United States
Department
of Agriculture

Forest Service
Southern Region

January 1993

FINAL
REVISED LAND AND RESOURCE MANAGEMENT PLAN

GEORGE WASHINGTON NATIONAL FOREST
Virginia West Virginia

GEORGE WASHINGTON NATIONAL FOREST
THE REVISED LAND AND RESOURCE MANAGEMENT PLAN

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CHAPTER 1

INTRODUCTION TO THE REVISED FOREST PLAN

PURPOSE

This Revised National Forest Land and Resource Management Plan:

– Establishes natural resource management direction for the George Washington National Forest (the Forest) for the next 10 to 15 years Forest multiple use goals and objectives are contained in Chapter 2 Forest standards are listed under "Common Standards" in Chapter 3

– Explains, issue-by-issue, how the Revised Plan responds to issues that evolved from concerns of the public, concerns of other agencies, and concerns of Forest staff – Chapter 2.

– Summarizes the management situation in terms of the existing resource conditions and the potential for resource development including the anticipated demand for goods and services from the Forest – Chapter 2

– Allocates twenty-four roadless areas to management areas which permit a range of uses – Chapter 2 and the management area map for Alternative 8A .

– Specifies what we would like the Forest to be -- physically, biologically -- as we work toward resolution of the issues Chapter 3 presents each management area and the standards that apply. This chapter includes objectives designed to move the Forest toward its desired future condition.

– Determines what lands are available for leasable mineral development based on the objectives and desired future condition of different management areas – Management Area Standards in Chapter 3.

– Specifies how the Revised Plan will be put into practice – Implementation in Chapter 4. Specifies time-tables for reviewing the Revised Plan, for updating it, for amending or revising it – Chapter 4.

– Establishes a quality control system that determines how well direction in the Revised Plan is carried out and determines the accuracy of outputs and effects projected in the Revised Plan – Monitoring and Evaluation in Chapter 5.

– Identifies land that is suitable for timber production – Appendix A The National Forest Management Act requires that "scheduled timber sales" using

even-aged and uneven-aged regeneration harvest methods be limited to lands that are classified as suitable for timber production.

– Establishes the Allowable Sale Quantity (ASQ) and the Timber Sale Schedule – Appendix A The allowable sale quantity is the most timber volume that can be harvested during any decade on lands that are classified as suitable for timber production

The National Forest Management Act, the Code of Federal Regulations, and other guiding documents determined the content of this Revised Plan. Land allocations and standards set forth here constitute the management direction the Forest will follow. The projected levels of forest products and services offered, however, and the associated time-frames are dependent on the amount of the budget allocated to the Forest annually.

RELATIONSHIP TO EIS

This Revised Plan is a detailed description of the Forest Service preferred alternative The procedures used in developing the Revised Plan and in analyzing all alternatives are described or referenced in the accompanying Environmental Impact Statement (EIS).

The Revised Plan incorporates management direction from four other environmental impact statements.

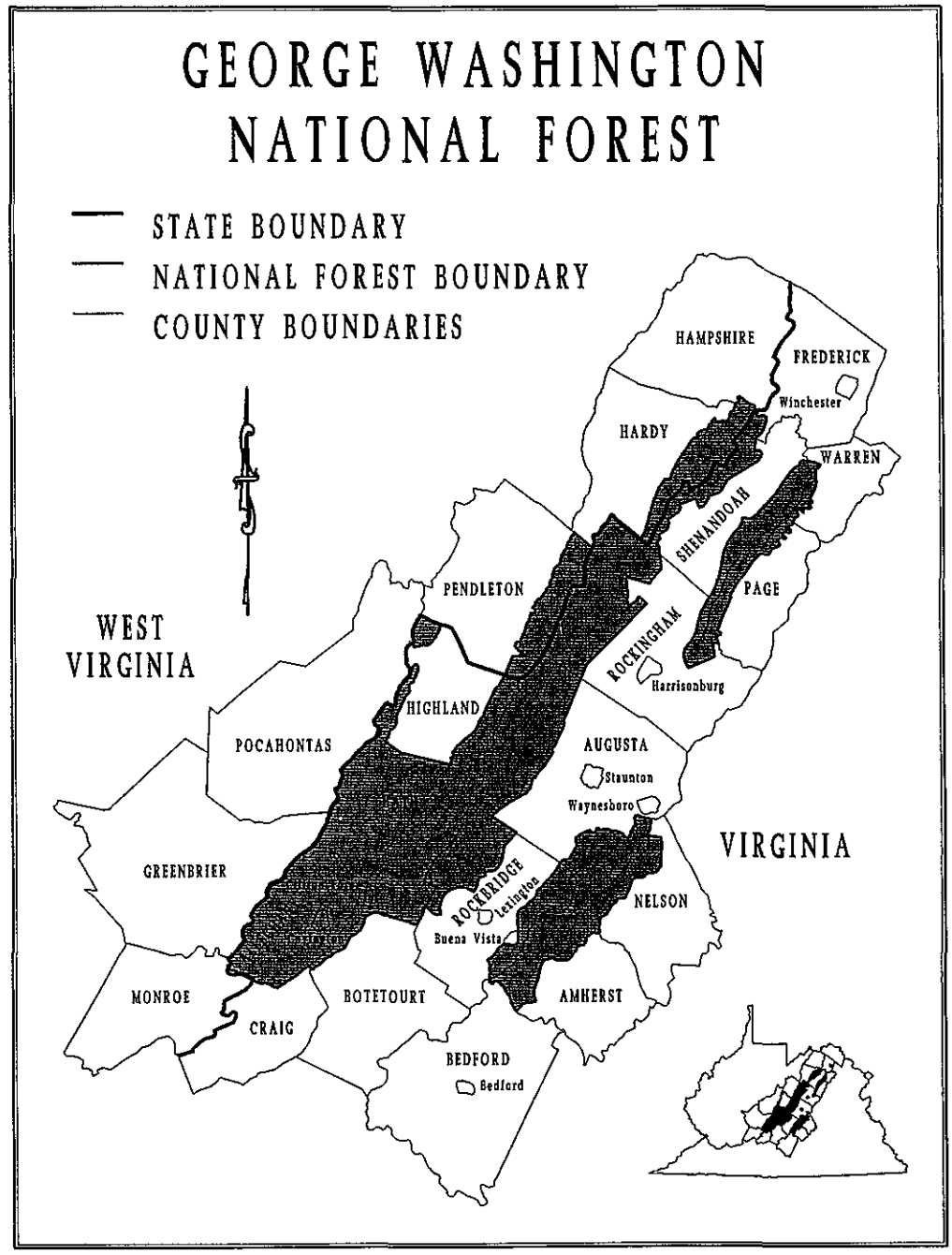
- *Final Environmental Impact Statement for Suppression of Southern Pine Beetle* (USDA Forest Service – Southern Region, April 1987)
- *Final Environmental Impact Statement as Supplemented* [in] *1985–USDA Gypsy Moth Suppression and Eradication Projects* (1985);
- *Final Environmental Impact Statement–Appalachian Integrated Pest Management (AIPM)–Gypsy Moth Demonstration Project* (1989);
- *Final Environmental Impact Statement – Vegetation Management in the Appalachian Mountains* [USDA Forest Service – Southern Region, July 1989].

The Revised Plan provides general, program-level direction for projects and activities on the six ranger districts of the Forest All must meet certain legal requirements that are discussed in Chapter 4 of this document.

FOREST INFORMATION

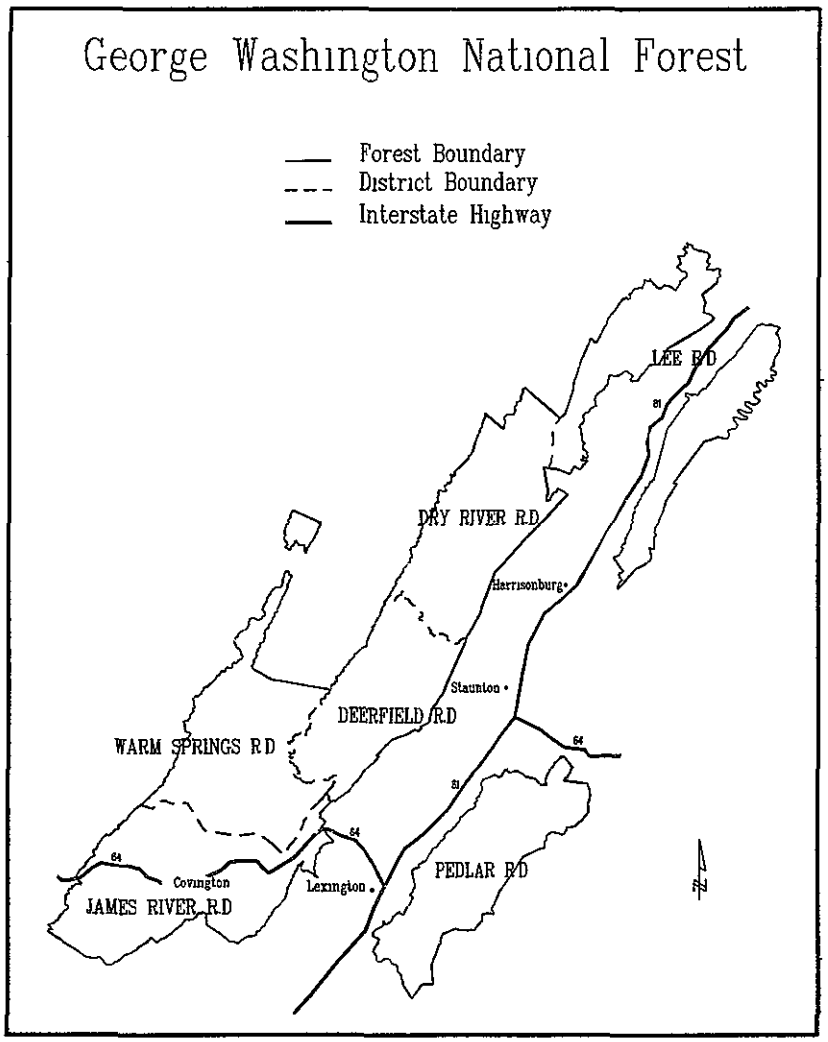
Location

The George Washington National Forest extends for 140 miles along the Appalachian Mountains of northwestern Virginia and adjacent West Virginia. The Forest includes approximately 956,000 acres of National Forest System land in 13 Virginia counties and approximately 105,000 acres in four counties in West Virginia -- a total of 1,061,000 acres.



Structure

The Forest is divided into six ranger districts: the James River, Warm Springs, Pedlar, Deerfield, Dry River, and Lee ranger districts The Forest Supervisor's Office is in downtown Harrisonburg, Virginia The Forest Management Team includes the Forest Supervisor, eight staff officers, and six district rangers.



ADDITIONAL INFORMATION AVAILABLE

Supporting information is incorporated-by-reference in this document and in the accompanying Environmental Impact Statement. The information that is incorporated-by-reference is available for review at the Supervisor's Office in Harrison Plaza, 101 North Main Street, Harrisonburg, Virginia The phone number is (703)433-2491.

CHAPTER 2

HOW THE REVISED PLAN ADDRESSES YOUR ISSUES

INTRODUCTION

This chapter describes how the Revised Plan developed in response to public issues and to comments about the draft revised Plan. For organization purpose, all of the information is discussed under the 13 issues that guided the revision. This chapter includes:

1. A summary of the management situation in terms of the existing resource situation and the potential for resource development including the anticipated demand for goods and services from the Forest.

2 Statements of management direction in the form of Forest-wide multiple-use goals and objectives which have been underlined for identification.

The reader is directed to Chapter 3 where specific management area direction and standards are provided for the Forest for the next 10 to 15 years

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ISSUE 1: BIODIVERSITY

Maintaining biological diversity on the Forest is a major goal of the Revised Plan. Standards are designed to conserve specific elements of biodiversity and restore others were needed Efforts are increasing in developing knowledge and in implementing conservation measures. The Forest's land and resource management approach conserves biodiversity as an integral part of sustaining multiple uses of the Forest and achieving the desired future described in Chapter 3 for each management area.

The next four sub-headings describe how the complex subject of biodiversity is addressed in the Revised Plan.

Fragmentation

Almost every acre of the Forest was heavily impacted by humans through timber harvesting, mining, charcoal and tanbark production, grazing, and recurrent burning prior to federal acquisition. Additionally, ecosystems within the Forest were severely affected by natural events (such as chestnut blight). Since acquisition that began in 1911, the Forest has recovered from these past activities and now provides large blocks of unfragmented habitat.

Changes to the ecosystems of the Forest from management practices need to be viewed within the context of natural changes that are already occurring to forest vegetation from both natural disturbances and plant succession. Many of the plant communities contain forest vegetation with advancing age struc-

tures approaching physical maturity. These plan communities are currently relatively stable or advancing toward climax conditions.

Forest vegetation is again facing a major disturbance – gypsy moth and oak decline Significant oak mortality will occur. Disturbance of normal ecological process will inhibit adequate oak regeneration and promote considerable species shift to nonsusceptible species. Abundance of dead overstory trees with no seasonal foliage promote a biological response to find a new ecological site equilibrium.

Our approach to fragmentation takes into account that all ecosystems on the Forest will be dynamically affected by these forces and that no natural community or habitat condition is considered never changing.

Forest fragmentation is a function of patch size, isolation of patches, total reserve area, and linkages among patches. Patch size and age requirements vary by species Many species tolerate or prefer a mixture of forest age classes, but some species are restricted to young (early successional) or mature (late successional) forest communities only The Revised Plan will provide large, unfragmented blocks of forested land, mostly in later successional stages These areas are allocated primarily to Management Areas 4, 5, 6, 8, 9, 18, 21 and portions of Management Areas 13, 14 and 15 that are unsuitable for timber production. These forested and riparian areas are located in a manner that provides opportunities for the movement of plants and animals resulting in long-term viability of species Although the Revised Plan permits vehicles on existing roads, wildlife habitat improvements, and timber salvaging operations in the immediate vicinity of system roads, these activities are located on the periphery of the unfragmented areas and will not significantly cause additional fragmentation.

Fragmentation of late successional habitats are usually caused by openings in the forest canopy. Edge effects occur when distinct habitat boundaries are created by timber harvest or other activities. These effects may be permanent or temporary depending on whether the disturbed area is allowed to proceed through vegetative succession. Species composition and community structure may change in areas where light and wind can extend into the exposed forest edge. This creates habitat suitable for some species and unsuitable for others

Habitat for species benefitting from early successional vegetation is provided to a lesser extent in the Revised Plan. Early successional habitat is provided in Management Areas 12, 16, 17, 20, 22 and portions of Management Areas 7, 11, 13, 14 and 15 which are suitable for timber production This habitat will , primarily be located in timber harvest units (0-10 age class), wildlife clearings,

utility rights-of-way, and along closed system roads and in prescribed burn areas.

Old Growth

The Southern Region is in the process of formulating definitions and descriptions of old growth for the major forest types on each national forest. These definitions will not be completed until after the Revised Plan is published The Revised Plan was prepared with the understanding that future amendments may be needed as new policies on old growth are issued.

The Forest contains ten of the old growth forest type groups that are being defined by the Southern Region. These forest type groups are described in Appendix H of the FEIS. The ID Team has prepared "interim" definitions for each of these types and identified stands which have a high probability of containing old growth characteristics.

At the present time, the Forest contains some stands (predominately hemlock) that have never been harvested. These stands are located in Management Areas 4, 8, 9, and 21. The largest concentration of existing old growth stands are on Shenandoah Mountain. As the Forest ages, additional stands, and even larger areas, are beginning to reach an age where "old growth characteristics" are developing Lands unsuitable for timber production in other management areas will provide additional acres of potential old growth in future years.

Management of most stands with old growth characteristics will mimic natural disturbances by using practices such as prescribed burning Naturalized undesirable exotic pest plants and animals will be controlled or eliminated where it is practical and economically feasible while maintaining the biological features of the area Gypsy moth will affect old growth conditions in some forest types where oak dominates by decreasing the percentage of oaks in the canopy. These will become standing snags and downed logs thereby contributing to structural diversity and large woody debris accumulation.

Table 2-1 on the following page displays acreages for the ten old growth forest type groups. The acreages located on lands classified as suitable for timber production, lands classified as unsuitable for timber production and the total acreages are displayed. Based on existing inventories, approximately 180,000 acres exist Using the same identification criteria, this will increase to 256,000 acres in ten years and to 737,000 acres in 50 years.

As previously discussed, the Revised Plan will not include an "old growth" policy until a Regional policy is completed. To avoid foregoing opportunities for old growth, the following interim policy will be followed until the Regional policy is developed and, if necessary, the Revised Plan subsequently amended:

1. No silvicultural practices will be scheduled in stands identified as "Present Old Growth" in Table 2-1 and located on lands classified as unsuitable for timber management in any of the ten old growth forest type groups,

Table 2-1.
Acres by Forest Type With a High Probability of Now Containing Old Growth Characteristics[1]

Old Growth Forest Type Group and Number	Total All Ages	Total Present Old Growth	Unsuitable For Timber Production	Suitable For Timber Production
1 northern hardwood forests	9,378	349	337	12
2 *conifer northern—hardwood forests*				
2a hemlock—northern hardwood subgroup	6,857	1,960	1,915	45
2b white pine—northern hardwood subgroup	37,942	2,279	311	1,968
2c. *spruce — northern hardwood subgroup*	432	375	285	90
5 mixed mesophytic forests	51,095	3,425	2,244	1,181
10 hardwood wetland forests	61	0	0	0
21 dry-mesic oak forests	677,958	87,889	59,605	28,284
22 *dry & xeric oak woodlands & savannas*	597	575	458	117
24 xeric pine & pine-oak forests & woodland	125,773	78,178	78,178	0
25 dry & dry-mesic oak-pine forests	122,501	4,441	3,024	1,417
28. eastern riverfront forests	216	206	186	20
37. *rocky, thin-soiled excessively drained* cedar woodlands	11	0	0	0
TOTALS	1,032,821	179,677	146,543	33,134

[1]See Appendix H of the FEIS on criteria for determining old growth characteristics
[2]*Type exists on Forest but no old growth acres are represented in the present inventory*

2 No regeneration harvest practices will be scheduled in stands identified as "Present Old Growth" in Table 2-1 and located on lands classified as suitable for timber production in old growth forest type groups 1, 2a, 2b, 2c, 5, 10, 22, 24, 25, 28 and 37.

3. Prior to scheduling any silvicultural practices in stands identified as "Present Old Growth" in Table 2-1 and located on lands classified as suitable for timber production in old growth forest type group 21 (dry-mesic oak forests), the following actions will be accomplished.

a Any stand where activities are proposed will be inventoried by the criteria listed in Appendix H of the FEIS (specifically, the Generic Attributes on page H-1).

b. Management practices, such as prescribed burning and control of undesirable exotic species, may proceed after site-specific analysis and disclosure which includes a discussion on the old growth characteristics found in each area, the effect of the action on these characteristics, and the effect the action will have on the contribution of the areas to the Forest's "old growth" inventory.

Conversion

The National Forest Management Act Regulations [36 CFR 219 27(g)] require an analysis and justification for any planned type conversion.

Management direction in the Revised Plan does not direct planned type conversion. Specifically, no conversion of hardwood forest types to pine forest types is needed to meet the desired future condition of any management area

Pine forest types can be regenerated either artificially or naturally to native pine species that are commonly occurring within the local watershed Pine-hardwood forest types can be regenerated artificially or naturally to mixed pine-hardwood stands of native species that are commonly occurring within the local watershed.

Paradoxically, the gypsy moth may prompt catastrophic events that will significantly alter the stand regeneration processes in hardwood stands containing a significant oak component Significant species composition shifts may occur on xeric dry sites

In response to this anticipated situation, the Revised Plan provides for regeneration of tree species on lands suitable for timber production as part of salvage harvests. When natural regeneration is not sufficient, artificial regeneration will be used to help meet the desired future condition of any management area. Hardwood or pine seedlings may be planted.

Following salvage operations, mixed stands of hardwood and pine will be managed to facilitate natural species diversity including both naturally or historically occurring pine and hardwood species.

Salvage post-harvest treatments permitted on lands suitable for timber production with site indices of 70 or more are:

1. Installation of tree shelters on existing advanced reproduction of hardwood species or planted hardwood species.

2. Planting of hardwood species at approximately 45 feet spacing (22 trees per acre) where natural advanced reproduction is inadequate.

3. Release of trees planted in tree shelters from competing vegetation if necessary.

Salvage post-harvest treatments include planting and subsequent release of naturally or historically occurring pine species on site index 50 or 60 land where desirable hardwood or pine advance reproduction is not adequate.

Riparian Areas

The Forest contains 1,287 miles of perennial streams and 3,190 acres of lakes, ponds and reservoirs. One of the overall objectives of the Revised Plan is the restoration, maintenance, and enhancement of riparian areas and their dependent resources.

Rather than use an arbitrary distance to determine the width of riparian areas, the Revised Plan lists the physical and biological characteristics used to define riparian areas in Appendix K.

The Revised Plan allocates most of the riparian areas on the Forest to Management Area 18. Management area direction for this linear management area compliments the management direction for adjoining management areas. Therefore, riparian areas are managed three different ways which are described in more detail in Chapter 3:

1. Management Area 18A is allocated to those riparian areas, reservoirs, lakes and ponds in the Forest that are adjacent to Management Areas 4, 5, 6, 9, 10, 12, 20, 21, 22 and lands classified as unsuitable for timber production in Management Areas 7, 11, 13, 14, 15, 16 and 17.

2. Management Area 18B is allocated to those riparian areas in the Forest that are adjacent to lands classified as suitable for timber production in Management Areas 7, 11, 13, 14, 15, 16, and 17.

3. Management Area 18C is allocated to those riparian areas on national forest lands that are adjacent to or upstream of the following municipal water supplies. Lynchburg Reservoir, Coles Run Reservoir, Mills Run Reservoir, Clifton Forge Reservoir, Skidmore Reservoir, Staunton Reservoir, and Elkhorn Lake Management Area 18C also includes any portion of these water supplies that may be on national forest lands.

Management Area 18 does not include riparian areas where legal or administrative mandates restrict certain activities. These areas include existing wilderness and roadless areas recommended for wilderness study (Management Area 8) and the Little Laurel Run Research Natural Area (Management Area 4) Any wide-spread vegetation manipulation or change in the physical structure of these riparian areas is not permitted.

Streamside management zones are applied to both perennial and intermittent streams. Depending on the width of the riparian area, streamside management zones may be located entirely within, or partially outside, the riparian area In the case of perennial streams, they are required to comply with the Clean Water Act. In the case of intermittent streams, they are used to protect or enhance downstream riparian-dependent resources. Since these streamside management zones are located in many management areas, they are listed under COMMON STANDARDS in Chapter 3 of the Revised Plan.

Management Indicator Species

Management Indicator Species (MIS) selected for the 1986 Forest Plan included black bear, wild turkey, white-tailed deer, common flicker, and pileated woodpecker. For the Revised Plan, additional species are selected to better meet the intent of Section 219.19(a)(1) of the NFMA Regulations which require MIS to include: (1) rare, threatened, or endangered species; (2) species whose habitats may be influenced by management activities, (3) species commonly hunted or fished; (4) non-game species of special interest; and (5) species whose population changes are believed to indicate the effects of management activities on other species or selected major biological communities.

In order to adequately monitor the effects of management practices on biological communities, plant and animal populations, and ultimately biological diversity, additional MIS are selected for the Revised Plan to measure the effects of forest fragmentation, gypsy moth defoliation, and management activities as well as to represent all forest ecosystems.

Management indicator species selected for the Revised Plan are:

DEMAND SPECIES
white-tailed deer
black bear
wild turkey

ECOLOGICAL INDICATORS	THREATENED/ENDANGERED SPECIES
cave dwelling bats	Indiana bat
brown-headed cowbird	northern flying squirrel
oven bird	peregrine falcon
worm eating warbler	bald eagle
Cow Knob salamander	James spinymussel
tiger salamander	shale barren rockcress
brook trout	swamp pink
sunfish family (centrarchid)	northeastern bulrush
common flicker	
pileated woodpecker	

yellow pine community (pitch, table mountain, Virginia and shortleaf pine)
old growth forest types

As directed in 36 CFR 219.19(a)(3) of the NFMA Regulations, consultation or selection of these MIS was made with Virginia Department of Game and Inland Fisheries, West Virginia Department of Natural Resources, Virginia Natural Heritage Program, and the USDI Fish and Wildlife Service. The rationale for the selection of MIS may be found in Appendix J of the FEIS.

MIS will be used to monitor the implementation of the Revised Plan, and effects on diversity and population viability of all native and desirable non-native plants and animals. MIS will help in determining if the Revised Plan is achieving the desired future condition across the Forest and each management area.

Monitoring of MIS will include individual species, but these species will not necessarily be monitored on a single species basis. Rather, monitoring of groups of species or biological communities will more accurately describe diversity, population viability, and changes as a result of management activities. For example, monitoring of an entire bird community in some situations can be accomplished with the same effort as monitoring individual species using breeding bird surveys or point counts. This information can be compared to long-term trends established by the USDI Fish and Wildlife Service.

Species with concerns for viability due to small isolated populations, such as threatened and endangered species, will be monitored on a single species basis. Demand species populations will be monitored in cooperation with the Virginia Department of Inland Fisheries and the West Virginia Department of Natural Resources based on acres treated, habitat capability curves, and hunter harvest information.

The Revised Plan will provide suitable habitat to maintain viable populations of all MIS. Objectives for minimum viable populations of MIS are included in Appendix J of the FEIS.

Threatened, Endangered and Sensitive Species

The Revised Plan provides habitat for the continued existence of all populations of threatened, endangered, and sensitive plant and animal species in the Forest. The Forest Service will coordinate management of threatened, endangered and sensitive species and their habitats with the USDI Fish & Wildlife Service and the appropriate agencies in Virginia and West Virginia.

The habitats and populations of threatened, endangered, and sensitive species throughout the Forest are protected and maintained as appropriate. If needed to determine the effects of proposed projects, additional site-specific surveys will be conducted for undiscovered for habitats and populations of threatened, endangered, and sensitive species prior to a decision to implement any project under the Revised Plan. As these areas are identified, appropriate actions will be taken to ensure their continued existence.

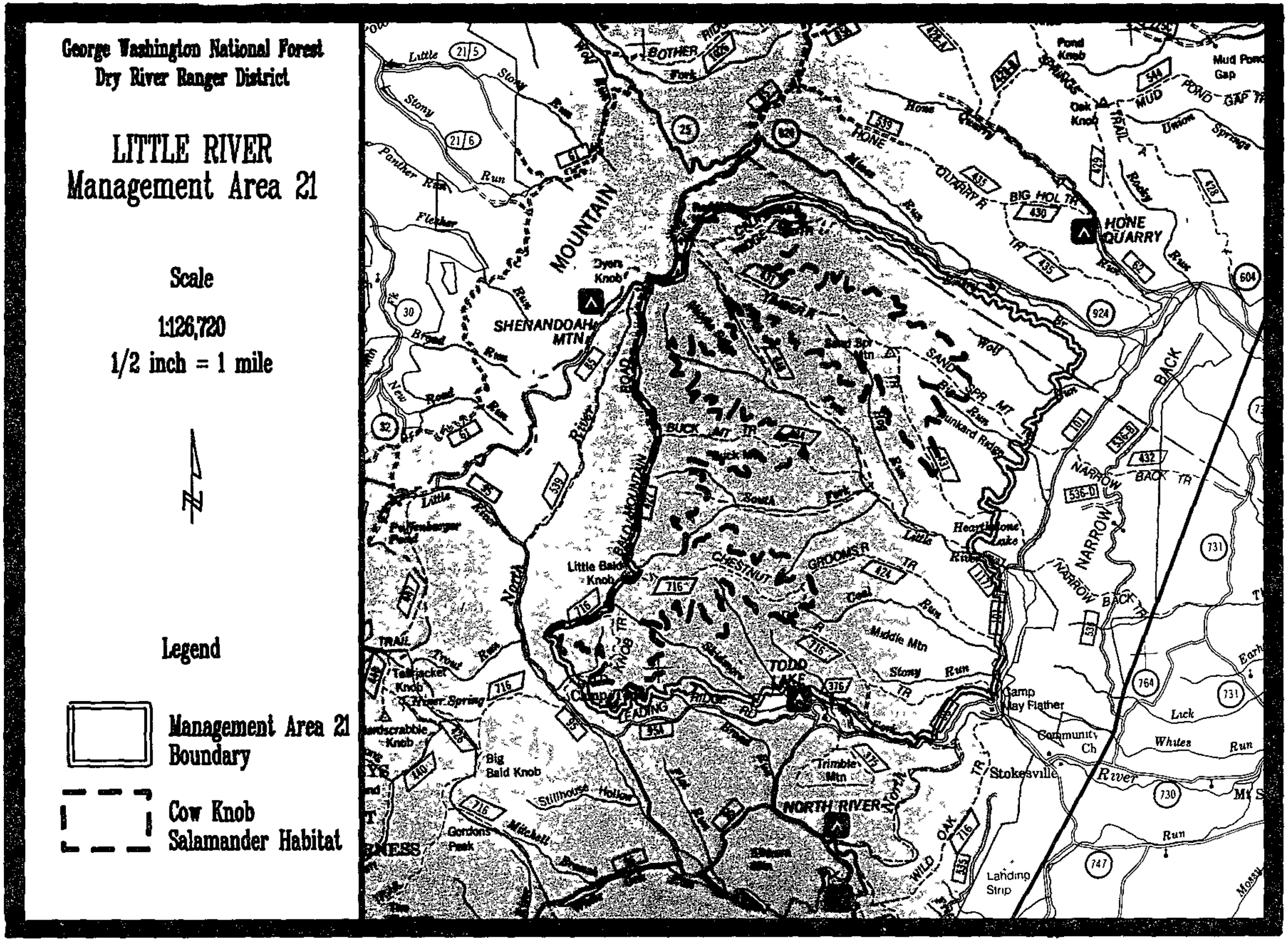
Appendix L of the Revised Plan contains charts showing which TE&S species occur or are likely to occur in the Forest; their global and state rankings; their occurrences by ranger districts and management areas; and the generalized type of habitat appropriate for the species.

Unique Natural Communities

The Forest contains a number of unique natural communities. Many of these unique communities were designated as Special Interest Areas in the 1986 Plan Since publication of that document, additional areas have been identified

The Revised Plan allocates 70,000 acres to Management Area 4 (Special Interest Areas or SIAs) to manage and protect 38 Biological SIAs, two Geological SIAs, 12 Historic SIAs, one research natural area and the Shenandoah Mountain Crest SIA, containing special habitat for the Cow Knob Salamander. Additional habitat for the Cow Knob Salamander is located in the Little River Special Management Area (Management Area 21). See the map of the Little River Special Management Area on the following page. These areas have been identified by the Forest, state natural heritage programs and wildlife agencies, and the USDI Fish & Wildlife Service as deserving special protection and appropriate management.

Six of these areas (Big Levels, Laurel Run, Maple Flats, Shale Barren Complex, Skidmore, and Slabcamp/Bearwallow) are recommended for further study and possible classification as Research Natural Areas Designation of the area as a SIA or its possible future designation as a RNA will not affect traditional uses (such as hunting, berry-picking, hiking, or fishing) as they now occur. These designations also will not affect access as it is now allowed. Non-motorized travel will be allowed and by motorized vehicle on open roads through the area.


George Washington National Forest
Dry River Ranger District
LITTLE RIVER
Management Area 21
Scale
1:126,720
1/2 inch = 1 mile
Legend
Management Area 21 Boundary
Cow Knob Salamander Habitat
SHENANDOAH MTN
MOUNTAIN
HONE QUARRY
NARROW BACK
BALD MOUNTAIN
CHESTNUT
TODD LAKE
NORTH RIVER
Stokesville
Camp May Flather
Landing Strip
Little Bald Knob
Big Bald Knob
Trimble Mtn
Middle Mtn

ISSUE 2: BELOW-COST TIMBER SALES

The timber sale program on the Forest has resulted in a negative cash flow in the Financial Report of the Timber Sale Program Accounting Report since the reports were first issued in 1989.

Efficiency of the Timber Sale Program

During the implementation of the Revised Plan, Forest employees will continue to search for means to increase the efficiency of the timber sale program by improving revenues from timber sales and by reducing expenses. In accomplishing these goals, the program must comply with federal and state laws and regulations, maintain the environmental quality inherent in the ecosystem management policy, and manage the Forest in a cost-effective manner. However, it is anticipated that the Forest's timber sale program will continue to be below cost.

Opposition to below-cost timber sales continues. The issue of below-cost timber sales is national in scope Future national direction or legislation on below-cost timber sales may require amendment of the Revised Plan.

The Revised Plan uses a timber sale program as the most cost-effective method of achieving other multiple use resource objectives (predominately wildlife habitat) and to retain the latitude to react to rapidly changing conditions such as those caused by gypsy moth infestations. Timber sales are used to achieve the desired future conditions for Management Areas 7, 11, 13, 14, 15, 16 and 17 described in Chapter 3.

Modifications to the Preferred Alternative

In formulating Alternative 8A as the Forest Service preferred alternative, the following modifications were incorporated which will lessen the economic impact of a modest reduction in timber harvest from historic levels.

1. The allowable sale quantity has been increased from 270 million board feet in the Draft Revised Plan to 330 million board feet (or an average annual offer of 33 million board feet). This increase was a result of using timber harvest as the most cost-effective method to meet the desired future condition on certain management areas and more efficiently manage the gypsy moth condition.

2. Lands suitable for timber production are concentrated on sites with higher productivity. This is expected to permit a higher percentage of the offered volume to be high quality hardwood and pine sawtimber.

3. To the extent consistent with specific management area objectives, a higher percentage of the allowable sale quantity will be offered on districts where the strongest timber demand has historically been exhibited.

4. The Forest will continue to work with communities under the Rural Development program to seek ways to diversify their employment opportunities in those

counties where unemployment is high and opportunities for employment outside the forest products industry are limited.

Rural Development

The desired future condition involves continuing Forest contributions to the economic and social vitality of the Forest's neighbors. The Forest works with neighboring people and communities in developing natural-resource-based opportunities and enterprises within the capabilities of the resources.

Rural development considerations are included in Forest decisions to assist communities in achieving long-term economic development. The Forest actively seeks partnerships that promote development activities.

Suitability

Appendix A contains a discussion on the determination and locating of lands suitable for timber production. The lands suitable for timber production are where regulated harvesting of timber products is used to accomplish timber, wildlife, and other resource objectives. These are the lands where, over time, the Forest would be scheduling timber sales using a variety of harvest methods.

The Revised Plan identifies 350,000 acres as suitable for timber production. Lands suitable for timber production are shown on a map that accompanies the Revised Plan. Table 2-2 contains a breakdown of the suitability of lands for timber production in each management area: In Chapter 3, there is a discussion in the desired future condition of Management Areas 7, 11, 13, 14, 15, 16, 17 and 18 describing the desired future condition being achieved by timber sales on suitable lands within these management areas. The overall goal is (1) to initiate timber sales for timber management purposes on those highly productive lands where timber management can show a positive cash flow and is compatible with the desired future condition of the management area and (2) to implement timber sales on other lands in those situations where it is the most cost effective method of achieving the specific desired future condition for the management area.

Table 2-2.
Lands Unsuitable and Suitable For Timber Production

Management Area	Thousands of Total Acres	Thousands of Unsuitable Acres	Thousands of Suitable Acres
4	70	70	0
5	10	10	0
6	10	10	0
7	39	27	12
8	44	44	0
9	141	141	0
10	8	8	0
11	11	8	3
12	2	2	0
13	42	38	4
14	133	85	48
15	331	139	192
16	39	12	27
17	91	28	63
18	21	20	1
20	4	4	0
21	59	59	0
22	6	6	0
TOTAL	1,061	711	350

One-third of the forested acres is suitable for timber production. The remaining acres were not designated as suitable for a number of reasons:

1. regulated timber harvesting is inconsistent with the management area objectives (Management Areas 4, 5, 6, 8, 9, 12, 20, 21 and 22);
2. high roading costs to access remote areas with low value Forest products;
3. low value stands on sites with low site indices; and
4. weak markets in certain areas of the Forest. Generally, such areas were removed from the suitable timber base to increase economic efficiency of the Forest's timber program.

Allowable Sale Quantity

Based on the maximum timber benchmark, all of the potential commercial lands on the Forest are capable of producing a first decade harvest of 1.9 billion board feet off a land base of 915,000 acres. Such a program, however, would result in a major below-cost timber sale program with a projected net revenue of -5.6 million dollars.

The estimated demand for timber products from the Forest is 455 million board feet for the first decade that the Revised Plan is in effect.

The Revised Plan contains an allowable sale quantity (ASQ) of 330 million board feet for the first decade. Although less than the anticipated demand, this ASQ is consistent with achieving an amount of vegetation manipulation to achieve wildlife and other mulitple-use objectives.

Table A-7 in Appendix A displays the timber sale schedule by ranger district. The Revised Plan encompasses a more efficient timber sale program concentrated on more productive sites. By concentrating the timber program on the more productive sites, the Revised Plan also permits the Forest to offer an amount of quality pine and hardwood sawtimber greater than what has been historically offered.

Salvage

The ASQ normally includes timber volume from scheduled timber sales on lands suitable for timber production. When salvage occurs on lands suitable for timber production, the salvage volume replaces scheduled timber sales volume and is considered part of the ASQ.

Salvage of mortality from gypsy moth infestation as well as other natural events, on lands unsuitable for timber production is not part of the ASQ. Instead, it is non-chargeable volume that is not charged to the ASQ. The "Non-Chargeable Volume" and the ASQ comprise the "Timber Sale Program" as discussed in Appendix A of the Revised Plan. The Revised Plan anticipates a very small amount of "non-chargeable volume" (500 MBF per year).

Providing a forest environment where the ecological processes of the forest are balanced against social and economic uses is a primary goal of the Revised Plan. Dying, dead and damaged trees are an important part of the ecosystems of the Forest. They are also a resource that can be used for fuelwood or sawtimber if removed prior to deterioration. In most cases, only a relatively small percent of the woody biomass is removed from the Forest in salvage operations because either it is deteriorated, low value, small size and inaccessible. Direction is provided to clarify a salvage policy that achieves the objective of balance recognizing that:

1. Dead and dying wood is a major reservoir of organic matter and nutrients. Dead, standing trees (called snags) can provide tree cavities that are important

to many animals. When snags fall, they become logs on the forest floor or in streams that provide microhabitats for a diverse succession of organisms.

2. Dead and dying wood is a valuable resource that can be removed from the forest ecosystem (salvaged) for various products to fulfill a social and economic need.

Dead or down trees are salvaged from existing open roads by individuals for personal use fuelwood in most areas of the Forest. Such salvaging is not permissible in all of Management Areas 8, 12, 20, 22 and portions of Management Areas 4 and 21.

Salvage is used to protect public safety. Salvage is also used for the purpose of utilizing high-value products before that value is lost

Salvage harvests generally do not remove all trees from a stand, but will leave those trees less susceptible to the insect or disease agent. Where appropriate and needed to meet the desired future condition on any management area, snags will be retained.

As discussed under ISSUE 1 – BIODIVERSITY, providing for regeneration of tree species on lands suitable for timber production is a further objective of salvage harvests. When natural regeneration is not sufficient, artificial regeneration will be used to help meet the desired future condition of any management area. Hardwood or pine seedlings may be planted.

ISSUE 3: FOREST ACCESS

The lands acquired for the national forest contained a spiderweb of old charcoal, tanbark, logging, and wagon roads that generally followed the stream bottoms along the path of least resistance. Over the years, roads have been closed or restored by the Forest Service to prevent resource damage, to lower maintenance costs, and to meet management objectives.

At the present time, the Forest varies from highly roaded with road densities exceeding 3 miles per 1,000 acres to unroaded areas with less than 1/4 mile of "improved" road per 1,000 acres.

The Revised Plan recognizes that the desire for motorized access to the Forest must be balanced against conflicting goals of providing for certain types of wildlife habitat and non-motorized recreation use.

System Roads

The Forest Transportation System contains approximately 1,760 miles of Forest Development Roads administered by the Forest Service. Approximately 610 miles are open to the public year-round; an additional 440 miles are open seasonally; 710 miles are closed to public vehicles year-round. The latest, updated existing road system and road management status is shown on a map that accompanies the Revised Plan.

Under the Revised Plan, a road system will be maintained to serve the public, meet management needs, and protect resources in a cost-effective manner. New roads will be constructed as needed and to the standard to meet the desired future condition identified in each management area. Road standards are identified in Appendix G.

Generally, it is not the intent of the Revised Plan to change the management of existing roads. Rather, it is to establish direction for management areas which will dictate access requirements.

The amount of road construction needed to accomplish the timber management and wildlife habitat needs on suitable acres in the Revised Plan is estimated to be 5 to 8 miles of system roads every year during the 10 to 15 year period that the Revised Plan is in effect. This does not include reconstruction or maintenance of existing roads. Additional roads may be needed for a variety of reasons including access to new developed recreation sites, general forest access, and access to wildlife improvements.

Most of the future road management practices will consist of the maintenance, reconstruction and, where appropriate, relocation of existing roads.

The decision to construct any additional roads will be made when projects are selected and supported by appropriate site-specific analysis and documenta-

tion. The Revised Plan assumes that any road construction in Management Areas 4, 5, 6, 9 and 21 will be limited to short spur roads leading to parking areas.

The Revised Plan estimates that 90% of new system roads constructed to support the timber and wildlife needs will not be open to public vehicular use. They will, however, be open to non-motorized use, such as horseback riding, mountain biking, and foot travel.

The Revised Plan continues the existing management direction of identifying and evaluating open roads or motorized trails. Roads that serve a legitimate access need, are consistent with the management area direction and meet standards in the Revised Plan remain open to public use. When they do not meet these requirements, these routes will be permanently closed or improved, as funding permits.

Decisions that determine whether individual roads are open or closed to public vehicular use are made on a case by case (road by road) basis. Existing roads may be closed under one of the following conditions:

1. The road will not be needed again. It will be closed permanently and removed from the Forest Transportation System. These roads will be revegetated, and no further maintenance required.

2. The road will not be needed for several years except possibly for emergencies such as firefighting access. It will be closed to all public traffic by placing a physical barrier at the entrance. These roads will be revegetated.

3. The road is only needed for administrative purposes and closing it will contribute to the desired future condition of the management area. It will have a locked gate at the entrance.

4. The road is seasonally closed because of weather conditions, because of the need for resource protection in cases of unacceptable or unsafe conditions, or to meet open road densities in Management Areas 15 or 16. It will have a locked gate at the entrance.

Licensed OHV Use

The ID Team worked with District personnel to identify approximately 160 miles of system roads which are currently designed to a standard that could offer opportunities for 4-wheel drive and other licensed OHVs without causing unacceptable resource impacts. In addition, there are more than 60 miles of system roads (see Appendix J) open at least seasonally which offer a degree of interest to users of licensed OHV vehicles.

As discussed in Chapter 3 of the FEIS, it is estimated that an additional 187 miles of 4-wheel drive and other licensed off-highway vehicle roads are needed to meet the anticipated demand for such opportunities by the year 2000.

Under the Revised Plan, all open system roads on the Forest are available for vehicles licensed for public roads. The intent of the Revised Plan is to continue to offer uear round use on those system roads where year round use has traditionally been offerred, and to continue to offer seasonal use on those system roads where seasonal use has traditionally been offered.

The map which accompanies this Revised Plan shows the routes which offer opportunities for licensed OHV users. Persons interested in OHV experiences should contact the appropriate Ranger District to learn the status and specifics on the location of these OHV routes.

Non-Motorized Trails

The Forest trail system includes approximately 950 miles designed for a variety of non-motorized uses including hiking, horseback riding, mountain biking and backpacking. The Revised Plan continues the "Share The Trail" concept.

Non-motorized trails are compatible with all management areas. Trails in Management Areas 4 and 18 may be closed or relocated if it is determined that unacceptable damage is being caused to biological or riparian resources.

Appendix B contains a listing of potential trail construction and reconstruction projects. It is the intention of the Revised Plan to develop or improve these trails as funding permits.

Three trails are components of the National Trails System: the Appalachian National Scenic Trail, the Lion's Tale National Recreation Trail and the Wild Oak National Recreation Trail.

Approximately 60 miles of the Appalachian National Scenic Trail are within the boundary of the Pedlar Ranger District. Except for portions of the Trail in the The Priest and Three Ridges Roadless Areas (allocated to Management Area 8), the Appalachian Trail Foreground Zone has been allocated to Management Area 6. New standards have been incorporated as recommended by the Appalachian Trail Conference.

The 0.3-mile Lion's Tale National Recreation Trail, located on the Lee Ranger District, is part of Management Area 12 ("Specialized Recreation Sites").

The 25.6 mile Wild Oak National Recreation Trail, located on the Dry River Ranger District, lies within Management Areas 13 and 21.

Access for Persons With Disabilities

The Revised Plan encourages the continued exploration of methods to provide access to persons with disabilities in accordance with the Americans with Disabilities Act and other applicable legislation. The Forest Service intends to continue to seek such opportunities as the Revised Plan is implemented. Access for disabled persons is also provided in developed recreation facilities as discussed under **ISSUE 13 -- THE MIX OF GOODS AND SERVICES**

Currently, two motorized routes are provided for hunting access to physically disabled hunters The two mile Neal Run Trail on the Warm Springs Ranger District is open for ATVs or motorcycles. The Fore Mountain Road on the James River Ranger District is opened for licensed OHVs

Most Ranger Districts provide hunting access to physically disabled hunters who possess a valid Virginia or West Virginia permit. Additional information is available from the Ranger District and state agencies.

ISSUE 4: ALL-TERRAIN VEHICLE (ATV) USE

Under current management direction, the Forest has developed three all-terrain vehicle systems on the Forest:

1. The Taskers Gap/Peters Mill Run System on the Lee Ranger District contains approximately 20 miles of routes. There is potential for additional route mileage within this particular management area.

2. The Rocky Run System on the Dry River Ranger District contains 15 miles of routes. There is potential for additional route mileage within this management area.

3. The South Pedlar System on the Pedlar Ranger District contains approximately 25 miles of routes.

The Revised Plan calls for one additional system to be established on the Deerfield Ranger District if there is interest on the part of an organization to sponsor the construction and maintenance of this system. The length of this potential system is estimated to be 15 miles.

As discussed in Chapter 3 of the FEIS, the ID Team anticipates that an additional 331 miles of routes would be needed to meet the anticipated demand for ATV opportunities by the year 2000.

Forest officials worked with representatives of ATV organizations to identify sixteen other potential areas where ATV systems could be developed. If all of

these systems were developed, an estimated 375 miles of ATV routes would be available for public use.

The number of ATV trail systems offered under the Revised Plan is based on the amount of use deemed appropriate under the overriding theme of managing the Forest to provide a wider array of uses, service, products and conditions than in the past, and under the assumption that all-terrain vehicle use is incompatible with the objectives and desired future condition of most of the management areas. The process paper "Incorporation of the NFMA Requirements for Off-Road Vehicle Use into the Revision of the Land and Resource Management Plan for the George Washington National Forest" contains an analysis of the fifteen trails routes not selected in the preferred alternative.

The four ATV systems are located in Management Area 11. Licensed OHVs are allowed if the trail is designated for such a vehicle by a Supervisor's Order. More detailed information on their management is contained in Chapter 3 of this document under the discussion for Management Area 11.

Under the Revised Plan, as under current management direction, the remainder of the Forest is closed to vehicles which are not licensed by the state.

ISSUE 5: ROADLESS AREA MANAGEMENT

The Forest contains an identified 27 areas that qualify as "roadless" under national policy. These roadless areas contain more than 260,000 acres. Appendix C of the Final Environmental Impact Statement contains an evaluation report on each of the roadless areas.

Federal legislation is needed to establish wilderness. The Revised Plan recommends three roadless areas for wilderness study (Management Area 8): St. Marys Addition, the Priest and Three Ridges. These roadless areas would be valuable additions to the National Wilderness Preservation System. This recommendation is a preliminary administrative recommendation that will receive further review and possible modification.

Table 2-3 displays how the Revised Plan allocates the 260,000 acres of roadless areas to different management areas.

Big Schloss, Laurel Fork, Little River and Mount Pleasant have been allocated to Management Area 21 ("Special Management Areas"). The majority of the remaining roadless area acreage is allocated to Management Area 4 ("Special Interest Areas") and Management Area 9 ("Remote Highlands").

Table 2-3
Allocation of Roadless Area Acreage to Management Areas

Management Area	Thousands of Acres
4	32
6	2
7	0[1]
8	12
9	121
10	1
13	9
14	11
15	7
17	0[1]
18	4
21	60
22	0[1]

[1]Less than 500 acres, rounded to zero.

5% of the roadless area acreage is allocated to Management Area 8 and recommended for wilderness study. 84% of the acreage is allocated to Management Areas 4, 6, 9, 10, 18 and 21 where the roadless nature of these areas will not be substantially changed. On the remaining 11%, projects may be scheduled that might substantially change the roadless nature of these areas.

Before any project is scheduled in a roadless area, site-specific analysis and appropriate disclosure will be completed. This site-specific disclosure will include discussion of the effects of the project on the roadless nature of the particular area as described in Appendix C of the FEIS.

ISSUE 6: SPECIAL MANAGEMENT AREAS

The 1986 Plan contained 20 management areas, many of which were "Special Management Areas" containing unique values. Most of these Special Management Areas were roadless areas identified in RARE II as part of the roadless area inventory discussed under **ISSUE 5 — ROADLESS AREA MANAGEMENT.**

The Revised Plan continues to recognize areas of the Forest that possess unique values. These areas are assigned to specific management areas with management direction designed to preserve and/or enhance their values.

Table 2-4
Allocation of Special Management Areas in the Revised Plan

Description of Area	Management Area
Little Laurel Run Research Natural Area	4
Existing Wilderness	8
Skidmore	4
Dolly Ann Hollow	4
Southern Massanutten	9
Laurel Fork	21
Little River	21
Big Schloss	21
Hidden Valley	13 and 15
Jackson River	10
North River	10
Crab Tree Falls	13
Mount Pleasant	21

Wilderness

The four existing wildernesses on the Forest are allocated to Management Area 8. Two small portions of wildernesses that are located primarily on the Jefferson National Forest are also recognized in this management area, but no specific management direction is provided since these areas are administered by the Jefferson National Forest.

Rivers

Table 1 in Appendix D of the FEIS identifies the rivers or river segments on the Forest which are eligible for inclusion in the National Wild and Scenic Rivers System. The Forest Service is required by the National Wild and Scenic Rivers Act of 1968 to protect rivers under consideration for inclusion.

Suitability studies will be completed on these rivers after the Revised Plan is published. Designation of any river or river segment for inclusion in the National Wild and Scenic Rivers System requires an act of Congress.

In the Revised Plan, river segments that are eligible for designation are managed in a manner that retains the attributes that make them eligible.

Corridors along these rivers are generally allocated to Management Area 10. A portion of the Jackson River in Hidden Valley, the Elizabeth Furnace area along Passage Creek, and the Walton Tract on the Cowpasture River have been allocated to Management Area 13. Small fields along the South Fork of the Shenandoah River, the Evans, Wallace and Marshall Tracts of the Cowpasture River, and the Zepp Tannery tract on Cedar Creek have been allocated to Management Area 22. Management practices permissible in these management areas will not preclude future inclusion of the rivers into the National Rivers System.

Important Scenic and Recreational Areas

A number of areas on the Forest will be managed to provide a quality visual and recreation experience to visitors and users.

The foreground zone of the Appalachian National Scenic Trail has been allocated to Management Area 6. Additionally, any "seen areas" from the Appalachian Trail have a visual quality objective of either preservation, retention, or partial retention.

The Highlands Scenic Tour (a Forest Service scenic byway) has been allocated to Management Area 7. The foreground zone for the Blue Ridge Parkway, major highways including a number of Virginia Byways noted for their scenic beauty, has also been allocated to Management Area 7 for protection of these scenic corridors. These Forest development roads, known for their scenic qualities, were also added to this management area.

Management Area 13 contains areas which receive heavy dispersed recreation use. Most of these areas are located near popular developed recreation areas and are managed in conjunction with the developed recreation experience such as hiking loops from the Longdale and Elizabeth Furnace Recreation Areas.

Fisheries

The Forest contains 660 miles of cold water streams, 627 miles of cool or warm water streams and 3,190 acres of lakes, ponds and reservoirs.

Under the Revised Plan, fisheries will be managed to develop and maintain aquatic habitats that contain suitable water quality, food chains, and necessary habitats for all life stages of native fish, and to facilitate sport fishing.

Lakes, ponds, reservoirs and most perennial streams are contained in Management Area 18. The desired future condition for Management Area 18 gives specific objectives for large woody debris, water temperature, sedimentation, and dissolved oxygen levels for streams. Fisheries direction for lakes, ponds, and streams is also provided in the discussion of Management Area 18 in Chapter 3.

ISSUE 7: AESTHETICS

The approximately 1.1 million acres of the Forest contain picturesque mountains and valleys of great scenic beauty.

Under the Revised Plan, the Forest landscape continues to be a basic Forest resource and, as such, it's requirements are based on appropriate visual quality objectives when managing resources of the Forest. Management Areas 5 and 7, in particular corridors along scenic routes, are managed to emphasize visual resource objectives.

Visual quality objectives (VQO's) are used as a management tool to protect the scenic attributes of the landscape. They identify the degree of acceptable alteration to the existing landscape appearance as perceived by the average Forest visitor. Assigned VQO's are consistent with the best management practices for all resources as emphasized in a particular management area.

During the revision process, the existing inventory of VQO's as defined in the National Forest Landscape Visual Management System was updated and verified. The Revised Plan uses "adopted" VQO's to match the management of the visual resources with the other objectives of each management area. Each management area described in Chapter 3 is assigned one or more VQO's.

The maximum modification visual quality objective is inconsistent with any of the recreation opportunity spectrum classes in the Revised Plan. Therefore, the maximum modification VQO has been eliminated. In its place, an adopted VQO of retention, partial retention, or modification is used, depending on the management area direction in Chapter 3.

Table 2-5 contains a breakdown of the acreage by long-term VQO in the Revised Plan compared to the existing inventory.

Table 2-5.
Thousands of Acres by Visual Quality Objectives

Visual Quality Objective	Thousands of Acres Inventory	Thousands of Acres Revised Plan
Preservation	34	46
Retention	94	379
Partial Retention	279	548
Modification	641	88
Maximum Modification	13	0

In addition to these five long-term VQO's, there are two short-term VQO's which may be employed: rehabilitation and enhancement.

Specific guidelines and contrast reducing techniques have been developed for use with vegetation management practices on the Forest. They aid management in determining how to provide the visual image that viewers expect in certain areas. Refer to Common Standards in Chapter 3.

ISSUE 8: VEGETATION MANIPULATION

The 1986 Plan called for a variety of vegetation management practices to be applied on the Forest. Table 2-7 on the next page displays the acreage in Appendix N of the 1986 Plan.

The Revised Plan allows a combination of even-aged and uneven-aged regeneration harvest methods (refer to Table 2-6). Specific locations of nine areas that will be managed under uneven-aged harvest systems and all other lands suitable for timber production are shown on a map that accompanies the Revised Plan.

Appendix H describes the ability of different regeneration harvest methods to achieve vegetation objectives This information will be used by interdisciplinary teams in selecting and designing projects to implement this Revised Plan

Modified shelterwood harvest will be the primary even-aged timber harvest method employed. However, the full range of silvicultural practices, including regeneration and intermediate harvest methods, for even-aged and uneven-aged management, are available for use based on site-specific conditions and desired objectives.

Clearcutting will be used only after site-specific, project-level analysis has determined that other regeneration harvest methods will not achieve the desired future condition of the management area. For instance, (1) Clearcutting would be the only method that would be reasonable following wildfire damage, or (2) clearcutting could be the only method that can achieve the desired wildlife habitat conditions for a particular species (such as grouse) that requires high stem density.

Table 2-6 presents a display of the amount of land that would be regenerated using various timber harvest methods for the 1986 Plan, interim management direction (Alternative 2), the Draft Revised Plan (Alternative 8) and the Final Revised Plan (Alternative 8A). Since the decision to use any regeneration harvest method is based on site-specific analysis, the acreages shown in this table are estimates rather than commitments.

Table 2-6
Thousands of Acres Estimated to be Regenerated During the First Decade

Method	1986 Plan	Interim Management	Draft Revised Plan	Final Revised Plan
Clearcut	46	25	3	3
Seed Tree	0	0	2	2
Removal	0	2	0	2
Modified Shelterwood	0	0	0	16
Two-Staged Shelterwood	4	4	15	0[1]
Group Selection	40[2]	40[2]	65[2]	8[2]
Individual Tree Selection	0	0	0	0

[1]No acres are scheduled.
[2]These are the acres where uneven-aged treatments will be employed, not the acres of openings created.

Featured Species

Under the 1986 Plan, any given area of the Forest contained standards and guidelines to protect and enhance habitat for a specific wildlife game species. Featured species were black bear, wild turkey, white-tailed deer, gray squirrel, and ruffed grouse. By providing habitat for this group of game species, the Forest maintained a variety of habitats, and thus provided for a wide variety of species.

The Revised Plan still provides management for these species, but not as featured species. Instead, the Revised Plan emphasizes habitat for the traditional "featured species" in Management Areas 14, 15, 16 and 22 while monitoring and evaluating the effects of management practices through management indicator species. The Revised Plan provides for a forest environment with a

wide variety of habitats to meet the needs of wildlife species inhabiting the Forest.

The Forest has reduced the amount of land suitable for timber production from the 1986 Plan, but has not appreciably reduced the amount of lands on which a variety of management practices can occur. Even on most of the lands unsuitable for timber production, other management activities may take place. The expanded wildlife management program provides habitat manipulation in areas where timber quality is poor, where there are weak markets for such products, and/or in remote areas where associated roading costs are extremely high. These conditions exist in many portions of the Forest, and designating such areas as unsuitable for timber production helps avoid below cost timber sales. Overall habitat management increases, compared to Alternative 2 (Interim Management), and estimates made for game species' populations do not show declines.

Management Area 14 emphasizes quality habitat for black bear and other disturbance sensitive species. Management Areas 8, 9, 21, and portions of other management areas such as 5, 6 and 15 also provide quality habitats for black bear and area sensitive species based on the opportunities for such habitat.

Management Area 15 emphasizes quality habitat for wild turkey and other species that favor a more mature forest environment with small, herbaceous clearings and freedom from disturbance during nesting and brood-rearing season. Portions of other management areas will provide similar habitat functions.

Management Area 16 emphasizes quality habitat for the ruffed grouse and other species that depend on early forest seral stages. Management Area 17 provides similar habitat, but contains larger openings than in Management Area 16.

Almost all management areas contain quality gray squirrel habitat, with Management Area 18 providing the highest quality habitat available.

The white-tailed deer will fare well in many management areas, and particularly in 15, 16 and 17.

Small game preferring open habitats, and "watchable wildlife" species are intensively managed for in Management Area 22. Management for watchable wildlife is also emphasized in Management Areas 12 and 13. Increased environmental awareness and education projects, and short interpretive trails and viewing areas are developed within these areas as well as habitat for small game.

Waterfowl habitat enhancement is emphasized in and around Lake Moomaw and other impoundments. Nesting opportunities for the wood duck and woodcock are increased within Management Area 18.

A variety of treatment methods will be utilized in combination with proper spatial arrangement to promote quality hunting opportunities. Walk-in turkey and grouse hunting areas are expanded, particularly in Management Areas 15 and 16. Management Area 9, with occasional openings and prescribed fire, offers opportunities for remote walk-in hunting for bear, deer and turkey.

Many different habitat management practices to benefit both game and non-game species are utilized to improve habitats throughout the Forest.

ISSUE 9: RESOURCE SUSTAINABILITY

The public has expressed concerns about ecosystem management, reintroduction of extirpated species, the sustainability of timber management, opposition to the use of herbicides, effects of management practices on water quality and soil productivity and hazards of wildfire.

Ecosystem Management

The Revised Plan provides a variety of resource benefits, including wood, wildlife, fish, range, dispersed recreation, developed recreation, minerals, wilderness and special uses, in a manner that maintains the diversity, productivity and long-term sustainability of ecosystems.

After 75 years of management as a national forest, the ecosystems on the Forest are recovering from major disturbances caused by past human activities. The Forest offers ecological conditions that are not commonly found on private lands within the mid-Atlantic states.

The Revised Plan stresses the need to sustain a high quality environment while also producing needed goods and services. It will use an ecological approach to achieve multiple use management of the Forest. Lands and resources are managed for a number purposes such as producing, restoring, or sustaining certain ecological conditions; for desired resource uses and products; and for aesthetic, cultural, or spiritual values. These goods and services will be produced in an environmentally acceptable manner.

Some examples of how the Forest Service incorporates elements of ecosystem management into the Revised Plan are: designation of special habitat for Cow Knob Salamander, limitation on amount of clearcutting, and definition of riparian areas based on ecological criteria.

Extirpated Species

The Revised Plan does not promote the reintroduction of extirpated species. The lead agency on such an action is either the USDI Fish & Wildlife Service or an appropriate agency of Virginia or West Virginia. The Forest Service serves as a coordinating agency when any decision is made to reintroduce an extirpated species.

Soil Productivity

The Revised Plan contains standards which ensure that management practices are implemented in a manner that maintains or improves the long term productivity of the site.

In actively eroding areas where the resources are incurring unacceptable damage as a result of human activities or natural processes, restoration projects are implemented.

In any project, soil productivity is protected through the application of mitigation measures as specified in Common Standards.

Representative samples of projects are monitored to ensure that soil productivity is maintained.

Water Quality

The Forest recognizes the importance of producing abundant clean water for the uses on the Forest and of responding to the increasing public and resource needs in watersheds draining from the Forest. The Revised Plan maintains or improves water quality to meet demands for beneficial uses of water, both within and adjacent to the National Forest.

In any project, water quality is protected from nonpoint source pollution through the use of standards that meet or exceed best management practices.

On-site implementation of standards is monitored, as is their effectiveness in protecting water quality and maintaining the biological condition of streams. Results of monitoring are evaluated and practices will be adjusted as needed to protect beneficial uses.

The Forest Service cooperates with local, state and municipal agencies in monitoring and assessing water quality and quantity.

Watershed improvement projects are implemented in actively eroding areas where sediment is adversely affecting beneficial uses.

Acid deposition is having an adverse effect on Forest streams, causing a decrease in alkalinities and a reduction in fish and aquatic insects in acid-sensitive streams. This deposition is derived from off-Forest sources and is beyond the control of the Forest. Mitigation for acid deposition through liming and other means may be done on a very limited basis.

Vegetation Management

Under the standards in the Revised Plan, all vegetation management, including timber harvesting, shall be accomplished in a manner that maintains the diversity, productivity and long-term sustainability of ecosystems

Prescribed fire is used to achieve specific management objectives. A burning program of approximately 3,000 acres per year improves fire-dependent ecosystems and wildlife habitat, maintains open areas along the Appalachian Trail, and restores and maintains some threatened, endangered, and sensitive species habitats

Herbicides

The Revised Plan limits the use of herbicides to those listed in the *Final Environmental Impact Statement for Vegetation Management in the Appalachian Mountains* and under the mitigation measures described in that document and incorporated as Common Standards in Chapter 3 of the Revised Plan.

The decision to employ any herbicide must be within the appropriate standards in the Revised Plan and based on site-specific analysis tiered to the *Final Environmental Impact Statement for Vegetation Management in the Appalachian Mountains.*

Aerial application of herbicides is only permitted on certain utility corridors under stringent conditions in Management Area 20 and only after site-specific analysis and disclosure.

Fire

Wildfires are suppressed (either through confinement, containment or immediate control) using the least cost methods commensurate with the resource values at risk, the potential for human injury, the management area suppression objectives and the availability of manpower and equipment.

One of the consequences of an expanding population near the Forest is the presence of new communities and housing developments adjacent to the Forest. Fire professionals are finding that many new neighbors have located in areas or have constructed homes in such a manner that they are at great risk from wildfires. The Forest is currently working with the Virginia Department of Forestry on a wildland-urban interface fire prevention program on the Lee Ranger District to identify areas where wildfire risk is high and to recommend safeguards for these neighbors. Under the Revised Plan, strategies to lessen fire impacts in the wildland-urban interface areas are developed with cooperators.

Air

Under the Common Standards in Chapter 3 of the Revised Plan, the Forest is managed in a manner that meets Class II National Ambient Air Quality Standards.

ISSUE 10: MINERALS

The Revised Plan continues to offer opportunities to explore and develop leasable (natural gas and other minerals) and common variety minerals on the Forest as one of the products important to the public. Tables 2-7, 2-8 and 2-9 display the number of acres available for oil and gas leasing, leasing of non-energy minerals and the sale of common variety minerals.

In areas of high mineral resource potential, minerals are recognized as an important multiple use that may be developed in coordination with other resource values. Areas needing special protection (i.e. wilderness, recreation areas, etc.) either have minerals activities prohibited by law or restricted by timing, controlled surface use, or no surface occupancy stipulations according to the appropriate management area direction.

On land available for minerals, exploration and development are consistent with the provisions of the management area to which the land is allocated.

As existing oil and gas leases expire, new leases will be issued under the standards of the appropriate management area.

Table 2-7.
Thousands of Acres Available for Leasable Energy (Oil and Gas) Minerals[1]

Leasing with Standard Lease Terms	Leasing with Timing or Controlled Use Stipulations	Leasing with No Surface Occupancy Stipulations	Unavailable due to Congressional Action
145	842	42	32

[1]The above acreage figures do not distinguish between Federal and private mineral rights. Approximately 19 percent of the Forest contains private mineral holdings.

Table 2-8.
Thousands of Acres Available for Non-Energy Leasable Minerals[1]

Leasing Generally Available	Leasing on Case-by-Case Basis	Unavailable due to Congressional Action	Unavailable due to Administrative Action
479	532	32	18

[1]The above acreage figures do not distinguish between Federal and private mineral rights. Approximately 19 percent of the Forest contains private mineral holdings.

Table 2-9.
Thousands of Acres Available for Salable (Common Variety) Minerals[1]

Mineral Material Sales Allowed	Mineral Material Sales on Case-by-Case Basis	Unavailable due to Congressional Action	Unavailable due to Administrative Action
141	840	32	48

[1]The above acreage figures do not distinguish between Federal and private mineral rights. Approximately 19 percent of the Forest contains private mineral holdings.

Although a large number of acres are "available" for mineral activities, mineral deposits suitable for mining are scare. Areas needed for mineral extraction are relatively small and isolated features on the vast acreage of the Forest. At most, only a very small percentage (less than 1%) of the Forest is expected to contain mineral activities.

Exploration for minerals requires that large areas be searched. Most of the searching of these large areas does not disturb the ground surface. It is done primarily by 1) analysis of satellite images, remote sensing images, and aerial photos, 2) by geologic mapping, and 3) study of existing data from previous exploration or mining.

ISSUE 11: GYPSY MOTH

One of the goals of the Revised Plan is to provide a forest environment where damage to natural resources from forest pest organisms, especially gypsy moth, are minimized when such damage prevents the attainment of other natural resource objectives. The Forest manages insect and disease populations by utilizing the principles of integrated pest management.

The Revised Plan provides a strategy that is consistent with the expected behavior of gypsy moth populations and their impacts for the ten to fifteen year period that the Revised Plan will be in effect. This expected behavior and impacts are described in the FEIS.

Population Control

By summer of 1992, reproducing populations of gypsy moth could be found on approximately half of the Forest. Since first defoliation on the Forest in 1986, gypsy moth population levels have expanded to outbreak levels with more than 40 percent of the Forest experiencing at least one defoliation.

It is estimated that the entire Forest will have defoliating population levels in the next five to seven years. Following this first epidemic of gypsy moth, the Forest will be subjected to future recurrent epidemics as populations rise to defoliating levels and then collapse again. Generally, the first outbreak is the worst in terms of duration and damage; subsequent outbreaks are usually of shorter duration and are generally less damaging. The degree of damage or mortality will depend upon specific site factors that directly influence tree vigor and buildup of secondary pests.

Population collapses are usually caused by a virus disease of the caterpillar; however, the collapse may result when caterpillars rapidly consume acceptable foliage and then die from starvation before they can complete their development.

Intervention Treatments

To date, there is no cost-effective or environmentally acceptable way of achieving wide-spread control of gypsy moth populations in the infested area. Limited treatments of defoliating populations of gypsy moth are based on sound forest health evaluations conducted compelling economic analysis. Treatments to prevent gypsy moth defoliation are not justified where the costs outweigh the benefits.

A new natural enemy of the gypsy moth is an insect pathogenic fungus that is becoming established across the Forest as the result of its artificial introduction and its natural spread from the Northeast. The fungus attacks and kills gypsy moth caterpillars across a broad range of population densities. It was artificially introduced into the Forest in 1991 and developed to epidemic levels in 1992, causing the widespread collapse of gypsy moth populations across the Forest.

This fungus will most likely alter the population dynamics and impacts of gypsy moth on the Forest.

The Revised Plan calls for the continued introduction, where appropriate, of natural enemies, including fungal agents, to contribute to the biological control of introduced pests.

Those gypsy moth treatments which are evaluated in the *Final Environmental Impact Statement — Appalachian Integrated Pest Management (AIPM) — Gypsy Moth Demonstration Project* and *Final Environmental Impact Statement as Supplemented [in] 1985 — USDA Gypsy Moth Suppression and Eradication Projects* may be considered to manage gypsy moth populations on the Forest.

The protocol for the treatment of gypsy moth populations has evolved under the Appalachian Integrated Pest Management (AIPM) — Gypsy Moth Demonstration Project. Decisions on the specific treatments are made annually based on Forest health evaluations by professional entomologists, economic analysis and site-specific environmental analysis tiered to the environmental disclosure in the *Final Environmental Impact Statement — Appalachian Integrated Pest Management (AIPM) — Gypsy Moth Demonstration Project* and *Final Environmental Impact Statement as Supplemented [in] 1985 — USDA Gypsy Moth Suppression and Eradication Projects.*

Chapter 3 of the Revised Plan provides additional guidance in each management area description on where treatments might be appropriate given management area objectives.

Silvicultural Practices

Silvicultural practices are considered as a means of reducing the susceptibility and vulnerability of timber stands to damage caused by pests. Stands with high gypsy moth mortality or stands with a high probability of gypsy moth mortality will receive priority in scheduling regeneration harvests and other silvicultural practices on lands suitable for timber production.

ISSUE 12: ADEQUACY OF THE REVISION	Most of the comments under this issue deal with the concern that the FEIS for the 1986 Plan contained inadequate environmental disclosure, an inadequate range of alternatives, an inadequate "no action" alternative, errors in analysis, flaws in economic analysis assumptions and unreliable data. There was also concern expressed that the 1986 Plan was not responsive to public opinion. These are technical points of NEPA that were addressed in Chapter 3 and Appendix A and B of the FEIS.
Implementation	Chapter 4 of the Revised Plan contains a discussion on how the Revised Plan will be implemented.
Monitoring	Chapter 5 of the Revised Plan contains the monitoring schedule that will be used to ensure that the Revised Plan is properly implemented and is achieving the desired future described for each management area in Chapter 3.
Management Areas	One of the criticisms of the 1986 Plan was that most of the Forest was assigned to one management area. The Revised Plan allocates the Forest to eighteen management areas where different mixtures of multiple use benefits are emphasized and different desired future conditions are stated. The management area map accompanies the Revised Plan. The boundaries of management areas were adjusted between the draft and the FEIS to maximize opportunities for each to meet its desired furture condition.
Present Net Value	The NFMA Regulations require the use of *present net value* as the indicator of the economic efficiency of any alternative. Simply stated, present net values are the discounted benefits minus the discounted costs over the entire planning horizon. It is considered a good indicator of long-term relative economic efficiency. The ID Team completed two benchmarks which provide an indication of the economic efficiency which could be achieved. The maximum present net value benchmark that assigned values to both market (timber and minerals) and nonmarket (recreation and wildlife) goods and services had a present net value of 1.31 billion dollars. The maximum present net value benchmark that assigned values only to market goods (timber and minerals) had a present net value of -302 million dollars. Both of these benchmarks are discussed in more detail in Appendix B of the FEIS. Under the Revised Plan, the Forest has a present net value of 1.23 billion dollars when values are assigned to both market and non-market goods and services. The budget to implement the Revised Plan is located in Appendix F.

ISSUE 13: THE MIX OF GOODS AND SERVICES

As discussed under the "Future of the Forest" in Chapter 3, the public desires a wider array of values, products, services, and conditions from the Forest than provided in the past. This desire for a wider array of values, services, uses, and conditions has led the ID Team to explore the traditional mixture of goods and services provided from the Forest. It is evident that the Forest cannot fully satisfy the different desires for all of the identified values, products, services and conditions.

Developed Recreation

The Forest contains developed recreation sites to meet the public demand for a variety of developed recreation opportunities ranging from small, minimally developed areas to large, major recreation complexes with extensive amenities. As discussed in Appendix B of the FEIS, the demand for developed recreation opportunities is anticipated to be 4.8 million recreation visitor days for the first decade of the Revised Plan. The developed recreation facilities operated under the management direction in the Revised Plan would provide approximately 7 million recreation visitor days.

A list of the proposed facilities to be constructed is contained in Appendix B.

Under the Revised Plan, the following fifteen new developed recreation facilities are scheduled for construction during the next ten years, funding permitting:

Ranger District	Developed Recreation Areas
Deerfield	Deerfield Camp
Dry River	Dry River Camp Dry River Rifle Range
James River	James River Camp Highlands Scenic Tour
Lee	Bear Wallow Camp Bucktail Camp Edinburg Gap Camp Lee Rifle Range
Pedlar	Crabtree Meadows Pedlar Camp Pedlar Rifle/Archery Ranges Environmental Education Center
Warm Springs	Greavers Ridge Camp Warm Springs Camp

Under the Revised Plan, the following eleven existing recreation sites are scheduled for rehabilitation and expansion, funding permitting:

Ranger District	Developed Recreation Areas
Deerfield	Braley Pond
James River	Longdale Morris Hill
Lee	Elizabeth Furnace Trout Pond
Pedlar	Crabtree Falls Trail and Observation Site Sherando Lake
Warm Springs	Bolar Mountain Hidden Valley McClintic Point Camp

In accordance with the Americans with Disabilities Act (ADA) and other applicable legislation, most developed recreation facilities are made accessible as funding allows.

Under the Revised Plan, interpretive facilities and programs are developed throughout the Forest. Interpretation emphasizes environmental education and resource management. Proposed interpretive projects and facilities are discussed in Appendices B and C.

The Forest recognizes that present and future dispersed recreation activities offer unique opportunities to the approximate 60 million residents within a day's drive of the Forest.

Many of those who commented on the Draft Plan expressed a variety of interests, including: hunting, cold and warm water fishing; nature study; watchable wildlife; sightseeing via auto tour, 4-wheel drive motorbikes and ATVs; hiking; back packing; horseback riding; mountain biking; hang gliding; canoeing; and visiting historical areas such as Warwick mansion and civil war sites on the Forest.

Most of the dispersed recreation opportunities including access points, interpretative signing and appropriate sanitary facilites are provided in management areas 4,6,7,8,9,10,11,13,14,15,16,18,21 & 22.

The Forest is protected from overuse and human impacts by the comman standards and management area specific standards in Chapter 3, and monitoring and evaluation discussed in Chapter 5.

The many dispersed and developed recreation uses are incorporated into the various recreation opportunity settings that will be subsequently adopted in the Final Revision.

Dispersed Recreation

As displayed in Table 2-10, the Forest offers a variety of recreation opportunity settings ranging from the highly developed to remote.

Table 2-10.
Existing Recreation Opportunity Spectrum Inventory

ROS Class	Thousands of Acres
Urban	0
Rural	2
Roaded Natural	689
Semi-Primitive Motorized	203
Semi-Primitive Non-Motorized	167

The Revised Plan uses five recreation opportunity spectrum classes to reflect the types of recreation opportunities available on the Forest. Table 2-11 displays the acres by ROS class under the Revised Plan:

Table 2-11.
Adopted Recreation Opportunity Spectrum

ROS Class	Thousands of Acres
Rural	2
Roaded Modified	88
Roaded Natural	613
Semi-Primitive Motorized—1	104
Semi-Primitive Motorized—2	104
Semi-Primitive Non-Motorized	150

Each of these classes permits a differing degree of opportunities. For instance, Roaded modified permits the greatest amount of motorized recreation. Semi-primitive non-motorized restricts motorized recreation.

The desired future condition for each management area includes a description in Chapter 3 of the recreation opportunities that are consistent with the management area.

Table 2-12 contains a comparison of the estimated demand (in millions of recreation visitor days) for the different recreation opportunity spectrum (ROS) classes and wilderness and the corresponding supply provided by the Revised Plan All of these are for the first decade of the Revised Plan.

Table 2-12
Millions of Recreation Visitor Days for the 1st Decade of the Revised Plan

Recreation Opportunity Spectrum	Demand	Revised Plan
Wilderness	0.1	0.2
Semi-Primitive Non-Motorized	0 6	2.0
Semi-Primitive Motorized ROS	1 0	3.0
Roaded Natural[1]	13.9	33.6

[1]Includes roaded modified

Wildlife

A detailed discussion on how the Revised Plan manages different management areas to achieve wildlife objectives can be found under **ISSUE 8 – VEGETATION MANIPULATION**

Table 2-13 displays a comparison of the thousands of days of hunting provided by the maximum wildlife benchmark and the Revised Plan compared to the anticipated demand for hunting. All numbers are for the first decade of the Revised Plan.

Table 2-13
Number of Days of Hunting Provided by Bear, Turkey, and Deer in the Revised Plan, by the Maximum Wildlife Benchmark, and in Comparison to the Anticipated Hunting Demand for the 1st Decade of the Revised Plan.

	Bear	Turkey	Deer
	Thousands of Days of Hunting		
Maximum Wildlife Benchmark	636	1,423	2,868
Revised Plan	462	971	1,809
Anticipated Demand	278	1,007	2,156

Land Ownership

The land ownership goal of the Revised Plan remains the same as the 1986 Plan. This goal is directed toward consolidation of national forest ownership by exchange or acquisition with particular emphasis on acquiring desirable interior tracts, high value recreation lands, or threatened, endangered, and sensitive species' habitat. Such consolidation increases management efficiency, lessens

encroachments, reduces the number of isolated forest tracts without legal access, and reduces the miles of boundary line that must be maintained

A map that identifies lands being considered for acquisition or exchange is available in the Forest Supervisor's Office, Harrisonburg, Virginia, and at each ranger district office. Lands activities, including ownership adjustment strategies, are further described in Appendix E of the Revised Plan.

Established boundary lines are planned to be maintained on a ten-year rotation basis. All Forest boundaries are planned to be established to Forest Service standards within the first plan period.

Special Uses

The Revised Plan allows for special uses of the Forest provided the uses are consistent with the objectives of the management area where the use is to be applied. Prior to authorization, every request for use is assessed to determine compatibility and compliance. Dedication of public lands to a single use is minimized and discouraged.

Existing major utility corridors are allocated to Management Area 20 The Revised Plan emphasizes confining utilities to existing corridors wherever possible. Additional utility corridors may be established where there is an established need that cannot be met within the existing corridors.

Necessary easements for state and federal road projects that provide public benefits are granted when environmental effects can be mitigated to an acceptable level.

Adequate access for meeting resource management needs is pursued through rights-of-way acquisitions

Grazing

The Revised Plan continues the current program of grazing on five allotments on 250 acres. These allotments are located along the South Fork of the Shenandoah River and along Cedar Creek on the Lee Ranger District Grazing these areas serves to maintain the pastoral setting of the area.

The grazing allotments are part of Management Areas 10 and 22. Common standards in Chapter 3 of the Revised Plan apply to the management of these allotments

CHAPTER 3

MANAGEMENT OF THE FOREST
Under the Preferred Alternative

INTRODUCTION

This chapter describes management under the alternative selected by the Forest Service as the preferred alternative – Alternative 8A Alternative 8A is expanded here and developed into the Revised Forest Plan. The Revised Plan guides the management of the Forest for the next 10 to 15 years.

The chapter is divided into the following sections: (1) an overview of the Forest's mission and planned resource management; (2) a description of each management area with a vision of its desired future condition Included with each management area is a list of specific standards that are required in addition to the Common Standards when implementing the Revised Plan; (3) a list of Common Standards that may apply to several management areas or may be applicable forestwide.

AN OVERVIEW

With its roots in the early years of the conservation movement in the United States, the Forest was chartered for the protection of watersheds. The Forest's mission broadened over the years and now, in addition to watershed protection, includes management of resources such as recreation, wildlife habitat, and timber production.

Scientific knowledge also broadened. The past 30 years included an accelerating awareness of the complexity and dynamics of ecosystems and their components.

Through increased scientific knowledge, we have come to realize that examining each resource separately (such as trees, soil, or wildlife) -- and units of land at the stand level -- cannot give us the answers to questions about the impact of our activities taken as a whole over space and time. Our concerns with sustainability and productivity had tended to make us consider one resource at a time rather than looking at the whole.

Thus, the key difference between ecosystem management of today and resource management of the past is that the former is an integrated approach while the latter is an individualized approach. Under ecosystem management, we consider more elements in the decisions we make, and we consider them at a broader range of spatial and temporal scales.

Ecosystem Management

Ecosystem management is the means to an end -- not an end in itself. We do not manage ecosystems just to preserve intrinsic values or to imitate conditions that occurred at some time in the past We manage ecosystems for specific purposes such as producing, restoring, or sustaining certain ecological conditions; for desired resource uses and products; for vital environmental services, and for aesthetic, cultural, or spiritual values. These are the needs and desires of the public and are the issues communicated to us through social, economic, and political systems The land and resource management planning process and the implementation of forest plans is where it all comes together.

Plan Commitments

The Revised Plan, presented here management area by management area, commits to forest management that adheres to an equitable balance of resource values, both human and environmental, and produces products, services, and conditions in a manner that sustains the biological diversity and productivity of ecosystems. In other words, management of our ecosystems will be used to achieve the multiple use objectives of the Forest.

The Revised Plan establishes the framework for achieving this mixture of values, products, services, and conditions by describing the desired future for each management area.

This desired future condition is a summary of the anticipated physical and biological condition of the Forest that is the result of planned production of forest products and services for periods of 10 years, 50 years, or beyond, as appropriate. The guidelines that determine the desired future of the Forest are set by Forest Service policies, federal and state laws and regulations, and by Forest Service responses to public issues.

MANAGEMENT AREAS

Management areas are **"areas of the Forest with similar management objectives where compatible management prescriptions[1] are applied."** The Revised Plan is based on a system where lands managed to achieve complementary objectives under the same standards[2] are allocated to the same management area. Twenty-two management areas were developed to accommodate the variety of desired management activities, products, services, and conditions identified by the public. Each of the 14 alternatives considered in detail in the Final Environmental Impact Statement (FEIS) used a different combination of these management areas in achieving a distinct forest management theme. Appendix B of the FEIS contains a discussion of the 22 different management areas used in formulating the 14 alternatives. The Revised Plan -- a detailed and expanded version of the preferred alternative -- utilizes 18 of the 22 management areas. Each of the 18 management areas is described in detail in the pages following, beginning with acres per management area in Table 3-1

Table 3-1. Management Area Acreage by Thousands of Acres

Management Area		Per Management Area	Percent of Forest	Unsuitable Acres[3]	Suitable Acres[3]
4	Special Interest/Research Natural Areas	70	7%	70	
5	Sensitive Viewsheds	10	1%	10	
6	The Appalachian Trail	10	1%	10	
7	Scenic Corridors/Highland Scenic Tour	39	3%	27	12
8	Wilderness/Wilderness Study	44	4%	44	
9	Remote Highlands	141	13%	141	
10	Scenic/Recreational Rivers	8	8%	8	
11	All-Terrain/Off Highway Routes	11	1%	8	3
12	Developed Recreation Areas	2	2%	2	
13	Dispersed Recreation Areas	42	4%	38	4
14	Remote Habitat for Wildlife	133	13%	85	48
15	Mosaics of Wildlife Habitat with Freedom from Continued Disturbance	331	31%	139	192
16	*Early Successional Forested Habitat for Wildlife*	39	3%	12	27
17	Timber Emphasis	91	9%	28	63
18	Riparian Areas with Ecological Widths	21	2%	20	1
20	Administrative Sites, Utility Corridors, and Communication Sites	4	4%	4	
21	Special Management Areas	59	6%	59	
22	Small Game and Watchable Wildlife	6	6%	6	
	TOTAL	**1,061**	**100%**	**711**	**350**

[1]See Appendix B of the EIS for a discussion of the prescriptions used in formulating alternatives.

[2]The NFMA Regulations require the identification of *standards and guidelines* for each management area. These regulations, however, provide no insight as to any difference between a standard and a guideline. Therefore the term *standard* is considered synonymous with *standard and guideline* in this Revised Plan.

[3]The categories Unsuitable Acres and Suitable Acres refer to acres classified as unsuitable for timber production and acres classified suitable for timber production.

MANAGEMENT AREA 4

This 70,000-acre management area contains lands that are managed to maintain and protect significant biological, historical, geological values. All lands are classified as unsuitable for timber production.

Special Interest Areas

Research Natural Areas

The lands in this management area are designated as either Special Interest Areas -- biologic, historic, or geologic -- or as Research Natural Areas. The two designations share a common goal: the protection of unique resource values.

Special Interest Areas with a biological emphasis and Research Natural Areas will be nominated for placement on natural areas registries maintained by the Virginia Department of Conservation and Recreation and the Virginia and West Virginia chapters of The Nature Conservancy. These voluntary agreements recognize the protection and management of natural areas for specified natural heritage resource values. In the meantime, the Forest's designation of biologic, historic, and geologic SIAs occurs with the adoption of the Revised Plan.

Little Laurel Run and Ramseys Draft were designated as Research Natural Areas in the 1930s. Ramseys Draft RNA is now within the Ramseys Draft Wilderness and is therefore allocated to Management Area 8.

Six areas (Big Levels, Laurel Run, Maple Flats, Shale Barren-Complex, Skidmore and Slabcamp/Bearwallow) have been identified as candidates for consideration and possible RNA designation Five of these areas are currently in Management Area 4, Special Interest Areas, and Laurel Fork is in Management Area 21. Possible future designation of an area as an RNA does not affect traditional uses such as hunting, fishing, hiking, and berry picking. Travel by foot is allowed as well as motorized travel along open roads

SIAs - BIOLOGIC

Special Interest Areas-Biologic include lands that support key components and concentrations of the Forest's biological diversity. These areas typically include high quality natural communities such as high elevation mountain tops, shale barrens, caves and karst features, wetlands, and habitat for threatened, endangered, and sensitive (TES) species. Old growth forest types now occur in some Special Interest Areas and additional acres will develop in future years.

Thirty-eight Special Interest Areas-Biologic, a total of about 26,000 acres, are designated with the adoption of the Revised Plan.

Table 3-2.
Special Interest Areas — Biologic

District	Biologic Area
Deerfield	Blackies Hollow
	Elliott Knob
	Rubens Draft Shale Barren
	Headwater Shale Barren
	Clayton Mill Spring
	Sister Knob
Dry River	Camp Run Prairie
	Brandywine Shale Barren
James River	D. S. Lancaster Shale Barren
	Potts Pond
	Dry Run (Dolly Anne)
	Brattons Run
	Guaging Station Shale Barren
	Craig Creek Shale Barren
	East Sharon Shale Barren
Lee	Peters Mill Run Bog
	Mudhole Bog
	Edinburg Gap Shale Barren
	Vances Cove
	Buck Mountain
	Trout Pond
	Salus Spring
	Browns Hollow
	Signal Knob Barren
	Scothorn Gap
	Teets Bog
	Twin Blackwater Ponds
Pedlar	Big Levels
	Loves Run Ponds
	Maple Flats Sinkhole Ponds
	Statons Creek
	Little Irish Creek
	Pines Chapel Ponds

Table 3-2.
Special Interest Areas – Biologic (Continued)

District	Biologic Area
Warm Springs	Bald Knob
	Millboro Tunnel
	Paddy Knob
	House Hollow
	Browns Pond

These areas are managed to protect and/or enhance their outstanding natural biological values. Habitat manipulation is light-on-the-land management such as prescribed burning to enhance or maintain a natural plant community which evolved under periodic fire.

Individual implementation schedules are developed for each of the SIAs-Biologic. It is estimated that between 100 acres and 300 acres per year may need to be treated to maintain or restore these areas to a more natural state. The primary treatment method is prescribed burning. Other treatments include elimination or control of exotic species and selective removal of individual trees. Removal creates light-gaps that 1ncrease the amount of sunlight reaching the understory.

The Desired Future SIAs-Biologic

The existence of unique examples of species, landscape diversity, and the condition of existing vegetation are the main reasons for designation of a site as SIA-Biologic. The existence of ecosystems within an SIA depends on the maintenance or re-establishment of natural ecological processes. Species that favor vegetation influenced by natural environmental and ecological processes predominate.

Special Interest Areas are generally protected against the activities of humans that directly or indirectly modify natural processes. The restoration and maintenance of certain vegetation communities is permitted through prescribed burning or other proven means which mimic natural processes in the control of natural succession.

Visitors to a Special Interest Area can expect to see examples of the natural communities of the region. Visitors have the opportunity to experience solitude and enjoy the unique features of the vegetation. Limited dispersed recreation

opportunities are provided. The opportunities do not conflict with the special biological values of the area and, in most cases, consist of dispersed non-motorized recreation activities. Activities may include hunting, fishing, hiking, nature study, and other similar activities. Interpretive facilities such as signs, wildlife viewing areas, and scenic vistas may be used to support dispersed recreation opportunities.

The continuance or reintroduction of natural processes is the most significant consideration when determining management activities for these SIAs-Biologic. Habitat is protected and managed for rare species and unique natural communities. Inholdings and adjacent lands are acquired as opportunities arise and are considered a priority for acquisition.

Conflicts that develop between biological resource protection and existing or proposed activities within an SIA-Biologic are resolved in favor of the activities that least impact the natural environment yet provide public safety and consistency with the special biological management objectives for the area

Public use is allowed as long as it does not contribute to the impairment of natural values.

Standards for SIAs-Biologic

Adherence to the following standards is required when implementing the Revised Plan in Special Interest Areas-Biologic. These standards are in addition to the applicable Common Standards listed at the end of this chapter

Aesthetics

4-1. SIAs-Biologic are generally managed to meet a visual quality objective of retention. Short-term visual quality objectives of enhancement or rehabilitation may be used for individual areas where there is a need to manipulate vegetation or perform other management practices to retain or enhance special biological features.

Fire

4-2 In meeting objectives for habitat management and species maintenance, prescribed fire is permitted.

Integrated Pest Management

4-3 Insect and disease outbreaks are not controlled except where threatened, proposed, endangered, or sensitive species and their habitats may be adversely impacted. Biological control methods are the preferred tactics.

Minerals

4-4. The area is available for oil and gas leasing with the following stipulations; no surface occupancy is permitted in areas less than 300 acres; in areas more than 300 acres, surface occupancy is restricted with controlled surface use stipulations and requirements.

4-5 Areas are available for other leasable minerals and common variety minerals on a case-by-case basis, according to analysis of needs and associated effects.

Recreation

4-6. Biological areas are managed under four recreation opportunity classes. Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 1) or semi-primitive motorized (subclass 2). Lands inventoried as semi-primitive non-motorized remain semi-primitive non-motorized. See the recreation opportunity map accompanying the Revised Plan.

4-7. Where appropriate, interpretive services (trails, signs, viewing areas) are provided to enhance visitors' understanding and appreciation of the special values of the areas.

4-8. Trails and other recreation facilities are located so as to minimize negative impacts to the natural values of the area.

Roads

4-9. Motorized public travel is restricted to open system roads. New road construction is normally prohibited See Common Standards.

Soil and Water

4-10 Watershed improvement projects are developed and implemented on areas where erosion is human-caused, but are not normally undertaken in response to natural processes that may occur.

Special Uses

4-11. New special uses are issued only where there is an over-riding demonstrated public need or benefit Access to privately owned property is permitted only when other access is impractical or infeasible.

4-12. New utility corridors are located outside this management area if at all possible.

Timber and Other Vegetation

4-13. If needed for safety of the public, dead or dying trees along roads can be cut. Availability for removal as salvage depends on the degree of disturbance and is determined on a case-by-case basis.

Wildlife

4-14. Vegetation may be manipulated for the management of the biological values identified as well as any threatened, endangered, or sensitive species and their habitat.

4-15 Existing or replacement wildlife improvements may be maintained as long as their presence is compatible with the management objectives of the area

SIAs - HISTORIC

Twelve historic sites are identified as Special Interest Area-Historic. These areas are. Confederate Breastworks, Callie Furnace, Catherine Furnace, Capon Furnace, Van Buren Furnace, Mount Torry Furnace, Wallace House, High Knob Tower, Hematite Mining Community, Signal Knob, Zepp Tannery site, and Warwick Mansion. Camp Roosevelt and Elizabeth Furnace are located in developed recreation areas and are therefore part of Management Area 12 with the historical resources protected.

Unless previously classified, the formal classification of these areas as SIAs-Historic occurs concurrently shortly after adoption of the Revised Plan. Where appropriate, special management direction is provided for individual areas.

Historic sites are non-renewable resources designated by federal laws to be antiquities in excess of 50 years in age that can be found on or within National Forest System lands. The purpose of this management area is to protect historic sites from destructive impacts.

The Desired Future
SIAs - Historic

Historic sites that have been evaluated as significant using criteria for nomination to the National Register of Historic Places, are protected

Selected sites are interpreted for the benefit and education of the general public. Modest interpretive facilities may be located near the historic feature. Interpretation is conducted in a manner which protects, complements, and maintains the historic character of the site.

Many historic sites are near existing developed or dispersed recreation areas; some are adjacent to roads Social interaction among recreation users may be high. This public use continues as long as it does not cause a disturbance to the cultural resource.

Standards
SIAs - Historic

Adherence to the following standards is required when implementing the Revised Plan in Special Interest Areas-Historic. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

4-16 SIAs-Historic are managed to meet a visual quality objective of retention. Interpretive facilities may be constructed in character with the visual image of the areas as determined by the historical structure that is featured.

Cultural Resources

4-17. Efforts are made to stabilize historic structures and to protect historic sites from vandalism and natural weathering processes.

4-18. All protection practices for historical properties are guided by the Advisory Council on Historic Preservation's "Preparing Agreements Documents" (September 1989).

4-19 Excavation, research, and educational activities by Forest Service archaeologists, by volunteer groups under the supervision of Forest Service archaeologists, or under the provisions of special use permits are undertaken through the Section 106 consultation process.

Fire

4-20. Prescribed fire is not permitted.

4-21 Wildfires are contained at the smallest possible size.

Integrated Pest Management

4-22. Forest insect and disease outbreaks may be controlled to prevent tree mortality and reduce hazards and nuisance to visitors.

Minerals

4-23 SIAs-Historic are available for oil and gas leasing with the "no surface occupancy" stipulations.

4-24. SIAs-Historic are not available for other leasable minerals and common variety minerals.

Recreation

4-25. Where appropriate, interpretive services (trails, signs, viewing areas) are provided to enhance visitors' understanding and appreciation of special values of the area

Roads

4-26. Road construction is permitted to reach boundaries of SIAs-Historic but is not permitted inside the areas unless linked to the protection of interpretation of the site.

Special Uses

4-27 New special uses are issued only where there is an over-riding demonstrated public need or benefit Access to privately owned property is only permitted when other access is impractical or infeasible.

Timber

4-28. Removal of dead and dying trees is permitted to protect cultural resources or for public safety reasons. Firewood gathering in SIAs-Historic is not allowed.

SIAs-GEOLOGIC

Two areas of the Forest that total 169 acres are designated as SIAs-Geologic: Devils Garden on the Lee Ranger District and Rainbow Rocks on the James River Ranger District. Formal classification of these areas as SIAs-Geologic occurs concurrently with or shortly after adoption of the Revised Plan. Where appropriate, special management direction is provided for individual areas.

SIAs-Geologic are managed for the protection of scenic, physical, and scientific values. Protection is afforded to unique or special examples of geologic phenomena, geologic process, and landforms. Management activities are limited to those uses that do not affect the existing scenic, physical, and scientific values If vegetation threatens to obscure the geologic features present, small clearings and vegetation removal may be beneficial to expose the geologic resource for interpretation.

The Desired Future SIAs-Geologic

A natural setting with physical processes dominates the landscape. Natural succession of vegetation enhances the natural qualities of the area.

Dispersed recreation opportunities are provided to the extent that human recreation use is compatible with the protection and interpretation of the unique geological values of these areas.

Standards SIAs-Geologic

Adherence to the following standards is required when implementing the Revised Plan in Special Interest Areas-Geologic. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

4-29. SIAs-Geologic are managed to meet a visual quality objective of retention.

Fire

4-30. Prescribed fire is not permitted.

Integrated Pest Management

4-31. Forest insect and disease outbreaks are not controlled except where threatened, endangered, proposed, or sensitive species and their habitats may be adversely impacted.

Minerals

4-32. The area is available for oil and gas leasing with "no surface occupancy" stipulations.

4-33. Common variety and leasable minerals are not available.

Recreation

4-34. Lands classified as roaded natural are managed to achieve as natural or undisturbed setting as possible.

4-35. Where appropriate, interpretive services (trails, signs, viewing areas) are provided to enhance visitors' understanding and appreciation of the special values of the areas.

4-36. Trails and other recreation facilities are located so as to not disturb the natural values of the established area.

Roads

4-37 No road construction is permitted in this management area

Special Uses

4-38. New special uses are issued only where there is an over-riding demonstrated public need or benefit. Access to privately owned property is permitted when other access is impractical or infeasible.

Timber

4-39. Salvage of dead or dying trees and firewood gathering are not permitted

SIA - SHENANDOAH MOUNTAIN CREST

The crest of Shenandoah Mountain is an SIA-Biologic. It requires a write-up separate from the other SIAs-Biologic due to unique standards for the Cow Knob salamander This 43,000-acre SIA contains lands that are managed to maintain, protect, and enhance the significant biological values of the Shenandoah Mountain crest. This SIA is located on the Dry River Ranger District along the crest of Shenandoah Mountain above 3,000 feet from Cow Knob south to Little Bald Knob.

This area includes lands which were previously in the following areas and were treated as separate SIAs Bother Knob/High Knob, Cow Knob, Laurel Run, Little Bald Knob, Maple Spring, Middle Mountain, Puffenbarger, Glade, Reddish Knob, and Skidmore. This large area is managed to protect and/or enhance outstanding natural biological values that coexist with heavy dispersed recreation activities as well as other wildlife management activities that are compatible A variety of threatened, endangered, and sensitive species and unique natural communities occur on Shenandoah Mountain. This includes at least 15 species of plants and 13 species of animals plus their associated habitats.

Formal classification of this area as an SIA occurs concurrently with or shortly after adoption of the Revised Plan Upon establishment of a national or state classification system to register and protect areas of concern for biodiversity, this area is nominated.

An individual implementation schedule is to be developed for this SIA and a prelisting conservation plan developed in conjunction with the U.S. Fish and Wildlife Service for the Cow Knob salamander.

It is estimated that 50 to 100 acres per year may need treatment to maintain or restore various vegetation types to a more natural state. Primary treatment is prescribed burning; other treatments include elimination or control of exotic species.

The Desired Future Shenandoah Crest

The protection, maintenance, and restoration of species, natural communities, and ecological processes are the primary objectives. Within this context, light-on-the-land multiple resource management activities may occur as specified in the standards for this SIA.

Vegetation types are influenced by the natural environmental and ecological processes that dominate the landscape. This area is generally protected from activities that fragment landscapes or conflict with TES species management goals. Restoration and maintenance of certain vegetation communities are permitted through prescribed burning or other proven means of controlling natural succession. Inholdings and adjacent lands are acquired as opportunities arise and are considered a priority for acquisition.

Visitors to this area see examples of the natural communities of Shenandoah Mountain. This includes various old growth forest types as well as a mosaic of grass and fern dominated openings with scattered trees along the very crest of Shenandoah Mountain. Dispersed recreation opportunities are provided when in harmony with the special biological values of the area. The existing Shenandoah Mountain picnic site continues to be used at its current size. Mountaintop vistas such as Reddish Knob Observation Site and Flagpole Knob provide sweeping views of the Shenandoah Valley.

Motorized vehicle access is limited to designated routes. Unauthorized roads are closed to vehicular traffic and revegetated. Driving for dispersed recreation is allowed on open system roads.

Non-motorized dispersed recreation opportunities abound. Visitors have the opportunity to experience solitude and enjoy the natural character of the landscape. Recreation activities include wildlife viewing, hunting, hiking, mountain biking, pleasure driving, and dispersed camping. Trail systems may be maintained, upgraded, expanded, or reduced, depending on demand and analysis.

Standards Shenandoah Crest

Adherence to the following standards is required when implementing the Revised Plan in SIA-Shenandoah Mountain. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

4-40. This area is generally managed to meet a visual quality objective of retention.

4-41. Vegetation management practices that are used to provide scenic quality are permitted, such as removal of single or small groups of trees to provide or maintain a vista.

Fire

4-42. Prescribed fire is permitted to meet resource objectives for habitat restoration management or species maintenance.

Integrated Pest Management

4-43. Forest insect and disease outbreaks are not controlled except where threatened, endangered, or sensitive species or their habitats may be adversely impacted. If control efforts are deemed necessary, biological control measures are the preferred method of control.

Minerals

4-44. This area is available for oil and gas leasing with controlled surface use stipulations.

4-45. This area is not available for other leasable minerals.

4-46 This area is available for common variety minerals on a case-by-case basis. Availability depends on the nature and degree of disturbance planned.

Recreation

4-47 The Shenandoah Crest area is managed under three recreation opportunity classes. Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 1). Lands inventoried as semi-primitive non-motorized remain semi-primitive non-motorized. See the recreation opportunity map accompanying the Revised Plan.

4-48. Where appropriate, interpretive services (trails, signs, viewing areas) are provided to enhance visitors' understanding and appreciation of the area's special values.

4-49 Trails and other recreation facilities are located to minimize impacts occurring to the natural values of the established area.

4-50. Vistas and associated turn-outs may be maintained or increased where compatible with biological values.

Roads

4-51 Motorized public travel is restricted to current open system roads

4-52 New road construction is normally prohibited. See common standards.

4-53. Reconstruction, minor relocation and construction of parking facilities are permitted where compatible with biological values.

Soil and Water

4-54. Watershed improvement projects are developed and implemented on areas where erosion is man-caused, but not normally undertaken in response to natural processes occurring on the area.

Special Uses

4-55. New special uses including utility corridors are issued only where there is an over-riding demonstrated public need or benefit. Access to privately-owned property is permitted when other access is impractical or unfeasible.

4-56. Vegetation within existing corridors is maintained in a grass/shrub type by mowing, hand cutting or use of selective herbicide treatments, except in areas inaccessible or too remote.

4-57. *Herbicides may be used to control or eliminate exotic and invasive plant* species if presence is inconsistent with the management objectives for the area.

Vegetation

4-58. Salvage of dead or dying trees using ground-based systems may occur for safety or scenic rehabilitation along open road systems.

Wildlife

4-59 Existing or replacement wildlife projects may be maintained if their presence is consistent with the management objectives for the area Additional improvements are permitted on a case-by-case basis as long as they do not negatively impact the special biological values of the area.

4-60. Vegetation may be manipulated for the management of the biological values identified as well as threatened, endangered, or sensitive species and their habitat.

RESEARCH NATURAL AREAS (RNAs)

Research Natural Areas are part of a national network of ecological resources designated for research, education and maintenance of biological diversity on National Forest System lands. RNAs are designated by the Chief, U S. Forest Service, after a formal study and recommendation by the Regional Forester. The purpose of this management area is to protect one of two RNAs currently designated for ongoing and future research activities.

Management Area 4 includes the Little Laurel Run Research Natural Area (2,000 acres) which was established in 1938 and is located on the Dry River Ranger District. Management Area 4 does not include the Ramseys Draft Research Natural Area (established in 1935) which is now within the Ramseys Draft Wilderness and therefore, is part of Management Area 8 and managed under those standards.

The Desired Future RNAs

The existence of unique examples of natural communities and the biological diversity they support are the main reasons for designation of a site as a Research Natural Area. The functioning ecosystem within a Research Natural Area is the result of the maintenance or re-establishment of natural ecological processes. Species which occur in vegetation types influenced by natural environmental and ecological processes predominate.

Research Natural Areas may be manipulated as specifically prescribed in the Chief's RNA establishment report. RNAs are protected against activities that directly or indirectly modify natural processes The maintenance of fire-dependent plant communities is permitted through prescribed burning or other proven means that simulate natural succession.

Visitors to a Research Natural Area can expect to see examples of the natural plant communities of the physiographic region. Motorized access, roads, trails, signs, and fences may exist if they specifically contribute to the management objectives or protection of the area. Exotic plants and animals are removed to the extent practical Inholdings and adjacent lands are acquired as opportunities arise.

Standards RNAs

Adherence to the following standards is required when implementing the Revised Plan in RNAs These standards are in addition to the applicable Common Standards listed at the end of this chapter

4-61. Research, study, observations, monitoring, management, and educational activities that are generally nondestructive and generally nonmanipulative can occur. Unmodified conditions and natural processes are maintained to illustrate for research and educational purposes the important forest types and natural communities.

Aesthetics

4-62. Little Laurel Run RNA is managed to meet a visual quality objective of preservation.

Fire

4-63. Prescribed fire may be used to achieve specific resource objectives.

Integrated Pest Management

4-64 Forest insect and disease outbreaks are not controlled except where threatened, endangered, sensitive species, their habitats, or the unique vegetative conditions for which the area was designated may be adversely impacted. If control efforts are deemed necessary, biological control measures are the preferred method of control.

Minerals

4-65. The Little Laurel Run RNA is available for oil and gas leasing with surface occupancy restricted by application of appropriate surface use stipulations.

4-66. The Little Laurel Run RNA is not available for other leasable minerals and common variety minerals.

Recreation

4-67. While limited non-motorized dispersed recreation opportunities are permitted, a high level of recreation use is discouraged.

4-68. Where appropriate, interpretive facilities such as trails and signing may be provided to explain the unique features represented in the area.

4-69. The Little Laurel Run RNA is managed under two recreation opportunity classes. Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized or semi-primitive non-motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 2). See the recreation opportunity map accompanying the Revised Plan.

4-70. Lands classified as roaded natural are managed to achieve as natural and undisturbed a setting as possible.

4-71. Non-administrative vehicular use is prohibited.

4-72. Developed recreation sites are not permitted.

Roads

4-73. Roads that do not contribute to the objective of preserving the natural ecosystem and not needed for administrative purposes are closed. Normally, natural revegetation will obliterate closed roads. Other measures, such as seeding or planting, may be used if conditions warrant.

4-74. Road construction is not normally permitted inside the area.

Soil and Water

4-75. Watershed improvement projects are developed and implemented on areas where erosion is man-caused.

4-76. No watershed improvement projects are undertaken in response to natural processes that may occur.

Special Uses

4-77. Special uses consistent with the Chief's establishment report are permitted.

4-78. New special uses are issued only where there is an over-riding demonstrated public need or benefit. Access to privately owned property is permitted when other access is impractical or infeasible.

Timber

4-79. Salvage of dead and dying trees, and firewood gathering is not permitted when the activity will take place in an area greater than 150 feet from the edge of an open road.

Wildlife

4-80. Wildlife management practices are restricted to those necessary to protect populations of threatened, endangered, or sensitive species.

MANAGEMENT AREA 5 Massanutten Mountain Sensitive Viewshed

This 10,000 acre management area primarily contains the visual middleground of the west face of Massanutten Mountain (a narrow strip) as seen from the Shenandoah Valley along Interstate 81. Generally, much of this area is steep except at the ridge top and valley floor. Accessibility is limited due to steep slopes and adjacent lower-slope land that is in private ownership.

Dispersed recreation use such as hunting, fishing, photography, hiking, bird-watching, backpacking, etc., is encouraged if compatible with maintaining the scenic resources. The area is classified unsuitable for timber protection because of its steep, rocky, and low site qualities. Timber may be salvaged along existing roads.

The Desired Future

Lands within this area are managed to retain the natural and rugged setting of the steep slopes of Massanutten Mountain. As visitors view the Forest from Interstate 81, they enjoy a landscape where scenic views dominate the area. The mountain slopes are forested, but from the Interstate, individual trees may not be distinguishable. The vegetation is a mixture of species of various ages and sizes. The area is classified unsuitable for timber production because of its steep, rocky, and low site qualities. Timber may be salvaged adjacent to existing roads.

Roads, trails, and wildlife habitat improvement activities are the most obvious changes to the natural environment. Activities proceed in a manner not noticeable to the casual observer.

Facilities, such as trailheads or interpretive signs, are constructed in a manner that maintains the visual quality of the area. Motorized use is limited to open system roads and roads providing access to private property. Non-motorized trails and open system roads provide access to the interior of the management area.

Habitat for wildlife species that require a mature forest, such as black bear, gray squirrel or pileated woodpecker, is provided. Existing improvements are maintained.

Standards

Adherence to the following standards is required when implementing the Revised Plan in Management Area 5. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

5-1. The area is managed to meet a visual quality objective of retention.

5-2. A short term VQO of enhancement may be assigned as appropriate to ensure scenic qualities are optimized.

5-3. A short term VQO of rehabilitation may be assigned as needed to restore an area or facility to a condition that meets the visual quality objective of retention

Integrated Pest Management

5-4 Actions are considered on a case-by-case basis to protect the aesthetic values of viewsheds and reduce hazard to visitors in locations where scenic routes cross the management area.

Minerals

5-5. The area is available for oil and gas leasing with "Controlled Surface Use" stipulations. The area is available for other leasable minerals and common variety minerals on a case-by-case basis.

Recreation

5-6. Lands within this management area are managed under two recreation opportunity classes. Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized or semi-primitive non-motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 2). See the recreation opportunity map accompanying the Revised Plan.

5-7. Lands containing a roaded natural ROS classification are managed to maintain their natural and relatively undisturbed setting.

5-8. Trails and other recreation facilities are located so as not to disturb the scenic values of the established area.

5-9. Where appropriate, interpretive services such as trails, signs and viewing areas, are provided to enhance visitors' understanding of and appreciation for the natural environment and the area's special values.

Roads

5-10. Any access roads through this management area are designed and constructed to meet the visual quality objective of retention.

5-11. Motorized public access is restricted to open system roads.

Soil and Water

5-12. Watershed improvement projects are developed and implemented on areas where erosion is due to man-caused activities.

Special Uses

5-13. New special uses are issued only where there is an over-riding demonstrated public need or benefit. Access to privately owned property is permitted when other access is impractical or infeasible.

Timber and Other Vegetation

5-14 Vegetation management for wildlife habitat improvement, recreation, visual resource enhancement and/or rehabilitation may occur

5-15. Salvage of dead, dying, or damaged trees using ground-based or helicopter logging methods can occur if provides safety or scenic rehabilitation. Salvage must be accomplished from existing roads without additional permanent road construction.

Wildlife

5-16. *Existing wildlife openings and other improvements are maintained.*

5-17. New wildlife habitat improvements may be provided for game and non-game species.

MANAGEMENT AREA 6
The Appalachian Trail

The Appalachian National Scenic Trail (AT), a continuous footpath from Maine to Georgia, was designated as a National Scenic Trail by act of Congress in 1968. The AT is an internationally renowned footpath that extends 2,150 miles from Maine to Georgia and passes through four states and six national forests in Region 8. The AT is located primarily along the crest of the Appalachian Mountains.

Ten-thousand-acre Management Area 6 contains approximately 58 miles of the AT, the lands mapped as the foreground viewing area, and, as designated on a case-by-case basis, associated trail shelters, viewpoints, water sources, and spur trails to these features. All are on the Pedlar Ranger District. This management area also includes all National Forest System lands administratively transferred to the USDA - Forest Service by the National Park Service under a memorandum of agreement. The portions of the AT that pass through the Three Ridges and The Priest roadless areas are allocated to Management Area 8.

Management practices protect the trail experience, strengthen the role of the volunteer, provide opportunities for high quality outdoor recreation experiences. Practices also provide for the conservation and enjoyment of the nationally significant scenic, historic, natural, and cultural qualities of the land through which the AT passes. Adjoining lands seen from the AT are managed for multiple use under the provisions of this Revised Plan in a manner that reasonably harmonizes with and is complementary to the AT experience. Management Area 6 is classified as unsuitable for timber production.

Management Area 6 provides for the protection, management, development, and use of the AT in accordance with the National Trails System Act (P.L. 90-543). The provisions of Management Area 6 are carried out through the Cooperative Management System as defined in the Appalachian Trail Comprehensive Plan. The AT is administered by the Secretary of Interior in consultation with the Secretary of Agriculture and is managed as a partnership among the Forest Service, local Appalachian Trail clubs -- Natural Bridge, Old Dominion, and Tidewater -- and the Appalachian Trail Conference (ATC).

The Desired Future

The Forest appears natural to the visitor. It is a mosaic of predominately mature hardwood forest and scenic vistas. The Visual Management System is used to enhance the visual experience or landscape character seen from the AT. Management activities needed to preserve or create vistas and open meadows receive high priority. Public safety is provided for the hikers. A variety of recreational activities are available such as hiking, hunting, viewing scenery, and dispersed camping. Opportunities for viewing wildlife from the AT are enhanced and wildlife habitat improvements are developed that complement the AT.

Insects and diseases are controlled and threatened, endangered, and sensitive species are protected.

Standards

In addition to the at the end of this chapter, the following standards apply to Management Area 6. These standards are in addition to the applicable Common Standards at the end of this chapter.

6-1. All management practices are guided by; a comprehensive Plan for the Protection, Management, Development and Use of the Appalachian National Scenic Trail, September 1981; FSM 2353, R-8 Supplement No. 42, 9/83; Appalachian Trail Conference Stewardship Manual: Trail Design, Construction and Maintenance, 1981; and overnight-Use Management Principles, approved by Appalachian National Scenic Trail Advisory Council (ANSTAC) 1977.

6-2. Volunteer agreements with the local A/T clubs are reviewed and renewed annually.

6-3. The Ranger District will participate in the established local management planning process described in the ATC Local Management Plans.

6-4. All activities that impact the management area are planned and carried out in consultation with ATC and the local trail club, based on the ATC trail assessment process. A work planning session is conducted with local AT clubs at least once annually.

Aesthetics

6-5. The Visual Management System (VMS) is used to enhance the visual experience or landscape character seen from the Appalachian Trail and from designed shelters, viewpoints, campsites, water sources, and the spur trails linking these features. Management activities needed to preserve or create vistas and open areas are high priority. VMS mapping is done during leaf-off season.

6-6. The area mapped foreground from the AT footpath and designated viewpoints, shelters, campsite, water sources and spur trails to these features, will have a VQO of retention. Lands outside the management area, are managed in accordance with the adopted VQO (*see USDA Agriculture Handbook, No.462 – National Forest Landscape Management Volume 2 Chapter I, The Visual Management System, P. 43*). This may include assigning a short-term VQO of rehabilitation or enhancement.

6-7. Site specific projects that may affect the visual resource and the adopted VQOs are coordinated with ATC, the local trail club, and other interested groups or individuals.

Cultural Resources

6-8 Where appropriate, interesting cultural sites are interpreted through maps, guidebooks, and signs. The Forest Archeologist will inventory cultural and historic resources and will recommend appropriate interpretive opportunities

Fire

6-9 All wildfires are controlled at the smallest practical size at all fire intensity levels

6-10 Prescribed fire may be used to maintain or enhance fire-dependent plant communities and for wildlife habitat improvement.

6-11 Where practical, avoid placing motorized equipment on the AT

Lands

6-12 Lands, or interest in lands, inventoried in the Appalachian National Scenic Trail Land Acquisition Inventory for Regions 8 and 9 are acquired to meet management objectives The inventory's accuracy is reconfirmed through the Optimal Trail Location Review.

Minerals and Geology

6-13. The area is available for oil and gas leasing with "no surface occupancy" stipulations in the Foreground Visual Zone. The area is unavailable for other leasable minerals and common variety minerals

6-14. Where outstanding or reserved mineral rights are involved, determination of the need for acquisition for protection of trail values is made and acted upon (see Lands).

6-15 Important geological features are inventoried for potential interpretation to enhance the experience of users of the Appalachian Trail.

Recreation

6-16. Lands within this management area are managed under three recreation opportunity classes. Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 2). Lands inventoried as semi-primitive non-motorized remain semi-primitive non-motorized. See the recreation opportunity map accompanying the Revised Plan

6-17. Additional development of recreational facilities is limited to those compatible with the Appalachian Trail. Existing facilities are managed to meet trail hiker needs.

6-18 Site specific projects that may affect the ROS class are coordinated with ATC, the local club, as well as other interested publics

6-19. Facilities are limited to shelters, privies, stiles, spring boxes, registers, trailheads, and other facilities mutually agreed to by the Conference, Clubs, and the Forest Service.

6-20. Trail shelters and any side trail from the AT leading to them, not within the mapped foreground corridor, have a 100-foot corridor (either side of the trail) included as part of this management area

6-21. Designated trail shelters, privies, viewpoints, water sources, and spur trails leading to them will have a mapped foreground zone included in the management area. An on-the-ground assessment involving ATC, FS, and local AT club representatives will determine which features are associated with the local AT experience.

6-22. Access by vehicle to trail shelters is limited to access for administrative purposes only. Open roads within 1/2 mile of shelters are minimized.

6-23. Where feasible, locate new shelters no closer than two miles from open roads and other access points.

6-24 Trail shelters and related facilities are managed, constructed and maintained in accordance with the ATC Overnight Use Principles and the responsible AT club local management plan.

6-25. Primitive camping is allowed where suitable, but recreation facilities are not constructed within l00 feet of the AT.

6-26. No motorized travel is permitted except where the AT is on an open road or where an open road crosses the AT. Vehicular use is otherwise limited to emergency purposes.

6-27. Horse and bicycle use are prohibited on the AT, and the AT is managed to exclude such use.

6-28. Existing portions of the AT are reconstructed or relocated as needed to enhance the recreation experience and protect trail-related and other resources, and to provide a reasonable level of public safety.

6-29. Trail relocation improvements do not cause a progressive loss of the primitive quality or simplicity of the footpath.

6-30. Decisions about relocation of portions of the AT are based on the Optimal Trail Location Review and follow approved relocation procedures described in FSM 2353, R-8 Supplement No. 42, 9/83.

6-31. The Appalachian Trail is identified through signs and blazes. Sufficient signing is provided to inform hikers of significant features and distances to major road crossings. Signing is consistent with the Sign Handbook (FSH 7109.11) except mileage to important features should be shown to the nearest tenth of a mile. The treadway is designed according to soil, drainage, vegetation, topography, and other constraints. Safety is considered in trail design, construction and maintenance, without sacrificing the aspect of the AT which challenges a hiker's skill and stamina.

6-32. Trails are constructed/reconstructed and maintained according to *Appalachian Trail Conference Stewardship Manual: Trail Design, Construction and Maintenance, 1981.*

Roads

6-33. Parallel and crossing roads are not compatible with trail values. Hold to a minimum the number of system roads within 1/2 mile of the AT.

6-34 All roads crossing or paralleling the AT within 1/2 mile are analyzed for their potential undesirable impacts on the hiker and documented as appropriate. Road locations are allowed that are the only feasible and prudent alternative and after all impacts have been minimized. (See FSM 2353.4-3(e), R-8 Supplement No. 42, 9/83).

6-35. Where feasible, parking facilities are provided at locations where the Appalachian Trail can be accessed by a short spur trail rather than at locations where the AT footpath crosses a road.

Soil and Water

6-36 The AT treadway and trail facilities are designed, constructed, and maintained to minimize its impacts on the natural resources of the AT and its surroundings.

6-37. All shelters, toilets, and primitive camps are located to minimize the possibility of contamination of water sources. Users are educated on low impact camping methods that protect water sources. See FSM 2353.4--12(c), R-8 Supplement No. 42, 9/83.

6-38 Watershed improvement projects are developed and implemented on (1) areas where erosion is due to man-caused activities, and (2) critical areas where erosion is due to natural causes.

Special Uses

6-39 New special uses are issued only where there is an over-riding demonstrated public need or benefit. Access to privately owned property is only permitted when other access is impractical or infeasible.

6-40. When issuing new special use permits, full mitigation measures to protect the AT values and environment are applied.

6-41. The impacts of utility right-of-way clearing are minimized within the Appalachian Trail management area.

6-42. The broadcast application of herbicides for control of vegetation in utility right-of-ways is prohibited within the Appalachian Trail management area.

6-43. A landscape management plan using screening, feathering, and other vegetation management techniques is required to mitigate the visual and other impacts of new, upgraded or re-authorized utility right-of-ways.

Vegetation Management

6-44. The Appalachian Trail management area is unsuitable for timber production.

Vegetation in the Appalachian Trail management area is managed to enhance the AT environment Timber activities are limited to improving health of the stand, providing scenic vistas, controlling insects and disease, attracting wildlife, or for providing public safety or resource protection such as threatened and endangered species habitat. Timber volumes are non-chargeable. The ATC and the local trail club are consulted on any timber management activity that may affect the AT experience.

6-45. Timber sales, prescribed burning, hand tools, power tools, and herbicides are used as appropriate to control vegetation that affects the AT.

Timber and Other Vegetation

6-46 Timber management activities visible from the AT but outside the management area are modified to reduce negative impacts from the hiker's view in accordance with the visual management system.

6-47 Salvage of dead, dying or damaged trees can occur from existing roads to provide for scenic rehabilitation or public safety using ground-based or helicopter logging methods without additional road construction.

Wilderness

The AT is managed within designated wilderness in accordance with the Wilderness Act of 1964, the specific area designating act, standards in Management Area #8, and the wilderness implementation schedule.

Existing facilities within wilderness areas may be maintained, but new facilities will not be constructed. See FSM 2353.4--3 (f).

Wildlife

6-48. Habitat improvements are developed that are complimentary to the AT. Such improvements are accomplished within visual management and ROS

guidelines, objectives, and standards. Habitat management practices along the AT that will enhance wildlife viewing opportunities are emphasized.

6-49. An inventory of proposed, endangered, threatened and sensitive species is conducted and maintained within the Area, in cooperation with ATC and the Virginia Division of Natural Heritage.

6-50. Wildlife habitat management necessary for the protection of threatened, endangered or sensitive species is allowed.

Forest Pest Management

6-51. Use Integrated Pest Management (IPM) practices as the strategy in managing pest populations to achieve resource management objectives for the management area.

6-52 Emphasis is placed on evaluating hazard potential and determining if efforts are needed to prevent or control loss of Trail values.

Law Enforcement

6-53. Hiker regulations are kept as unrestricted as possible. Use is restricted only to the extent proven necessary to protect the AT, its environment, the interests of adjacent landowners, and the AT users. Incompatible activities are controlled by educational efforts, and failing these, by enforcement of laws and AT regulations. An atmosphere of self-reliance and respect for AT values is fostered.

6-54. Law enforcement officers respond in a timely manner to and investigate AT incidents and randomly patrol trailheads and easily accessible facilities, particularly those with a history or pattern of incidents.

6-55. Incidents of criminal activity are reported to the Appalachian Trail Conference and the AT-maintaining club, in addition to the appropriate law enforcement authorities.

MANAGEMENT AREA 7
Scenic Corridors and the Highlands Scenic Tour

SCENIC CORRIDORS

This 39,000-acre management area contains primarily the visual foreground of outstanding scenic routes that traverse the Forest. The majority of Sensitivity Level 1 routes and three Sensitivity Level 2 routes are in this management area.

These routes are typified by Interstate 64, the Blue Ridge Parkway, and certain federal and state routes, some of which are listed as Virginia Byways.

Among these is the Highlands Scenic Tour, a component of the Forest Service's National Scenic Byways system. The desired future conditions and additional standards for both the foreground and middleground zones are provided separately at the end of the Management Area 7 discussion.

The Desired Future Scenic Corridors

As visitors travel through this management area corridor, they enjoy a landscape which offers a variety of scenic views. These may include rugged mountain terrain with rock outcrops as well as low lying hollows and valleys. Visitors enjoy views of water features such as lakes and cascading rivers and streams and forest vegetation A variety of sizes, colors and textures can be seen in the many species of vegetation

The foreground viewshed consists primarily of a continuous cover of large hardwoods and pines with understory and groundcover vegetation. Occasionally there is an opening in the forest where opportunities for viewing wildlife and geographic features are maximized. Except along interstates, most of the views are restricted to the immediate foreground by vegetation and natural landforms. There are occasional openings which reveal middleground or distant background vistas. Because of the undulating nature of the forest canopy over the road or trail, the visitors experience both shade and sun, enclosure and exposure Vertical curves in the travel routes provide elevation changes which afford views from a variety of vantage points. Occasionally, there are parking areas or pull-outs that provide opportunities for visitors to enjoy the landscape and photograph wildlife

As seen from these sensitive routes, the scenic resources of the Forest are maintained and, if necessary, rehabilitated or enhanced. Interpretive facilities are permissible along primary travel routes to enhance the visitor's experience and knowledge.

In areas with a VQO of retention, most observers are not aware of the various management activities that are occurring in the area such as wildlife habitat improvement or salvage of hazard trees. In areas which meet a partial retention VQO, observers may be aware of management activities which occur, but management activities are not obtrusive. They are carefully planned to remain

subordinate to the primary goal of maintaining the scenic qualities of the landscape. See Table 3-3 for a list of travelways which are included, at least in part, as scenic corridors in retention zones and those in partial retention zones.

Table 3-3.

Scenic Corridors in Retention VQO Zones

Interstate 64	State Highway 56
Blue Ridge Parkway	State Highway 311
Amtrak	State Highway 55
US Highway 60	State Highway 130
US Highway 250	State Highway 39
US Highway 33	State Highway 42
US Highway 211	State Highway 56
US Highway 220	State Highway 924
US Highway 501	State Highway 850
State Highway 259	State Highway 770
State Highway 605	State Highway 687
State Highway 666	Forest Development Road 447
State Highway 689 south of Douthat	

Scenic Corridors in Partial Retention VQO Zones

State Highway 718	Forest Development Road 125
State Highway 606	Forest Development Road 274
State Highway 687	Forest Development Road 106
State Highway 730	State Highway 600
State Highway 159	State Highway 629
State Highway 689 north of Douthat	

In areas classified as unsuitable for timber production, vegetation manipulation is permitted for improvements to visual resources, recreation opportunities, safety, and wildlife habitat.

Recreational and interpretive facilities which support developed and dispersed recreation opportunities may be located within the management area corridor. Interpretive services are provided to enhance visitors' understanding of and appreciation for the natural and cultural resources of the Forest Facilities may include but are not limited to trails, buildings, viewing areas, hang gliding and signs. All facilities blend well with the natural surroundings.

Wildlife species that require a mature forest – such as gray squirrel or pileated woodpecker – are maintained or enhanced, resulting in viewing opportunities for "watchable wildlife" species

Standards - Scenic Corridors

Adherence to the following standards is required when implementing the Revised Plan in Scenic Corridors. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

7-1. A short term VQO of rehabilitation can be used to restore an area or facility to a condition that meets the visual quality objective of retention. Rehabilitation is applied to travelways and vista points as needed

7-2. A short term VQO of enhancement may be assigned as appropriate to ensure scenic qualities are optimized.

7-3. Seek opportunities to screen or minimize visual impacts of utility corridors and support towers.

7-4. Vegetation management and other practices that meet the objectives for providing a scenic environment are permitted.

Integrated Pest Management

7-5. Actions are considered that protect the aesthetic values of the foreground on a case-by-case basis. Forest insect and disease outbreaks may be controlled along roadways and overlooks to prevent tree mortality and reduce hazards to visitors.

Minerals

7-6. The area is available for oil and gas leasing with "Controlled Surface Use" stipulations. The area is available for other leasable minerals and common variety minerals on a case-by-case basis.

Recreation

7-7. Lands within this management area are managed under three recreation opportunity classes Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 1). Lands inventoried as semi-primitive non-motorized remain semi-primitive non-motorized The Highlands Scenic tour is managed as roaded natural. See the recreation opportunity map accompanying the Revised Plan.

7-8. Interpretive services including trails, signs, viewing areas, self-guided programs and buildings are provided to enhance understanding and appreciation for the natural environment, cultural resources and the Forest's special features.

7-9. Larger scale public use facilities such as public information centers and administrative headquarters are allowed with structures properly landscaped.

Roads

7-10. Access roads through this management area are designed and constructed to minimize visual impacts and meet the retention VQO.

Special Uses and Utility Corridors

7-11. New special uses are issued only where there is an over-riding demonstrated public need or benefit Access to privately owned property is permitted when other access is impractical and infeasible.

Timber and Other Vegetation

7-12. Vegetation management is permitted for wildlife habitat improvement, visual resources enhancement, rehabilitation, recreation, firewood, safety and salvage of dead and dying trees

7-13. On lands suitable for timber production, silvicultural practices may be employed that achieve the desired future condition of the management area, and meet the appropriate visual quality objective

7-14 On suitable lands salvage of dead, dying and damaged trees can occur from existing roads to provide for scenic rehabilitation and public safety using ground-based or helicopter logging.

Wildlife

7-15 Wildlife and fisheries habitat improvement activities are performed to enhance viewing and fishing opportunities as well as for non-game wildlife species. "Watchable" wildlife species habitat enhancement is performed in accordance with a visual quality objective of retention

7-16. Wildlife habitat improvements that blend well with the surrounding landscape may be implemented.

THE HIGHLANDS SCENIC TOUR

The Highlands Scenic Tour is a 19 6 mile designated Forest Service Scenic Byway. It is located in Alleghany and Rockbridge Counties and includes segments of State Route 850, State Route 770 and FDR 447. The Byway takes on the form of an elongated loop. The visual foreground zone is managed differently than the middleground zones which are primarily located in the middle of the loop. The desired future and standards are discussed separately for these zones.

The Desired Future Foreground

From the dense forested stream valleys of Brattons Run and Simpson Creek to the upland hardwood forest on the ridge of North Mountain, the Highlands Scenic Tour weaves through scenery which consists primarily of a continuous cover of forest There are views to impressive geologic formations on the upper slopes as well as beautiful cascading streams in narrow valleys. There are numerous reminders of a once thriving mining community including building foundations and a narrow gauge railroad grade.

The scenic, historic and natural resources are interpreted for the benefit of visitors. There is a modest interpretive facility, trailhead and short loop trails along Simpson Creek. Other short interpretive trails are located along the

Highlands Scenic Tour route. At least three overlooks with parking are located along the ridge of North Mountain.

Road corridor improvements, interpretive facilities and past management practices are the most obvious changes to the physical and natural environment. These improvements will fit the roaded natural character of the land. The majority of visitors who are driving for pleasure are not aware that other management activities are occurring within the area Those who stop to use interpretive facilities will observe evidence of past and present management activities such as improvements to wildlife habitat, stream structures, protection of cultural resources, and vegetation manipulation for scenic, recreational and interpretive purposes.

The Tour is routed along paved and improved roads designed for only motorcycles, cars, mini-vans and pick-up trucks. Drivers of oversized vehicles are advised by signs and brochures which routes are appropriate and safe for their use. Turn-around areas are provided in areas unsafe for oversized vehicles Salvage of hazard trees along roadways is permitted.

Standards Foreground

Adherence to the following standards is required when implementing the Revised Plan on the foreground of the Highlands Scenic Tour. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

7-17. The area is managed to meet a visual quality objective of retention.

Roads

7-18. Other than the Tour route itself, only Traffic Service Level (TSL) D roads may be constructed, which are closed to public use

Timber and Other Vegetation

7-19. Timber harvesting and other management practices may be employed to achieve the objectives of the Highlands Scenic Tour, such as interpretation of resource management including demonstrating harvest techniques. These practices meet a visual quality objective of retention and are designed to blend with the landscape

7-20. Vegetation within the visual road corridor is managed to enhance the appearance of the site and to ensure public safety.

The Desired Future Middleground

The future condition under Management Area 7 provides examples of forest management practices and interpretation of them Most observers are aware of management activities, but do not find their appearance intrusive. Trails, timber

harvests, wildlife habitat improvement, cultural resource protection, and interpretive signs are the most obvious changes to the natural environment.

The landscape viewed from the scenic drive is characterized by a predominant cover of mature hardwoods and pines with their associated understories. Stands of vegetation may be fairly uniform in age, but contain a variety of species which, due to growth variances, are of different sizes.

Standards Middleground

Adherence to the following standards is required when implementing the Revised Plan in the middleground zone of the Highlands Scenic Tour. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

7-21 The area is managed to meet a visual quality objective of partial retention.

Timber and Other Vegetation

7-22 A variety of silvicultural practices that demonstrate and interpret forest management practices are employed to meet the desired future condition of this management area.

7-23. All timber harvest methods are allowed provided they meet the visual quality objective of partial retention

7-24. Ground-based timber harvesting is restricted to slopes less than 35 percent. Cable harvesting systems are not limited to slope.

MANAGEMENT AREA 8 Wilderness/ Wilderness Study

This 44,000-acre management area contains the four existing wildernesses (Ramseys Draft, Rich Hole, Rough Mountain, and St. Mary's) and the three roadless areas that are recommended for wilderness study (St Mary's Addition, The Priest, and Three Ridges). Small portions of Barbours Creek (20 acres) and Shawvers Run (95 acres) wildernesses that lie on the Forest are administered by the Jefferson National Forest.

Lands allocated to Management Area 8 are administered to maintain or achieve a naturally functioning ecosystem. Activities are integrated in such a way that current human use leaves only limited and site-specific evidence.

Roadless areas recommended for wilderness study are administered for retention of the wilderness attributes that led to their recommendation for inclusion in the National Forest Wilderness Preservation System Pending Congressional action, these areas are managed as though they are designated wildernesses.

The Desired Future

Within the existing wildernesses, the enduring resource of wilderness is maintained and perpetuated as one of the multiple uses of National Forest System land. Wilderness character and public values are protected and perpetuated and include, but are not limited to, opportunities for solitude, education, physical and mental challenge, inspiration, scientific study, and primitive recreation that includes hunting and fishing.

The ecosystem is the result of natural succession and natural processes. In some areas, natural succession eventually results in an older forest of predominantly shade tolerant vegetation. Wildlife favoring mature vegetation or the late successional stages of vegetation predominate in wilderness. Unfragmented habitat is provided for area-sensitive species.

There is little evidence of visitor use in the wilderness and there is low interaction among users. Facilities of a primitive nature may be present to protect the resources and the safety of visitors Minor evidence of primitive travelways exists. No motorized use is permitted

Specific recreation opportunity spectrum (ROS) classification criteria on size and distance from roads prevent existing wildernesses from qualifying for the primitive ROS class designation. Given this, opportunities are provided for semi-primitive, non-motorized dispersed recreation experiences that emphasize solitude and challenge consistent with wilderness recreation. Human travel is principally on system trails when provided. Trailheads and signing are provided Use is generally managed through informational services including trailhead information stations and one-to-one personal contacts and other wilder-

ness education efforts. Supervisor's Orders restricting overnight camping and campfires may be employed where needed to reverse or arrest unacceptable impacts.

Opportunities are provided for a variety of recreation pursuits with emphasis on activities that are in harmony with the natural environment All lands are classified as unsuitable for timber production and contribute to the unfragmented habitat of the Forest.

Standards

Adherence to the following standards is required when implementing the Revised Plan in Wilderness and Wilderness Study Areas. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Wilderness Management

8-1. Wildernesses and roadless areas recommended for wilderness study are managed in accordance with the provisions of the Wilderness Act of 1964 (Public Law 88-577); Virginia Wilderness Act of 1984 (Public Law 98-587), Forest Service Manual 2320, Wilderness Management; Forest Service Manual 5100, Fire Management; Forest Service Handbook 2309 19, Wilderness Management; Executive Orders; and Secretary of Agriculture Regulations.

8-2. Campsites and other areas of concentrated use are managed for a low level of change in naturalness recognizing that different areas or zones in wilderness show varying degrees of human influence.

8-3. Appropriate campsites are naturalized or rehabilitated. Temporary or permanent site closures are considered when other management techniques are not successful

8-4. Conflicts which develop between wilderness activities are resolved in favor of those activities (1) that least alter the wilderness environment, and (2) that are most dependent upon the wilderness environment. Some activities may be restricted or controlled to preserve the opportunities for solitude and primitive recreation experiences.

8-5. Primitive and semi-primitive non-motorized recreation opportunities requiring predominately unmodified natural settings with a high degree of challenge and risk are provided while traveling cross-country and on trails Activities may include hiking, camping, hunting, fishing, or nature study

8-6. Visitors are allowed to experience a wilderness environment by not reducing or eliminating personal risk associated with adverse weather conditions, isolation, natural physical hazards, and primitive travel and communications

8-7. Visitor use is dispersed through information, education, and trail design.

8-8. Wilderness awareness and no-trace use ethics are promoted The concept that wilderness is primitive and rugged and that certain outdoor skills are necessary for using these areas is promoted.

8-9. Minimum restrictions or controls necessary to protect the wilderness or roadless areas recommended for wilderness study are used

8-10 The use of bicycles and other forms of mechanized equipment, such as wagons or carts, is prohibited with the exception of wheelchairs for persons with disabilities on trails where such use is practical.

8-11. Management activities are accomplished with non-motorized equipment and non-mechanical transport of supplies and personnel Exceptions require approval of the Forest Supervisor and/or Regional Forester.

Trails Management

8-12 Trails are designed, constructed, reconstructed and maintained to the minimum standard necessary to minimize or prevent resource damage, and to protect visual quality and the safety of visitors. Trails are emphasized that appear to be part of the wilderness environment and not an intrusion upon it.

8-13. Guidance for wilderness trails management is provided in FSH 2309.18, trails management and 2309.19 wilderness management.

8-14. Trail treads are generally constructed and maintained for hiking to not exceed 18 inches in width

8-15. Native and local site materials are used in trail construction and maintenance.

8-16. Most trails receive level I or II maintenance (primitive or near primitive).

8-17. Any trails that have been constructed or maintained in excess of wilderness standards are allowed to return to the appropriate standard through natural processes.

8-18. Trails are favored that offer a "more difficult" to "most difficult" experience.

8-19. Outslope and/or waterbars or other drainage devices are provided when needed to minimize erosion.

8-20. Bridges and culverts are not installed for visitor convenience but may be established for safety or resource protection needs.

8-21 No additional trails are constructed in wilderness unless essential for safety of visitors, distribution of users, or to minimize resource damage.

Signing

8-22. Trail signs are only used for identifying a trail, dispersing use, or for administrative purposes. Signs are not provided for visitor convenience or for environmental interpretation within wilderness or roadless areas recommended for wilderness study.

8-23. Signing in the wildernesses and areas recommended for wilderness study conform to standards in FSM 7160, FSH 7109.11, and FSH 2309.19

8-24. Signing within wilderness or roadless areas recommended for wilderness study occurs at trails intersections if needed to disperse use This signing indicates a destination point such as a landmark or a trailhead.

8-25. Whenever possible, excessively used areas are not indicated on signing.

8-26 Distances to destination points will not be included on signs within wilderness, but may be indicated on signs outside the wildernss boundary or roadless area recommended for wilderness study.

8-27. Interior signs and posts are made of unstained wood with routed letters

8-28. Trail blazing within wilderness or wilderness study areas is allowed along portions of the Appalachian Trail (MA #6).

8-29 Regulatory or informational signs are only used in situations where control of excessive resource damage is needed

8-30. Bulletin boards and trail registration stations may be installed and maintained at primary access points outside the wilderness boundary or roadless areas recommended for wilderness study.

8-31. Wilderness boundary signs are placed as follows Intervisible around entire boundary, and where the wilderness boundary follows legal landline utilize the current landline marking system with boundary marker installed under the landline marker.

Aesthetics

8-32 The visual quality objective of preservation is met

8-33 Non-historical remnants such as old railroad ties and culverts within wildernesses causing unacceptable impact are removed.

8-34. When planning and implementing resource management activities adjacent to wilderness or roadless areas recommended for wilderness study, wilderness values are considered.

Cultural Resources

8-35. Scientific study consistent with the concept of wilderness or wilderness study areas, the intent of the Wilderness Act, and cultural resource management objectives is allowed.

8-36. Cultural resources are made available for interpretation consistent with management as wilderness or roadless areas recommended for wilderness study.

8-37. Suitability of studies are analyzed on a case-by-case basis Excavation of a site is permitted only if studies cannot be conducted elsewhere

8-38. Structures consistent with wilderness or roadless areas recommended for wilderness study and cultural resource objectives are managed.

8-39. Abandoned structures are allowed to deteriorate naturally after following procedures in 36 CFR 800.

Fire

8-40. Wildfires are suppressed in accordance with direction in FSM 5130, which states that all fire management activities are conducted with consideration of least cost plus loss that is consistent with Land and Resource Management Plan, and approved individual fire management direction for each wilderness.

8-41. Preference is given to suppression methods and equipment that cause the least alteration of the wilderness landscape; least disturbance of the land surface; least disturbance to visitor solitude; least reduction of visibility during periods of visitor use; and the least effects on other air quality-related values.

8-42. Fires are managed in order to minimize threat or damage to life and property

8-43. Fires are managed in accordance with approved individual Fire Management Direction for each wilderness found in the Forest Fire Management Action Plan.

8-44. Revegetation work, if necessary for resource protection, is done with plant species native to the Mid-Appalachian area

Fisheries

8-45. Habitat improvements are managed in accordance with Forest Manual 2320 and Forest Service Handbook 2309.19.

8-46. Mitigation for acid rain effects may be permissible, and is evaluated on a case-by-case basis.

Integrated Pest Management

8-47 Forest insect and disease outbreaks are controlled only if necessary to prevent unacceptable damage to resources on adjacent land, prevent an unnatural loss to the wilderness resource due to exotic pests, or protect threatened, endangered, or sensitive species.

8-48 Control measures are used that have the least adverse impact on the wilderness resource. Where possible, the use of chemical control methods are avoided.

Gypsy Moth

8-49 As authorized by the Wilderness Act, certain circumstances may arise when it is necessary, using least-impacting method available, to take action to manage a particular gypsy moth infestation in wilderness· When it is likely that gypsy moth will have an adverse effect on a endangered, threatened or sensitive plant or animal species or habitat essential to any of these species; When the potential exists based on gypsy moth populations, amounts of susceptible host type in wilderness, and other site conditions that significant defoliation and possible tree mortality is likely over a short period of time (1-2 years), thus creating a sudden catastrophic change in the wilderness ecosystem; when all or part of an ecosystem considered unique or rare occurs in wilderness, and is likely to be severely affected by gypsy moth if no action is taken, or when defoliating gypsy moth populations in wilderness are likely to spread to adjacent private lands and adversely affect the forest resources on these lands provided the forest resources can not be adequately protected by treatment outside wilderness

Southern Pine Beetle (SPB)

8-50 Control action is considered where threatened, endangered, proposed, or sensitive species may be adversely impacted by the SPB

8-51. No SPB control action is taken unless an infestation occurs within 1/4 mile of susceptible host on State and private land or high value forest resources on Federal land and is predicted to spread onto that land causing unacceptable damage. A site-specific analysis is completed and documented on each infestation predicted to impact adjacent lands prior to implementing control action.

8-52 No SPB control action is taken until a site-specific analysis of the infestation and surrounding site conditions is completed and documented. The site-specific analysis must indicate that successful control can be expected, given:

(a) the intensity of the infestation; (b) the constraints applied to the control methods and (c) the resources available to control the spot.

Lands

8-53. Adequate access is provided to states or persons, and their successors in interest, who own land completely surrounded by wilderness or roadless areas recommended for wilderness study.

8-54. Any national forest land within, or adjacent to, the wilderness or a roadless area recommended for wilderness study is not considered for exchange.

8-55. The purchase or exchange of any available private or state-owned land inholdings or interests within wilderness or roadless areas recommended for wilderness study is pursued.

8-56. Right-of-way and land acquisition is pursued to provide access to wilderness or roadless areas recommended for wilderness study.

Minerals

8-57. Existing wildernesses are unavailable for mineral leasing and development, subject to valid existing rights Leases with "No Surface Occupancy" stipulations may be issued when the area is subject to withdrawal of underground mineral resources.

8-58. The gathering of information on mineral resources in wildernesses is permitted in a manner that does not result in significant disturbance to the soil surface and meets legal requirements.

8-59. Roadless areas recommended for wilderness study are managed under the following direction until Congressional action occurs; these areas are available for oil and gas leasing with controlled surface use stipulations; these areas are available for other leasable minerals on a case-by-case basis; these areas are not available for common variety minerals

8-60. Upon Congressional action designating these areas as wilderness, roadless areas previously recommended for wilderness study are legally unavailable for mineral leasing and development, subject to valid existing rights.

Recreation

8-61. Lands within this management area are managed under two recreation opportunity classes. Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized or semi-primitive non-motorized adopt a recreation opportunity class of semi-primitive non-motorized. See the recreation opportunity map accompanying the Revised Plan.

Research and Scientific Study

8-62. Non-manipulative scientific study dependent and compatible with the goals and objectives of the wilderness are allowed. Only those studies are approved that are consistent with wilderness management.

8-63. Test plots are marked in a temporary manner not generally visually evident to the average visitor.

Search and Rescue

8-64. The county or counties where the wilderness areas are located have the responsibility for search and rescue of lost or injured visitors. The Forest will provide assistance when requested for such things as scouting services, detailed maps, aerial photography, and detailed information about the area. Use of motorized equipment for search and rescue operations within the wilderness area must be approved in advance by the Forest Supervisor.

8-65. Commercial use by outfitters and guides of wildernesses or roadless areas recommended for wilderness study is allowed if compatible with preservation of the wilderness values, is educational, or is in the interest of scientific research. However, contest events such as foot races or horseback enduros are not allowed.

8-66. Decisions to authorize commercial uses of wilderness or roadless areas recommended for wilderness study are documented following NEPA regulations.

Special Uses

8-67. Other special uses consistent with wilderness values are allowed on a case-by-case basis.

TE&S Species

8-68 Appropriate management is provided to known populations of endangered, threatened, and sensitive species

Water

8-69. No measures are initiated that change water flow.

8-70. No water developments, such as impoundments or water wells, are constructed in wilderness.

8-71 Water quality measurements are made with portable or nonpermanent equipment.

8-72 Water quality measurements are performed and documented as prescribed by State and/or Federal laws, policies, and/or procedures.

8-73 Users are informed of the need to purify drinking water and any other special or unusual conditions which they need to be aware of, such as flooding potential

MANAGEMENT AREA 9
Remote Highlands

This 141,000-acre management area contains many of the more remote areas of the Forest. Remote Highlands are managed to provide older vegetation in remote and isolated areas where recreationists can obtain a degree of solitude and the environment can be maintained in a near-natural state where only light-on-the-land management activities occur. These areas are classified unsuitable for timber production and contribute to the unfragmented habitat of the Forest.

The Desired Future

The ecosystem is generally the result of natural processes. Wildlife preferring unfragmented mature vegetation or the late successional stages of vegetation predominate in older age forests. Normally, visitors can view wildlife species that require old growth conditions and low levels of disturbance. Habitat is provided for threatened, endangered, sensitive species, and interior forest dwelling species and to meet requirements necessary for sustaining viable populations of other plant, bird and animal species.

Little evidence of other users and low interaction among users occurs, except along roads and trails. Facilities of a primitive nature may be present to protect the resources and the safety of visitors.

Recreation facility development is generally provided to accommodate users at the perimeter of the management area. Visitors are afforded the opportunity to be self-reliant on their outdoor skills in an environment away from such comfort and convenience amenities normally found in developed recreation areas. Trailhead parking, bulletin boards and vault toilets may be provided.

Opportunities are provided for primitive, dispersed recreation experiences that emphasize solitude and challenge such as hiking, horseback riding, mountain biking, hunting, fishing, and camping . Travel is primarily on system trails using mountain bikes, hiking, and horses. Existing system roads may remain open or be open seasonally. Motorized use of trails is prohibited. A range of tral difficulty levels, easy to most difficult, is offered as terrain dictates. For resource protection primarily, campsites may be designated and show evidence of repeated, but acceptable levels of use.

Stands having old growth forest oak are identified and managed to retain their old growth characteristics. Other portions of this management area attain the characteristics of old growth specific to that forest type over time.

Wildlife habitat improvements are implemented through maintenance or construction of openings, through prescribed burning, and similar improvements. Travel routes accessing these improvements are maintained at minimum levels.

Minerals activities may occur in a few locations Maintenance and restoration of developments are used to provide wildlife habitat

Standards

Adherence to the following standards is required when implementing the Revised Plan in Remote Highlands These standards are in addition to the applicable Common Standards listed at the end of this chapter

Aesthetics

9-1 Management practices meet the visual quality objective of retention Areas contributing to excessive erosion/sediment and salvage have a short term visual quality objective of rehabilitation Enhancement may be used to showcase outstanding scenic resources

Fire

9-2 Prescribed fire may be used to maintain habitat for wildlife and fire dependent plant communities.

Integrated Pest Management

9-3 Generally, forest insect and disease outbreaks are not controlled except where threatened, endangered, or sensitive species and their habitat may be adversely impacted or to prevent a threat to private land.

Minerals

9-4. These areas are available for oil and gas leasing with controlled surface use stipulations.

9-5. Other leasable minerals and common variety minerals are generally restricted but can be available on a case-by-case basis. Availability depends on the nature and degree of disturbance planned and the significance of the mineral.

Recreation

9-6 Remote Highlands are managed under four recreation opportunity classes Lands inventoried as roaded natural remain roaded natural Lands inventoried as semi-primitive motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 1) or semi-primitive motorized (subclass 2). Lands inventoried as semi-primitive non-motorized remain semi-primitive non-motorized. See the recreation opportunity map accompanying the Revised Plan

9-7 No-trace camping techniques are promoted. Campsites and other areas of concentrated use are managed for a low level of change in natural conditions.

9-8 Overused sites are rehabilitated Temporary or permanent site closures may be implemented when other management techniques are not successful

Roads

9-9. No new road construction is permitted except. (1) to access approved mineral activities; (2) where the new road is the only prudent alternative to serve

resource needs in adjacent management areas and it will minimally impact this management area; (3) to relocate existing roads; (4) to provide access to trailheads or (5) to provide access to private land if no other route is feasible. Reconstruction and relocation are limited to protection of resource values. Existing system roads, or those routes to access wildlife openings may continue to be used

Soil and Water

9-10. Water quality is maintained at existing or higher levels. Erosion from either natural causes or human use that is contributing to degradation of water quality is controlled.

9-11. Watershed improvement projects are developed and implemented where erosion is due to man-caused activities and on critical areas where erosion is due to natural causes.

Timber and Other Vegetation

9-12. Salvage of dead, dying or damaged trees can occur from perimeter roads using helicopter logging for a distance up to 1/2 mile. Salvage and firewood gathering from system interior roads can occur using ground based methods without additional road construction. Landings can be provided adjacent to existing roads.

Trails

9-13 Trails are designed to offer a challenging experience and to blend in with the natural environment. They are constructed and maintained to the minimum standard necessary to prevent resource damage and protect visual quality and visitor safety.

9-14 Local site materials are primarily used in trail construction and maintenance.

9-15. Snags along trails are not normally felled unless they present a definite safety hazard.

9-16. Bridges and culverts are not installed for visitor convenience, but may be established for safety and resource protection.

9-17. Old roads and logging trails are used where feasible in planning and developing trail systems.

Wildlife

9-18. Existing wildlife habitat improvements can be maintained. Additional improvements are permitted so long as they achieve specific wildlife habitat management objectives. Water holes may be created at one-half mile intervals where reliable water sources are absent.

MANAGEMENT AREA 10
Scenic Rivers & Recreational Rivers

This 8,000-acre management area consists of portions of rivers eligible for the National Wild and Scenic River System under scenic or recreational river designation The eligible portions of these rivers and the one-quarter mile wide corridors on each side are managed to meet the requirements of the Wild and Scenic Rivers Act of 1968.

Qualifying for Scenic River Designation

Segment A of Back Creek
Cedar Creek
Segment B of Jackson River
Segment C of Jackson River
Segment B of North River
Segment B of Tye River

Qualifying for Recreational River Designation

Segment B of Back Creek
Segments A & B of Cowpasture River
Segment C of Passage Creek
Segment D of Jackson River
North Fork of Shenandoah River
South Fork of Shenandoah River

The Forest completed eligibility evaluations and potential classification determinations on these rivers (see Appendix D of the EIS). Further evaluations by state and federal agencies are underway and will be published at a later date The latter evaluations are the final step in determining whether or not a river is recommended to Congress for further consideration. Until evaluations are complete, Forest management area allocations ensure that the qualifying characteristics of the rivers are protected.

Some river segments are allocated to management areas other than **Management Area 10.** The portion of Jackson River Segment B that flows through Hidden Valley is allocated to **Management Area 13,** the remainder of the segment is allocated to **Management Area 10.** One segment of the St. Mary's River lies within the St Mary's Wilderness and qualifies for wild river designation The segment is allocated to **Management Area 8. Management Area 8** protects the qualifying characteristics of a wild river. Direction for riparian areas and fisheries is found in **Management Area 18**

Management Area 10 is composed of approximately 55 miles of rivers that qualify as scenic rivers and approximately 200 miles that qualify as recreation rivers. Both have corridor widths of 1/4-mile on each side of the river. There are approximately 4,000 acres in the scenic river corridor and 4,000 acres in the recreation river corridor All acres are classified as unsuitable for timber production.

The Desired Future

Eligible river segments and their immediate environments are managed to preserve free-flowing conditions and to protect the outstanding values of the segments -- scenic, recreation, geologic, fish and wildlife, historic, cultural, and similar values that made it eligible. Until designation decisions are made or other river studies are conducted, National Forest System lands associated with each eligible river corridors are managed to perpetuate or enhance each rivers current conditions. Characteristics of the rivers and their corridors are not reduced below the standards for classification as a recreational river

Resource effects, including soil compaction, loss of vegetation, and water pollution around streams is minimized. Roads, trails, and dispersed campsites are managed to discourage impacts to lakes, streams, and fragile soil resources

Wildlife habitat improvement activities are performed to enhance viewing and hunting opportunities.

Standards

Adherence to the following standards is required when implementing the Revised Plan in areas where rivers/portions of rivers are designated as scenic or recreational These standards are in addition to the applicable Common Standards listed at the end of this chapter.

10-1. Until designation decisions are made, National Forest System lands associated with eligible river corridors are managed to perpetuate their current conditions. Management activities may enhance conditions, but may not reduce the characteristics below the standards for the river's potential classification.

Aesthetics

10-2. A short term VQO of rehabilitation can be used to restore an area or facility to a condition that meets the visual quality objective of retention. Rehabilitation is applied to travelways and vista points as needed.

10-3. A short term VQO of enhancement may be assigned as appropriate to ensure scenic qualities are optimized.

10-4 Overhead utility lines and support towers are screened where possible.

Facilities

10-5. Development of hydroelectric power facilities is discouraged on National Forest System lands

10-6. New flood control and water supply dams and levees are discouraged on National Forest System lands

10-7. Proposed facilities (roads, campgrounds, buildings) are located outside floodplain boundaries for the 100-year flood (Executive Order 11988), unless no practical alternative location exists. Where present and future facilities cannot be located out of the 100-year floodplain, structural mitigation (deflection structures, riprap, etc.) is used.

10-8. Utility structures such as new transmission lines, gas lines and water lines are discouraged. Where no reasonable alternative exists, additional or new facilities are authorized only in locations that can provide acceptable visual impacts.

Fire

10-9 Prescribed burning is permitted if meets specific resource objectives.

Integrated Pest Management

10-10 Suppression of forest insect and disease infestation may be consid--ered in developed areas with the objectives of protecting proposed, endangered, threatened and sensitive species, protecting the tree canopy along sensitive streams, preventing tree mortality and reducing hazards.

Recreation

10-11. Lands within this management area are managed under three recreation opportunity classes Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 1). Lands inventoried as semi-primitive non-motorized remain semi-primitive non-motorized. See the recreation opportunity map accompanying the Revised Plan.

10-12 OHV use is allowed only on open system roads.

10-13 Soils are stabilized on eroded recreational sites through revegetation, traffic control, or closing of site.

10-14. Trails are maintained to a standard compatible with intended use.

10-15 Trails are located, constructed, and maintained so as to minimize adverse impacts to the resources.

Soil and Water

10-16 Disturbed areas (channels, degraded areas, etc.) that are contributing sediment directly to perennial streams and bodies of water are treated so that sediment yield is reduced to the natural rate as soon as possible.

Timber

10-17. Salvage of dead, dying, or damaged trees can occur from existing roads with ground-based or helicopter logging methods without additional road construction.

Wildlife/Fisheries

10-18. Wildlife habitat improvement activities are performed to enhance viewing and hunting opportunities. Waterfowl, woodcock, watchable wildlife, and other riparian dependent species habitat enhancements are allowed.

10-19. Wildlife habitat improvements are constructed using materials that blend well with the surrounding landscape

SCENIC RIVERS -

River segments qualifying for scenic river designation under the National Wild and Scenic Rivers Act of 1968 (refer to Appendix D of the EIS) are managed to retain the attributes that qualify them for scenic river designation. As described in the Act, a scenic river is a river or section of river that is "free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads."

The largely primitive surroundings on the river and within the one-quarter mile corridor that exists on both sides of the river is maintained.

The Desired Future

The river and a one-quarter mile corridor on each side exist in a natural to near-natural setting and usually possess outstanding scenic quality. The characteristic landscape is that of continuous forest cover of predominantly hardwood species. Occasional small openings in the forest exist. The terrain is generally steep adjacent to the river, however some areas do possess a wide, flat river valley. Intermittent and perennial streams flow unobstructed from the sideslopes into the river. Opportunities for wildlife viewing are good. In some areas the hydrologic processes over time have exposed geologic features.

The river and its channel are not modified except for fisheries habitat improvements. Dams or other structures that impede the flow of the river are prohibited. Some activities related to management of riparian dependent resources or wildlife habitat activities may be evident. The river user is aware that man's past activities have changed the original character of the river and its surrounding landscape only in selected areas and for short stretches. Most users are not offended by these sights.

Recreation use on the river and within the corridor is not concentrated, and visitors have the opportunity to experience some solitude and enjoy the primi-

tive character of the surrounding landscape. Water-based recreation activities such as swimming, wading, fishing, canoeing, rafting, and kayaking occur in the river The use of motor powered boats may be permitted in designated areas. Land-based recreation activities include hunting, hiking, horseback riding, and other activities that do not disturb the serenity of the area. OHV use occurs only on existing open roads.

Management practices do not alter the primitive landscape. Access to scenic river segments is provided at select locations. Facility emphasis is on health, safety, and resource protection plus some degree of user convenience. Lands within scenic river corridors are classified unsuitable for timber production.

Standards

Adherence to the following standards is required when implementing the Revised Plan in areas with scenic river designation. These standards are in addition to standards that apply to all of Management Area 10.

Aesthetics

10-20. Scenic river corridors are managed to meet a visual quality objective of retention.

Facilities

10-21. No new special uses authorizing the construction of buildings or structures are issued unless there is no reasonable alternative.

Minerals

10-22. Scenic river sections are available for oil and gas leasing with controlled surface use stipulations.

10-23. Scenic river corridors are available for other leasable minerals and common variety minerals on a case-by-case basis

Recreation

10-24 Scenic river corridors are managed under three recreation opportunity classes. Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 1). Lands inventoried as semi-primitive non-motorized remain semi-primitive non-motorized. See the recreation opportunity map accompanying the Revised Plan

10-25. Rehabilitation can be used to restore an area or facility to a condition that meets both the semi-primitive motorized or nonmotorized ROS class designation and the visual quality objective of retention. This might include existing roads, trails, bridges, parking facilities, or campgrounds.

10-26 Public use facilities such as moderate size campgrounds, public information centers, and administrative headquarters are allowed if such structures are screened from the river and are located outside the floodplain..

Roads

10-27. Access for recreation development and wildlife and fisheries habitat development is allowed in selected locations within the river corridor

RECREATION RIVERS

River segments qualifying for recreation river designation under the National Wild and Scenic Rivers Act of 1968 are managed to retain the attributes that permit them to qualify for the recreation river designation. As described in the Act, *recreation rivers are rivers or sections of river that are "readily accessible* by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past."

Rivers qualifying for recreation river designation are managed to maintain the free-flowing nature of the river while providing for an abundance of recreation use. Multiple use activities may occur within the river corridor, including wildlife habitat manipulation, road construction, and trail construction.

To maintain pastoral settings, grazing is permitted on approximately 240 acres in five pastures or on newly acquired lands with similar desired futue conditions. Lands within this management area are classified as unsuitable for timber production. The grazing program is not expanded beyond the existing allotments.

The Desired Future

While the characteristic landscape in this management area is that of mostly continuous forest cover, the river and one-quarter mile corridors on each side of the river may have some development. Evidence of impoundments or diversions from the past may be present. A few roads, trails, wildlife habitat improvements, grazing in open pastures, and recreation activities dominate the landscape

The river is readily accessible by road or railroad. Forest Service facilities provide user information, access to the river, camping, and day-use activities. Facilities may be developed to provide for user convenience and may include paved boat ramps, electric hookups at camping sites, interpretive trails, and flush toilets at public restrooms.

Recreation use of the river and the corridor is concentrated. Opportunities for solitude are not readily available. The level of social interaction with other recreation users is moderate or high at developed sites and on the river. Water based recreation may include canoeing, rafting, tubing, hunting, kayaking, swimming, and fishing. Land based activities may include picnicking, hiking, camping, bicycling, horseback riding, and interpretive services.

Resource effects, including soil compaction, loss of vegetation, and water pollution around streams is minimized. Roads, trails, and dispersed campsites are managed to discourage impacts to lakes, streams, and fragile soil resources

Standards

Adherence to the following standards is required when implementing the Revised Plan in areas with recreation river designation These standards are in addition to standards that apply to all of Management Area 10

Aesthetics

10-28 The area is managed to meet a visual quality objective of partial retention.

Grazing

10-29 The grazing program is managed with range permit system with the existing allotments and any future ones confined to the areas designated to be maintained in an open pastoral setting

Minerals

10-30. Recreational river sections are available for oil and gas leasing and development with stipulations Other leasable minerals and common variety minerals are also available on a case-by-case basis

10-31. All proposed mining activities must include appropriate mitigation measures to protect the recreational designation.

Recreation

10-32. Recreation river corridors are managed under two recreation opportunity classes Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 1). See the recreation opportunity map accompanying the Revised Plan.

10-33. Rehabilitation can be used to restore an area or facility to a condition that meets both the roaded natural or rural ROS class designation and the visual quality objective of partial retention. This may include existing roads, trails, bridges, parking facilities, or campgrounds

10-34 Access for recreation use is provided to accommodate a large number of users

10-35 Dispersed recreation facilities -- such as bulletin boards, boat launches, garbage receptacles, etc. -- may be established close to the river as long as riparian resources are protected.

10-36. Whenever feasible, coordinate future developments and activities with state and local governments and landowners in an effort to develop partnerships and a strategy for long-range use of the river.

Roads

10-37. Roads constructed within the corridor can be in the traffic service level A, B, or C categories and are typically open year-round. They provide safe access to recreation facilities for a variety of vehicles, including larger recreation vehicles (RVs).

10-38. Newly constructed roads can parallel the river on both sides and may cross at designated locations.

10-39. *Long-term impacts of road construction on soil/water resources are* reduced and the road investment is protected.

MANAGEMENT AREA 11 All-Terrain/ Off-Highway Vehicle Routes

This 11,000-acre management area contains approximately 240 miles of routes designated for Off-Highway Vehicle (OHV) use.

Routes in this management area are managed to provide a variety of motorized recreation opportunities such as sightseeing, hunting, photography, and pleasure riding. Motorized use within the four ATV/OHV areas listed below occurs on approved and designated routes only. Routes within these areas are also suitable for unlicensed motorcycles

Table 3-4.
ATV/OHV Areas

Ranger District	ATV[1]/OHV[2]Areas	Appx.Miles of Routes Existing & Proposed
Deerfield	Archer	15
Dry River	Rocky Run	20
Lee	Taskers Gap-Peters Mill Run	20
Pedlar	South Pedlar	25

The Rocky Run area is classified unsuitable for timber production. It is characterized by a natural, relatively unmodified environment The viewshed consists primarily of a continuous cover of hardwoods with small openings. The landscape, for the most part, appears unaltered by human activity. Existing roads, trails, and structures and newly constructed ATV trails are the most obvious changes to the natural environment.

The remainder of Management Area 11 is classified suitable for timber production. Both even-aged and uneven-aged systems are used throughout Management Area 11.

[1]All-Terrain Vehicles (ATVs) - A type of off-highway vehicle It includes vehicles 50 inches or less in width having a dry weight of 600 pounds or less that travel on three or more low-pressure tires with a seat designed to be straddled by the operator Because all-terrain vehicles cannot be licensed or registered under state vehicle laws, they are not allowed on Forest Development Roads unless a road is designated by Supervisor's Order for OHV use that includes ATVs

[2]Off-Highway Vehicles (OHVs) - A broad category of motorized vehicles capable of off-highway travel. This broad category includes ATVs, motorcycles, trailbikes, and four-wheel drive vehicles. ATVs and most trailbikes are not licensed under state motor vehicle laws Licensed OHVs are allowed on any Forest Development Road that is open for public travel provided the vehicle and the operator are in compliance with motor vehicle laws of the state This definition encompasses and replaces the term ORV (Off-Road Vehicle)

Featured roads outside of these four areas are also included within this management area for larger licensed OHVs (no unlicensed vehicles allowed). These roads are listed in Table 3-5. Additional roads suitable for OHV use are listed in Appendix J. Generally, these roads are open during hunting seasons.

The featured OHV roads are not included in the management area map since only the road profile is included within Management Area 11

Table 3-5.
Featured OHV Routes.

District	Road Number	Name	Miles
Deerfield	399	Jerkemtight	3.6
Dry River	1117	Old Man's Run	8 0
	225	Union Springs	7 0
	225B	Stone Camp	3.5
	227	Skidmore Fork	5.4
	232	Germany River	4.0
	232B	Camp Rader Run	3 0
	240	VEPCO	10.5
	304	Dry Run	3.5
	422	Dictum Ridge	5.2
	423	Gauley Ridge	6.0
	502	Second Mountain	4.2
	549	Old 33 Raccoon Run	2.0
	72	Long Run	15.9
	72C	Feedstone Mountain	4.0
	85-4	Bother Knob	4.6
	85A	Flagpole	3.8
James River	175	Peters Mountain	7.8
Lee	1702	Peters Mill Run	7.6
	1716	Taskers Gap	3.2
Pedlar	1154	Poplar's Cove	2.1
	1158	Cashaw	3.4
	1167	Coon Bridge	8.2
	162	Bald Mountain	10.2
	1881	Enchanted Creek	3.5
	317A	Dancing Ridge	1.0
	318	Peavine	3.2
	318B	Slaty Gap	1.9
	36E	Bear Tolley	3.7
	510	Tom Glass	5.3
	520	Cow Camp	5.3
TOTAL			**160.6**

The Desired Future

Identified routes provide a variety of motorized recreation opportunities in this management area ATV and motorcycle users enjoy designated routes within four areas on the Forest. Larger OHVs such as four-wheel drive vehicles use existing featured roads which provide challenge and are suitable for high clearance vehicles In addition to routes within this management area, there are a number of roads throughout the Forest available for use by larger, licensed four-wheel drive vehicles Physical impacts are confined to the immediate trail or road profile and do not spread beyond.

Maintenance is performed to protect the routes and minimize effects to soil and water resources. Routes may be closed during inclement weather New routes are not developed until there is a demonstrated interest and a developed partnership with user groups.

The management emphasis of OHV recreation occurs only on designated routes. Other recreation opportunities such as hunting, fishing, and berry picking occur within the management area adjacent to the designated route corridors Small created openings in the forest canopy may be apparent and visitors may see evidence of resource management activities. However, treatments blend well with the natural landscape and vegetation diversity is enhanced over time Roads used or constructed to facilitate vegetation treatment are managed to provide non-conflicting access for both timber harvest and motorized recreation uses.

Recreationists enjoy traveling routes through a variety of landscapes. Along many of the routes the views are restricted to the immediate foreground by vegetation and natural landforms, but occasional openings reveal middleground or distant background vistas.

Within the four ATV/OHV areas routes vary from approximately 10 to 25 miles. Trail difficulty levels vary to accommodate a variety of desires and abilities. Users are adequately advised of trail difficulty levels and hazards. Constructed trails blend well with the natural environment. Though physical impacts from OHV use are confined to the immediate road or trail environment, sounds of motorized vehicles may be audible in other sections of the management area. The ATV/OHV areas are served by well designed, located, and maintained trailheads.

Off-route and other unauthorized OHV use is not allowed. When such use occurs, the route is closed permanently or until the situation is corrected.

Standards

Adherence to the following standards is required when implementing the Revised Plan on lands with routes designated for Off-Highway Vehicle use. These standards incorporate direction and criteria found in Executive Orders 11644 and 11989, 36 CFR 295, FSM 2355 and the publication *Management Directions for Off-Road Vehicle Use in the Appalachian Mountain National Forests*. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

11-1. The visual quality objective is partial retention.

Fire

11-2. Prescribed fire is permitted for wildlife habitat improvement or for maintaining fire dependent species.

Integrated Pest Management

11-3. Insect and disease outbreaks may be controlled to prevent tree mortality and to reduce safety hazards to visitors.

Minerals

11-4. The area is available for oil and gas leasing and development with standard stipulations. Other leasable minerals and common variety minerals are also available.

Recreation

11-5. Lands in this management area are managed under the roaded natural recreation opportunity class. See the recreation opportunity map accompanying the Revised Plan.

11-6. Trail and road systems are constructed that include both single-track, narrow trails for the motorcycle and ATV user as well as roads that may be used for removing timber and for larger four-wheel drive vehicles.

11-7. Through trail design, layout, and signing, minimize user conflicts and safety hazards that may exist with other recreation users and between full size four-wheel drive vehicle users and ATV and motorcycle users.

11-8. Through trail design, layout, and management, adverse effects on the land and resources are minimized. Damage to soil, watershed, vegetation, wildlife habitat, or other natural, cultural, and historical resources, and disturbance of wildlife on the public lands are minimized.

11-9. Routes are closed to ATV/OHV use when unacceptable adverse effects occur or are likely to occur. The routes or trails remain closed until the adverse effects are eliminated and until measures are implemented to prevent recurrence.

11-10. The effects of vehicle use, noise levels, enforcement of restrictions and closures are closely monitored and evaluated.

11-11. Public safety and effective law enforcement are promoted and conflicts are controlled with other uses of National Forest System lands.

11-12. Volunteer organizations are actively recruited through the Adopt-A-Trail program to become involved in the long-term construction and maintenance of trail systems.

11-13 Existing routes located in or adjacent to sensitive areas are relocated or closed. Unneeded old routes are restored to their natural profile and revegetated.

11-14. Trail system designs with a series of loops are encouraged. This results in a more compact trail system that confines impacts to a smaller area.

11-15 The trail network is located in an area which limits the ability of users to illegally access areas off the designated routes. Full advantage is taken of natural and man-made features to use as physical barriers to illegal use.

11-16. Old roads are converted to authorized routes to the extent possible and practical.

11-17 Within ATV/OHV areas public information is provided that, as a minimum, includes maps describing the routes where use is permitted, prohibited, or restricted and the conditions of such use.

11-18. Proposals for routes in this management area are evaluated during project level analysis based on direction and criteria found in Executive Orders 11644 and 11989, 36 CFR 295, FSH 2355 and the publication *Management Direction for Off-Road Vehicle Use in the Appalachian Mountain National Forests*. In addition, the following key factors are to be considered in the project level analysis.

a. Demand for new routes in this management area is determined and documented. In measuring demand, the following factors are normally included: the commitment of a club for assistance with construction, maintenance, patrolling and monitoring; significant number of requests by users or other publics to provide facilities; demonstrated conflicts with other Forest users; and existing uncontrolled use.

b. Routes are preferred that can provide a minimum two-hour riding experience, generally 10 to 15 miles in length, and that have looping characteristics or are a part of a larger transportation system Routes that provide access for disabled visitors or seasonal hunters may be exceptions.

c. Candidate roads and trails are eliminated or mitigating measures are planned where soil movement cannot be kept within acceptable standards

d. Routes are selected that avoid sensitive areas including, but are not limited to, threatened, endangered, and sensitive species areas, and native brook trout streams.

11-19. Design criteria in the *Trails Management Handbook* (FSH 2309.18), the *Road Preconstruction Handbook* (FSH 7709.56) and the *Guide to Off-Road Motorcycle Trail Design and Construction* are used to provide a safe motorized road or trail.

11-20 Routes are located outside riparian areas except at designated stream crossings. At stream crossings, use bridges or culverts where possible When fords are used, provide at least 50 feet of gravelled approaches. Use erosion stone or larger rock to increase road bearing strength at the water/land interface.

Roads

11-21. Designated roads remain open to public use unless unacceptable resource damage occurs

11-22. Repair, reconstruction, and relocation of portions of routes receiving unacceptable resource damage is favored over closing the entire route. When chronic problems occur the entire route may be need to be closed.

11-23. Roads for timber removal are planned concurrently with possible ATV/OHV route locations and opportunities.

Timber

11-24. Uneven-aged management using group selection and individual tree selection cutting methods are planned for the level parts of the Archer and South Pedlar ATV/OHV areas.

11-25. Five year to 15 year cutting cycles are used for uneven-aged silvicultural systems.

11-26 Intermediate cuttings such as improvement cutting, salvage cutting, and sanitation cutting are permitted as long as progression towards developing the uneven-aged character is maintained.

11-27. Even-aged management utilizing associated harvest systems is used to achieve management objectives for the Taskers Gap-Peter Mill Run and steeper areas of the South Pedlar and Archer ATV/OHV area.

11-28. Rotations for even-aged management systems vary:

upland hardwood	80 - 120 years
cove hardwood	70 - 90 years
white pine	60 - 80 years

11-29. Salvage on lands classified as unsuitable for timber production of dead, dying, or damaged trees can occur from existing roads if for scenic rehabilitation using ground-based or helicopter logging without additional road construction and public safety.

Wildlife

11-30. Habitat improvements may be maintained or developed.

MANAGEMENT AREA 12 Developed Recreation

Most developed recreation sites are allocated to this 2,000-acre management area where all lands are classified as unsuitable for timber production. These are recreation areas where facilities are provided by the Forest to protect the natural resources of the areas, provide for visitor safety, and enhance the visitors' recreation experience

Not allocated to this management area are eleven developed recreation sites. Table 3-6 shows to which management areas these sites have been allocated.

Table 3-6.
Developed Recreation Sites Not Allocated to Management Area 12

Management Area	Developed Recreation Areas
4	Confederate Breastworks Callie Furnace Historical Site
6	Brown Mountain Creek Trail Shelter Cow Camp Trail Shelter Johns Hollow Trail Shelter Maupin Field Trail Shelter Punchbowl Trail Shelter Seeley/Woodworth Trail Shelter
7	Top Drive Overlook
8	Harpers Creek Trail Shelter Priest Trail Shelter

Minimally Developed Recreation Sites

Twenty-six small, minimally developed recreation areas are managed covering approximately 150 acres and having a capacity of 1,830 PAOT (persons at one time). These areas have a low development level with few amenities provided. Table 3-7 lists the minimally developed recreation areas by ranger district.

Table 3-7.
Minimally Developed Recreation Areas

Ranger District	Minimally Developed Areas	
Deerfield	Braley Pond*	Mountain House
	Shaws Fork Dispersed Camp**	
Dry River	Blue Hole	North River
	Camp Run	Shenandoah Mountain
	Dry River Dispersed Camp**	
James River	Oliver Mountain Dispersed Camp**	
Lee	Hawk Rec Area	Hazard Mill
	Hazard Mill Canoe Camp	Tomahawk Pond
	High Cliff Canoe Camp	Wolf Gap Rec Area
	Little Fort Rec Area	New Market Gap
	Edinburg Gap Dispersed Camp**	
	Bucktail Dispersed Camp**	
Pedlar	Pedlar Dispersed Camp**	
Warm Springs	Greavers Ridge Camp**	Bubbling Springs
	Locust Springs	Greenwood Point*
	McClintic Point Camp	
	Warm Springs Dispersed Camp**	

*proposed expansion
**proposed new facilities - design dispersed camps to accommodate horse user camping as well as hunters and other types of dispersed recreation

Highly Developed Recreation Sites

Sixteen highly developed recreation areas are managed covering approximately 1,200 acres and having a capacity of 11,300 PAOT. These areas have more amenities for the comfort and convenience of users than are found in the minimally developed areas. Pressure water systems with flush toilets and warm showers are the norm. Electric hookups are provided at many but not all campgrounds. Most campgrounds have spaces for large recreation vehicles, paved roads, and interpretive facilities such as amphitheaters, displays, and visitor centers. Table 3-8 lists the highly developed recreation areas by ranger district.

Table 3-8.
Highly Developed Recreation Areas

Ranger District	Developed Recreation Areas	
Dry River	Brandywine Lake Hone Quarry*	Todd Lake
James River	Coles Mountain Fortney Branch	Longdale* Morris Hill*
Lee	Camp Roosevelt* Trout Pond*	Elizabeth Furnace* Bear Wallow**
Pedlar	Sherando Lake*	
Warm Springs	Bolar Flat Hidden Valley*	Bolar Mountain* Blowing Springs*

*proposed expansion
**proposed new facilities

Specialized Recreation Sites

Twenty-three specialized, small recreation sites are managed covering approxi--mately 230 acres and having a capacity of 1,600 PAOT. These small areas, not appropriately categorized as minimally or highly developed, meet the needs of a variety of Forest visitors. While most areas have a low development scale with few facilities, a few are highly developed and specialized for interpretation or environmental education. All sites have interpretive and informational bulletin boards as well as specific facilities for resource protection. Table 3-9 lists the 23 specialized developed recreation sites by ranger district.

Table 3-9.
Specialized Developed Recreation Areas

Ranger District	Developed Recreation Areas
Deerfield	Hite Hollow Rifle Range Augusta Springs Camp*
Dry River	Pendleton Rifle Range (WV) Dry River Rifle Range Reddish Knob Observation/Hang Gliding*
James River	Lowmoor Rifle Range National Children's Forest Jackson River access points
Lee	Boones Run Shelter Lion's Tale Trail Discovery Way Trail Kennedy Peak Veach Gap Shelter Powell's Fort Camp Sugar Knob Cabin Lee Rifle Range** Massanutten Storybook Trail Massanutten Visitor Center Paul Gephart Memorial Shelter Woodstock Tower Observation/Hang Gliding So. Fork Shenandoah River access point Edith Gap Hang Gliding Site
Pedlar	Crabtree Falls Trail and Observation Site Pedlar Rifle and Archery Range** Wildlife Center of Virginia Interpretive Site** Crabtree Meadows**
Warm Springs	Bath County Shooting Range

*proposed expansion
**proposed new facilities

The Desired Future for All Developed Recreation Sites

The Forest continues to meet the public demand for a variety of developed recreation opportunities. Facilities are available in a range of development levels This is to provide for those who want few amenities as well as for those wanting or needing more services.

Developed recreation is provided in three types of settings on the Forest: (1) in highly developed areas to accommodate concentrated activities; (2) in minimally developed areas designed with fewer developments and for smaller groups; (3) in developments for specialized recreation activities such as rifle ranges or hang gliding sites For a detailed discussion of developed recreation including proposed expansion, rehabilitation, and construction, see Appendix B.

Depending on the specific site, facilities and amenities are provided for the comfort of the user. The amenities range from a minimal level at shooting ranges to visitor centers with air conditioning.

Developed recreation facilities are safe for visitors and to the extent practical, accessible to visitors with disabilities. Areas remain open for use on either a year-round basis or on a regular recurring basis as determined by the District Ranger, and as allowed by climatic conditions Maintenance and rehabilitation are prompt and thorough in existing and future developed sites.

Interpretive facilities and programs are developed throughout the Forest. Interpretation emphasizes environmental education, cultural resources and National Forest management. Proposed interpretive projects and facilities are discussed in Appendix C.

Restrooms, vault toilets, and bathhouses are clean and sanitary. Cleaning, mowing and other needed maintenance is done on a regular and frequent basis. Facilities that are worn or vandalized are replaced or rehabilitated as quickly as funding becomes available.

Depending upon the site and level of development, a wide variety of quality activities are available either in the developed area or immediately adjacent. These activities include hiking, picnicking, bicycling, mountain biking, swimming, camping, wildlife viewing, hang gliding, fishing, and learning about nature through interpretive activities and programs.

Several sites are expanded and other sites are constructed to satisfy demand previously not met. Establishing and reinstating an image of quality with a visible National Forest design ethic is emphasized in all maintenance, construction, and rehabilitation.

Standards for All Developed Recreation Sites

Adherence to the following standards is required when implementing the Revised Plan in Management Area 12. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

12-1. A short-term VQO of enhancement is applied, when possible, to open vistas and to otherwise make the recreation experience more enjoyable for visitors.

12-2 Developed recreation sites are managed to meet the following visual quality objectives:

Type of Site	VQO
Minimally Developed	Partial Retention
Highly Developed	Retention
Rifle Ranges	Modification
Other Specialized	Retention

Cultural Resources

12-3 Where appropriate, cultural resources present in the site are developed and interpreted for the visitor's education and enjoyment consistent with *The Secretary of Interior's Standards of Archaeology and Historic Preservation.*

Facilities

12-4. The developed recreation area and its facilities are maintained to a high degree and in a timely manner Sites and facilities are rehabilitated or replaced according to need and funding.

12-5. Annual (or more frequent) safety inspections are performed at all developed sites.

12-6. Any problems related to the health and safety of the visitor are immediately corrected.

12-7. Sites or portions of sites are seasonally closed based on demand and cost efficiency.

12-8. Specific procedures for vegetation management in recreation sites are established and included in the district operation and maintenance plans. These procedures include timing of treatments, target and non-target vegetation, coordination with visitor use, and monitoring requirements to ensure visitor safety and enjoyment.

12-9. Facilities are provided to increase the level of amenities provided for the developed recreation visitor's comfort and convenience where there is a bona fide need

Fire

12-10. The suppression response is control for all intensity levels.

Integrated Pest Management/ Damaged Trees

12-11. Suppression of forest insect and disease infestations is considered to prevent tree mortality and to reduce hazards and nuisance to visitors and protect the value of the recreation investment.

a Potential insect and disease problems are considered when planning new recreation facilities.

b. Vegetation management plans, emphasizing damage prevention practices, are prepared for all recreation areas.

c. Hazard tree evaluations are conducted periodically and appropriate suppression steps are undertaken to minimize hazards.

d. Trees that are suspect hazard trees are recorded when identified. Those representing imminent threat of falling are removed as soon as possible or the area affected by the tree is closed to public use until the tree is removed.

Minerals

12-12. Exploration actions involving substantial activities are restricted to periods that will not interfere with Forest visitors

12-13 "No surface occupancy" stipulations are applied to any oil and gas leases

12-14. Other leasable and common variety minerals are not available.

Recreation

12-15. Management activities on minimally developed sites are compatible with the roaded natural ROS class. Management activities on highly developed sites are compatible with the rural ROS class. Management activities on the specialized developed sites are compatible with the ROS class of surrounding management areas.

12-16. Visitor use is monitored for site deterioration and safety problems; use is regulated to prevent or correct as needed.

12-17. Interpretive facilities and programs are encouraged.

Roads

12-18. Traffic Service Level A, B, or C roads are constructed to provide visitor access.

12-19. Motor vehicles are allowed in designated areas only.

Vegetation

12-20. Salvage of dead or dying trees for safety or for scenic rehabilitation can occur using ground-based systems.

Water

12-21. The quality of water for drinking and swimming is monitored on a regular recurring basis for the safety of visitors.

Wildlife

12-22. Watchable wildlife species habitat enhancement is permissible and encouraged.

12-23. Habitat improvements are made in a manner complementary to the developed recreation site. Improvements appear natural and remain subordinate to the area landscape.

MANAGEMENT AREA 13 Dispersed Recreation Areas

This 42,000-acre management area contains lands that receive heavy dispersed recreation use In some cases, the lands surround and complement developed recreation areas identified in Management Area 12. the lands are managed to provide a variety of dispersed recreation opportunities and experiences, to enhance and interpret unique natural resources, and to provide the facilities necessary to prevent degradation of the natural and aesthetic resources of the area.

Most of the lands are classified as unsuitable for timber production. Shaws Fork, North River, and Hidden Valley include lands that are suitable for timber production using uneven-aged management systems.

The smaller areas typically feature a significant scenic or recreational resource such as a waterfall or river and are used heavily by hunters and anglers. The larger areas typically have well-developed trail or road systems for activities such as hunting, fishing, horseback riding, hiking, and mountain bike riding. See Table 3-10.

Table 3-10.
Dispersed Recreation Areas by Ranger District

Ranger District	Area	Thousands of Acres (Approximate Size)
Deerfield	Shaws Fork	250
Dry River	Brandywine*	1090
	Hone Quarry*	660
	North River*	10,860
James River	Longdale*	435
	Children's Forest*	245
	Oliver Mountain	7,940
Lee	Trout Pond*	1,040
	Hazard Mill*	360
	Elizabeth Furnace*	2,930

Table 3-10. (Continued)
Dispersed Recreation Areas by Ranger District

Ranger District	Area	Thousands of Acres (Approximate Size)
Pedlar	Va. Wildlife Center	385
	Sherando*	3,715
	Pedlar River	690
	Crabtree Meadows*	1,250
	Shoe Creek	1,255
Warm Springs	Walton Tract	950
	Hidden Valley*	3,445
	Lake Moomaw*	4,325
	TOTAL	41,825

*Dispersed recreation areas surrounding or adjacent to developed recreation areas (Management Area 12).

The Desired Future

Lands in this management area provide a variety of dispersed recreation opportunities and experiences to enhance and interpret the resources of the area--natural, cultural, and aesthetic; to develop and administer a non-motorized trail system that supports demand; and to provide the facilities necessary to prevent degradation of the resources and to direct use of the area

There is a continuous cover of hardwoods over most MA 13 lands. However, there are occassional small openings created for wildlife habitat or basic facilities for visitor use and resource protection. Vegetation manipulation may also occur to the extent needed to provide safety for visitors or scenic rehabilitation and enhancement.

Motorized use is by licensed vehicles only and occurs only on open roads in and adjacent to MA 13 lands. Cross country travel by any motorized vehicle does not occur.

Each of the listed areas features many diverse non-motorized recreation opportunities. Motorized staging areas for these activities frequently occur at adjacent developed recreation sites in Management Area 12 or at sites managed as areas of concentrated use. The latter serve as motorized access points for non-motorized activities within the management area itself. Camping, fishing, firewood gathering, and other activities that are often closely associated with vehicle use also occur along open roads in less concentrated densities Self-

guided auto tours providing scenic, interpretive, educational and other pleasurable driving experiences, are available within easy access of populated areas.

Dispersed recreation areas that receive heavy use are managed to protect and preserve the resources of the areas. Site controls and facilities such as delineated parking lots, vault toilets, bulletin boards, user constructed fire rings, and hardened areas for tent use are used to provide some convenience to users and limit the spread of unacceptable impacts on the resources. Forest Supervisor's Orders may be used to implement necessary restrictions for resource protection.

The management area provides a variety of land and water-based, non-motorized dispersed recreation opportunities including but not limited to hiking, backpacking, bicycling, horseback riding, hunting, canoeing, rafting, and fishing. Lands in this management area are capable of handling a large number of users at any given time. Social interaction with individuals and groups is the normal situation. However, with the large size of some areas, there are many opportunities for solitude and challenge, remote and away from most evidence of man.

Interior access away from roads is by Forest Development trail on foot, horseback or bicycle. Many of these trails are loops for day hikes and backpacking

Standards

Adherence to the following standards is required when implementing the Revised Plan on Management Area 13 lands. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

13-1. The area is managed to meet a visual quality objective of retention in foregrounds from sensitive travelways and viewing points; the visual quality objective is partial retention elsewhere.

Cultural Resources

13-2. Where appropriate, cultural resources present in the site are developed and interpreted for the user's education and enjoyment.

Fire

13-3. The suppression response is control for all intensity levels in situations where facilities are at risk.

13-4. Prescribed fire may be used for understory maintenance, wildlife habitat improvement, and to enhance the recreation experience.

Fisheries

13-5 Riparian and fisheries direction is described in Management Area 18

Integrated Pest Management

13-6. Suppression of gypsy moth populations is considered to prevent tree mortality and reduce hazards to visitors.

Minerals

13-7. Exploration actions involving substantial activity, such as geophysical surveys, are confined to periods that do not interfere with Forest visitors.

13-8. The area is available for oil and gas leasing with the following stipulations; no surface occupancy is permitted in areas less than 300 acres; in areas more than 300 acres, surface occupancy is highly restricted by using controlled surface use stipulations.

13-9. Other leasable and common variety minerals are available on a case-by-case basis

Recreation

13-10 Lands managed for dispersed recreation opportunities are managed under four recreation opportunity classes. Lands inventoried as roaded natural remain roaded natural Lands inventoried as semi-primitive motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 1) or semi-primitive motorized (subclass 2). Lands inventoried as semi-primitive non-motorized remain semi-primitive non-motorized. See the recreation opportunity map accompanying the Revised Plan.

13-11. New trail systems may be added and existing systems expanded to meet the needs of the visiting public.

13-12. Sanitation facilities are provided where sanitation problems are anticipated or exist.

13-13. Identification signs, bulletin boards, maps, and brochures are installed as needed to support use and provide timely information to the user.

13-14. Existing capital investments and improvements are maintained.

13-15 Campsites and other areas of concentrated use are managed for a low level of change in natural conditions.

13-16. Overused sites are rehabilitated and temporary or permanent site closure is considered when other management techniques are not successful.

Roads

13-17. Roads to access recreation facilities are constructed to the standard necessary to support the level and type of use occurring.

13-18. Construction of new roads is minimized and new roads outside of developed areas are constructed to TSL D.

13-19. Motorized public access is restricted to open system roads.

Soil and Water

13-20 Water quality is maintained at existing or higher levels Erosion from either natural causes or human use that is contributing to degradation of water quality is controlled at acceptable levels.

Timber

13-21. On lands unsuitable for timber production, dead trees may be salvaged or cut for firewood. Live or damaged trees and shrubs may be cut and removed for the safety of visitors or for scenic rehabilitation.

13-22. On lands suitable for timber production, large contiguous areas with level terrain -- as shown on the special features map -- are classified as lands suitable for timber production. Here, uneven-aged management using group selection and individual tree selection cutting methods are used.

13-23. Ten-year to 15-year cutting cycles are used for uneven-aged silvicultural systems.

13-24. Intermediate cuttings such as improvement cutting, salvage cutting, and sanitation cutting are permitted as long as progression is maintained toward development of the uneven-aged character of stands.

Wildlife

13-25. Existing wildlife habitat improvements may be maintained. Additional improvements are permitted if they contribute to achievement of the desired future for the management area.

MANAGEMENT AREA 14
Remote Habitat For Wildlife

This 133,000-acre management area contains portions of the Forest that are managed to maintain or enhance habitats for wildlife species that favor a mature forest environment that provides a continuous supply of hard and soft mast; large high value timber products; areas of dense vegetation cover; and freedom from continued disturbance. Generally, this management area is composed of contiguous terrain or is adjacent to other remote areas such as Management Area 9. Examples of species that may commonly inhabit the area are black bear, worm-eating warbler, pileated woodpecker, common raven, and bobcat.

The Desired Future

A large remote mountainous area of contiguous forest with boulders, out crops, ledges and cliffs. Some thickets of mountain laurel and rhododendron and scattered small forest openings are present. Blueberry, blackberry, and other fruit/nut bearing species are common in forest openings and in the mid-story. The overstory consists of large, older trees of several species including oaks (bear, red and white), yellow pines (table mountain, pitch and short leaf) and hickories. Vehicular access to the area is limited because of few open roads. Common wildlife species inhabiting the area are black bear, worm eating warbler, pileated woodpecker, common raven and bobcat

Management with longer rotations (100-120 years) of hardwood and pine stands provide habitat for denning, cavity nesting and hard/soft mass production On unsuitable timber lands old growth characteristics are developing. As a result of prescribed fire, this area also has openings and dense understory species. Regeneration areas (0-10 age class) up to 25 acres in size provide dense thickets of escape cover for various wildlife species in areas classified as suitable for timber production.

Motorized public vehicle access is restricted, thus providing suitable conditions for disturbance sensitive species, such as black bear. In addition, timber activities are carefully planned and scheduled to minimize the overall disturbance and still meet the overall desired future condition for the area. Normally, periods between timber sale entry of compartments or groups of compartments, will range from 7-10 years.

Roads that are closed are seeded with a non-invasive grass/forb/legume seed mixture providing food and nesting cover for wildlife.

Non-motorized dispersed recreation, particularly hunting, fishing, wildlife viewing, and hiking are common activities Trail systems may be maintained, upgraded, expanded or reduced depending on demand. Many of these activities

are also linked to adjoining large remote areas such as management area 4, 8, and 9.

Management activities will be evident, particularly in the more accessible parts of the individual management areas. Habitat management activities include, but are not limited to development of water resources, prescribed burning, creation/maintenance of openings, and planting of fruit/berry producing soft mass. Mineral activities may occur.

Standards

Adherence to the following standards is required when implementing the Revised Plan on Management Area 14 lands. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

14-1. The area is managed to meet a visual quality objective of partial retention.

Integrated Pest Management

14-2. Control of insect and disease outbreaks may be considered in support of management objectives.

Minerals

14-3. Management Area 14 is available for oil and gas leasing with timing or controlled use stipulations.

14-4. Other leasable minerals and common variety minerals are generally restricted but can be available on a case-by-case basis. Availability depends on the nature and degree of disturbance planned and the significance of the mineral.

Recreation

14-5. Remote habitat areas are managed under two recreation opportunity classes. Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized or semi-primitive non-motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 2). See the recreation opportunity map accompanying the Revised Plan.

14-6. Public motorized use is permitted on open system roads.

Roads

14-7. The Forest objective is to limit open interior road densities to no more than one-quarter mile of open road per 1,000 acres. In cases where interior open road density exceeds one-quarter mile of open road per 1,000 acres, Forest strives to reduce the open interior road densities to the desired standard. Road to area ratios are determined on acres and miles of individual management areas.

14-8. TSL D roads may be constructed in conjunction with resource management activities. They are available for foot travel, but are closed to all vehicles except for administrative use.

Wildlife

14-9 Treatments such as prescribed burning or adding grape arbors may be practiced to increase herbaceous vegetation, browse, berry production, and to rejuvenate bear oak

14-10. Desired permanent openings should range from between one percent and five percent of the land area, depending on surrounding habitat conditions.

14-11 Permanent wildlife openings are periodically maintained by mowing, burning, or selective herbicide treatment.

14-12. Grape arbors, old home sites (open areas, orchards), spring seeps, and land form features that create unusual habitats are managed as key wildlife areas

14-13. Up to four water sources per square mile may be developed if free-flowing water is not present Springs and seeps will not be altered.

Timber

14-14 No artificial conversion of hardwood or hardwood-pine forest types to pine or pine-hardwood forest types is permitted

14-15 Grapevine eradication is not permitted.

14-16 Salvage of dead or dying trees can occur using existing or new roads to achieve wildlife habitat objectives or to provide scenic rehabilitation using ground-based or helicopter logging methods. The primary wildlife habitat objective during salvage operations is the establishment of hard mast species (oak and hickory).

Standards on Unsuitable Land

In addition to standards that apply to all Management Area 14 lands, the following apply to MA 14 lands that are classified as unsuitable for timber production.

Timber and Other Vegetation

14-17. The area is classified unsuitable for timber production. However, timber harvests may take place if the harvests achieve wildlife habitat objectives.

Fire

14-18 On lands classified as unsuitable for timber production, prescribed fire is permitted outside the parameters set by the common prescribed burning standards if needed to meet objectives for habitat management and species maintenance On suitable lands, refer to the common standards for prescribed fire

Standards on Suitable Land

In addition to standards that apply to all Management Area 14 lands, the following apply to MA 14 lands that are classified as suitable for timber production.

Fire

14-19. Prescribed burning is allowed only within parameters identified in common standards for prescribed fire.

Timber

14-20. Even-aged regeneration harvest methods are used to meet wildlife habitat requirements. Site-specific analysis determines which cutting method is used.

14-21. The Forest strives to attain an overall average rotation of even-aged stands of 130+ years Regeneration harvest levels should not exceed the maximum of eight percent of the land base in adjoining compartments within the management area. Regeneration cuts should also be well-disbursed throughout the management area. Desired rotation ages for even-aged systems vary in the following ranges.

Upland Hardwoods*	120 to 180	(scarlet oak 70+)
Cove Hardwoods	120 to 170	
White Pine	80+	
Yellow Pine	80+	
Virginia Pine	80+	

In stands where the scarlet oak component exceeds 50 percent of the basal area, the rotation age can be reduced to 70 years.

14-22. Regeneration openings can range in size up to twenty-five acres, usually averaging around 20 acres.

14-23. The pine component of pine-hardwood types can be maintained in stands regenerated naturally

14-24. Follow Region 8 Supplement 36 (Forest Service Manual 2631) direction for retention of snag and den tree clumps.

14-25. Soft mast species, such as dogwood and serviceberry, over two inches DBH are retained in site preparation at a rate of approximately 70 stems per acre (25 x 25 foot spacing), where available. Smaller stems will not be cut unless their abundance inhibits regeneration of the stand.

MANAGEMENT AREA 15 Mosaics of Wildlife Habitat

This 331,000-acre management area contains portions of the Forest that are managed to maintain or enhance habitat for wildlife favoring a mature forest environment with both temporary and permanent clearings, and freedom from disturbance during nesting, brood-rearing seasons. Vegetation characteristics and human activities are managed to provide high quality habitat for these species and high quality forest products to enable efficient vegetation manipulation through commercial timber sales on lands classified suitable for timber management. Development of quality habitat and control of motorized access receive the highest considerations in relation to associated resources. Species benefitting from this management area include, but are not limited to, wild turkey, ovenbird, gray squirrel, raccoon, and great horned owl.

The Desired Future

The area is managed to optimize hard and soft mast production and to provide a dispersed system of permanent forest openings Open, park like understories are created and maintained to promote moderate herbaceous undergrowth. Forest openings and other suitable areas are managed to provide moderate herbaceous ground covers and abundant insect populations. Vegetation in this management area consists of a mosaic of hardwood and pine stands with varying ages that provide habitat for a variety of wildlife species preferring habitat ranging from permanent forest openings to hardwoods of mast-bearing age. A sustained yield forest of balanced age classes with a minimum of 60 percent of the stands in mast bearing age is considered desirable.

The transportation system is managed to minimize open road densities and impacts thereby providing for a great degree of isolation from motorized intrusion during wildlife reproductive seasons. Frequency of entry should be kept to a minimum. Districts will strive to keep periods of entry to 7 to 10 years. This will ensure minimal overall disturbance while achieving desired vegetation conditions.

Lands both suitable and unsuitable for timber production are located in this area. A variety of management activities occurs to achieve the desired future conditions.

The even-aged management is emphasized to maintain oak regeneration, to create open understory conditions, as well as provide stand diversity throughout the management area. Long narrow cuts with an undulating perimeter are preferred. Even-aged harvest methods with 120 - 180 percent rotations are used to provide mosaics of older and younger trees, large dens and continuing supplies of hard and soft mast. Timber harvest operations are dispersed throughout the area to enhance wildlife habitat suitability; efforts are made to avoid placing new regeneration areas adjacent to recent regeneration areas.

Strategically located forest openings or open stands are developed and maintained in such a manner as to promote moderate growths of grasses, forbs, and legumes This type habitat is very desirable for wildlife species associated with this management area

Habitat management activities to facilitate desired future conditions include, but are not limited to, the development of water sources in areas where free-flowing water is lacking, controlled burning, timber harvests, and preparation and maintenance of temporary and permanent openings

Motorized vehicle access and management activities are limited in order to provide freedom from continual disturbance to species such as the wild turkey Some roads may be seasonally closed to vehicular traffic (April through August) to protect physical and biological resources and wildlife habitat Closed roads are seeded with non-invasive grass/forb/legume/seed mixtures that have known value to wildlife.

Non-motorized dispersed recreational opportunities, particularly hunting, fishing, wildlife viewing, and hiking predominate Trail systems may be maintained, upgraded, expanded, or reduced depending on demand.

Minerals activities may occur. Maintenance and restoration of minerals developments provide wildlife habitat

Standards

Adherence to the following standards is required when implementing the Revised Plan on Management Area 15 lands. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

15-1. The area is managed to meet a visual quality objective of partial retention.

Integrated Pest Management

15-2. Control of insect and disease outbreaks may be considered to meet the management objectives of this management area.

Minerals

15-3 Area is available for oil and gas leasing, other leasable minerals and common variety minerals Timing stipulations may be used on a case-by-case basis.

Recreation

15-4 These wildlife habitat management areas are managed under three recreation opportunity classes Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 1) Lands inventoried as semi-primitive non-motorized adopt a recreation opportunity class of

semi-primitive motorized (subclass 2). See the recreation opportunity map accompanying the Revised Plan.

Roads

15-5. The Forest objective is to limit open interior road densities to no more than one mile of open road per 1,000 acres. In cases where open road density exceeds one mile of open interior road per 1,000 acres, Forest officers strive to reduce the open road densities to the desired standard Road to area ratio are based on acreage of the individual management area.

15-6. Salvage of dead or dying trees can occur from existing, or new roads, to achieve wildlife habitat objectives, safety, provide scenic rehabilitation or to capture value of deteriorating timber using ground-based or helicopter logging methods. Perpetuating the establishment of hard mast species (oak and hickories) is the primary wildlife habitat objective for salvage in these management areas.

Roads are designed to the lowest standard necessary to meet management area objectives (either TSL C or D).

Wildlife

15-7. Public motorized travel may be seasonally allowed (September through March).

15-8 Strive to maintain 5 percent of the area should be maintained in grass/herbaceous openings for wildlife that are well-dispersed throughout the management area

a. Permanent wildlife openings are periodically maintained by mowing, burning, or selective herbicide treatment.

b. Savannahs, grape arbors, old home sites (open areas, orchards), spring seeps, and land form features that create unusual habitats are managed as key wildlife areas.

15-9. Up to four water sources per square mile may be developed if free-flowing water is not present

Standards on Unsuitable Land

In addition to standards that apply to all Management Area 15 lands, the following apply to MA 15 lands that are classified as unsuitable for timber production.

Fire

15-10 On unsuitable lands fire is permitted outside parameters established for common prescribed burning standard to meet objectives for habitat man-

agement and species maintenance on suitable lands refer to common standard for prescribed fire.

Timber and Other Vegetation

15-11. On areas is unsuitable for timber production, harvesting may be used where such practices result in achieving specific wildlife habitat objectives

Standards Uneven-aged Mgmt.

In addition to standards that apply to all Management Area 15 lands, the following apply to MA 15 lands that are classified as suitable for timber production where uneven-aged regeneration methods are used in meeting wildlife habitat objectives

Timber

15-12. Uneven-aged management using group selection and individual tree selection harvest methods may occur in two areas as shown on the specific features map

15-13 Ten-year to 15-year cutting cycles are used for uneven-aged silvicultural systems.

15-14. Intermediate cuttings -- such as improvement, salvage, and sanitation cuttings -- will occur as long as progression toward the uneven-age character of the stand is maintained

Standards Even-aged Mgmt.

In addition to standards that apply to all Management Area 15 lands, the following apply to MA 15 lands that are classified as suitable for timber production where even-aged timber cutting methods are used in meeting wildlife habitat objectives.

Fire

15-15. Prescribed burning is allowed only with parameters identified in common standards for prescribed fire.

Timber

15-16 On areas suitable for timber production, even-aged regeneration harvest methods are used to meet wildlife habitat objectives The decision on any specific timber harvest method is based on site-specific analysis

15-17. The Forest strives to attain an overall average rotation of even-aged stands of 120+ years Timber harvest levels should not exceed the maximum of 10 percent of the land base in any given compartment or groups of compartments and should be well dispersed throughout the management area Rotation ages for even-aged systems are varied between the following range·

Upland hardwoods*	120 to 180
Cove hardwoods	120 to 170
White pine	80+
Yellow pine	80+
Virginia pine	80+

*Stands where the scarlet oak component exceeds 50 percent of the basal area, the rotation can be reduced to 70 years.

15-18. No artificial conversion of hardwood or hardwood-pine forest types to pine or pine-hardwood forest types is allowed.

15-19. The average size of openings is approximately 20 acres with a maximum of 25 acres.

15-20. The pine component of pine-hardwood types can be maintained in the regenerated stand by natural regeneration

15-21. Grapevine eradication is not allowed.

15-22. Follow Region 8 Supplement 36 (Forest Service Manual 2631 - 4-80) direction for retention of snag and den tree clumps.

15-23. Soft mast species, such as dogwood and serviceberry, over two inches DBH are retained in site preparation at a rate of approximately 70 stems per acre (25 x 25 foot spacing), where available. Smaller stems will not be cut unless their abundance inhibits regeneration of the stand.

MANAGEMENT AREA 16 Early Successional Forested Habitats for Wildlife

This 39,000-acre management area contains portions of the Forest that are managed to maintain or enhance habitat for wildlife species that prefer early forest successional habitats with dispersed permanent herbaceous openings. This area is characterized by a mosaic of habitat types ranging from mature stands to early successional habitat Species benefitting from this management include, but are not limited to, the white-tailed deer, ruffed grouse, common flicker, prairie warbler, yellow-breasted chat, and mourning warbler.

This management area contains both land suitable and land unsuitable for timber production. A variety of management activities occur to achieve the desired future conditions.

The Desired Future

Lands in this management area provide high quality, early successional wildlife habitat intermingled with areas of mast-bearing trees and permanent herbaceous openings Wildlife species include, but are not limited to, the ruffed grouse, common flicker, prairie warbler, and white-tailed deer.

Dense, 5 to 15-year-old forests exist in places with the number of trees 1 to 4 inches DBH exceeding 10,000 stems per acre. These dense patches are small (5 to 20 acres).

Numerous fruit, nut, or acorn-bearing shrubs and trees exist such as dogwood, serviceberry, grape, blackberry, hickory, oak, and apple.

Ruffed grouse, common flicker and the prairie warbler nest and rear their young from April through June with no disturbances by humans. Trees with cavities are plentiful. Water is nearby. Thermal cover protects wildlife during the cold months.

Evidence of man's activities is seen by people walking the closed roads and trails, as management provides wildlife habitat. This evidence doesn't dominate the landscape.

A variety of habitats is provided that covers the range needed by grouse during their life cycle. Spring habitat essential for breeding or drumming cover and nesting cover exists. Summer habitat provides brood range and fall/winter habitat affords protection from inclement weather and predators and provides food sources. These habitat types occur in approximately equal amounts and are well dispersed throughout the management area

Other habitat management activities to facilitate desired future conditions include, but are not limited to, development of water sources in areas where

free-flowing water is lacking, prescribed burning, timber harvesting and creation/maintenance of temporary and permanent openings. Maintenance and restoration of minerals developments provide wildlife habitat.

Both motorized and non-motorized recreation opportunities are provided. A variety of recreational activities are available including quality hunting, fishing, wildlife viewing, berry picking, hiking, and driving for pleasure. Trail systems may be maintained, upgraded, expanded, or reduced depending on demand.

Closed roads are seeded with non-invasive grass/forb/legume seed mixtures with known value to wildlife.

Standards

Adherence to the following standards is required when implementing the Revised Plan on Management Area 16 lands. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

16-1. The area is managed to meet a visual quality objective of partial retention.

Fire

16-2. Prescribed fire is allowed only within parameters identified for prescribed fire in common standards.

16-3. Prescribed burning should strive to create and maintain moderate herbaceous ground cover and abundant insect populations in savannah type habitats or enhance fruit and/or nut production for species such as blackberry or bear oak. Priority should be given, but is not limited to, burning areas with slight slopes (<15 percent), moderate to high site indexes (60+), and low basal area (< or equal to 70).

Minerals

16-4. The area is available for oil and gas leasing and development with standard stipulations. Other leasable minerals and common variety minerals are also available.

Recreation

16-5 Lands managed for early successional habitat area are managed under two recreation opportunity classes. Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized or semi-primitive non-motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 1). See the recreation opportunity map accompanying the Revised Plan.

16-6. Recreational activities may be limited in areas that conflict with wildlife nesting and cover requirements.

Roads

16-7. Roads are designed to the lowest standard necessary to meet management area objectives (either TSL C or D).

Timber

16-8. Even-aged regeneration harvest methods are used to meet the DFC for this management area.

16-9. Salvage of dead or dying trees can occur from existing, or new roads, to achieve wildlife habitat objectives, safety, provide scenic rehabilitation or to capture value of deteriorating timber using ground-based or helicopter logging methods. Perpetuating the establishment of hard mast species (oak and hickories) is the primary wildlife habitat objective for salvage in these management areas

16-10 Rotation ages for even-aged management vary between the following range

Upland hardwoods	80 to 100 (scarlet oak 60 to 70)
Cove hardwoods	70 to 100
White pine	60 to 80
Yellow pine	60 to 80
Virginia pine	50 to 70

16-11 Regeneration cuts average approximately 8-10 acres in size, and do not exceed 20 acres.

16-12 Savannahs, grape arbors, old home sites (open areas, orchards), spring seeps, and land form features that create unusual habitats are managed as key wildlife areas.

16-13. Follow Region 8 Supplement 36 (Forest Service Manual 2631 - 4-80) direction for retention of snag and den tree clumps.

16-14. Soft mast species, such as dogwood and serviceberry, over two inches DBH are retained in site preparation at a rate of approximately 70 stems per acre (25 x 25 foot spacing), where available Smaller stems will not be cut unless their abundance inhibits regeneration of the stand

Wildlife

16-15. Up to four water sources per square mile may be developed if free-flowing water is not present.

16-16. The Forest strives to maintain at least 5 percent of the area in grassy or herbaceous openings.

16-17. Existing wildlife developments (permanent wildlife openings, waterholes, etc.) are maintained periodically.

16-18 Permanent wildlife clearings are periodically maintained by mechanical, chemical or burning.

16-19. Trees and shrubs with a high value for wildlife habitat are encouraged and maintained by planting, releasing, pruning, fertilizing and grafting. Non-invasive tree and shrub species are used whenever practical.

16-20. Mast producing species may be planted when it is determined that natural regeneration will not provide adequate future mast sources. Mast producing species may be planted in permanent wildlife clearings to increase mast diversity. Non-invasive tree and shrub species are used whenever practical

16-21. If natural drumming logs are not present at the desired rate of one per acre, after timber harvests are complete, strive to create potential drumming logs at this desired rate Considerations for new drumming logs should include:

a. Distribution - logs should be evenly distributed throughout the harvest unit at a rate of 1 per acre

b. Location - logs should be located on relatively level ground since grouse require a relatively flat platform on which to display. On slopes (<20 percent) fell logs across the slope instead of downslope to create a level surface.

c. Size and shape - potential drumming logs should be a minimum of 12 inches or more in diameter and at least 12 feet in length. Long lasting species such as, locust, oak, hemlock are preferred

16-22. Small (1/4 to 1/2 acre) plantings of native conifer species may be created for thermal cover in winter

16-23. Strive to maintain 10 percent of the management area in the 1-10 year class which can occur as even-aged regeneration cut areas.

16-24. At least 30 percent of the management area should be maintained in the 70+ year age class.

MANAGEMENT AREA 17
Timber Production

This 91,000-acre management area contains portions of the Forest that are more intensively managed for timber using even-aged and uneven-aged timber cutting methods. Almost two-thirds of the land in this management area is classified suitable for timber production This land provides a range of timber products in as efficient and economical a manner as is consistent with multiple-use management. Decisions on specific harvest methods are based on site-specific project-level analysis.

Management Area 17 land that is classified as unsuitable for timber production consists of interspersed stands of low site index and steep or rocky terrain. Road construction may occur on land classified as unsuitable in the process of providing access to adjacent suitable lands. Some timber may be salvaged from these unsuitable lands along existing or newly constructed roads when it helps achieve the desired future of the management area

Objectives for land in this management area vary slightly based on the productivity of the land On lands with a site index of 70 or higher for oak or equivalent, timber harvesting methods are applied that best provide high quality, valuable sawtimber that is most in demand in the marketplace and are applied on lands capable of supporting harvest, regeneration, and growth of those species. Other forest products such as pulpwood, fuelwood, and low value sawtimber are provided incidental growing & production of high quality, valuable sawtimber Opportunities are provided for firewood gathering

On lands with a site index 50 or 60 equivalent for oak, regeneration harvest methods provide a mix of forest products which are cut, regenerated, and grown on lands classified as suitable for timber production The particular mix of products is governed by the silvicultural needs of forest stands Products are sawtimber, pulpwood, fuelwood, and posts. Timber objectives are not concentrated on any single aspect of the available market, but rather the mix of forest products offered fluctuates depending on silvicultural needs and practices applied

The Desired Future

The desired future condition is a balanced age-class distribution of forest stands containing native tree species capable of sustained, high value timber production. These forested communities contain a wide diversity of tree species that receive periodic vegetation manipulation through commercial timber sales to initiate regeneration processes and/or maintain tree growth.

The forested communities are mostly associations of deciduous upland and cove hardwood species White pine occurs as a minor component in natural hardwood stands and as a partial component in hardwood stands were white

pine planting has occurred. Small stringers of southern yellow pine communities occur on very dry, exposed sites.

Where all even-aged harvest cutting methods are used, site-specific activities occur at the stand level. Stand sizes range from 10 acres to 40 acres each. Management activities in the stands are spatially distributed and timed to minimize adverse effects on wildlife, soil, water, recreation, and visual values in a cost efficient manner.

Where uneven-aged cutting methods are used, forest communities of large, contiguous blocks of gently sloping, roaded land are best suited to cost efficient management. Most likely, there is a gradual shift from intolerant to tolerant tree species within these forest communities.

Forest product commodity outputs contribute to the social and economic well-being of the people living in the area and help maintain a way of life long associated with those living within the area. Timber harvesting is apparent and uses sale layout and design to accommodate visual considerations through innovative harvesting techniques and sale layout.

Growth capability of suitable land is utilized at a high level, but well within the biological capabilities for sustained-yield production. Area regulation, or where identified, volume regulation, is eventually achieved with most of the area having stands with ages within prescribed rotation lengths.

Indigenous forest pests are kept within acceptable levels utilizing Integrated Forest Pest Management techniques. The gypsy moth is considered an exotic forest pest Impacts on vegetation by Forest pests are minimized through judicious use of biological controls, silvicultural techniques, and timely salvage of damaged trees.

Motorized recreation opportunities for OHV and sedan travel are provided along arterial, collector, and local roads and trails Existing trails are maintained. A variety of motorized and non-motorized recreation activities occur including hunting, fishing, hiking, bicycling, berry picking, dispersed camping, driving for pleasure, and viewing scenery and wildlife Management activities may or may not be visually evident Mineral activities may occur in a few locations. Maintenance and restoration of minerals developments provide for wildlife habitat.

Standards

Adherence to the following standards is required when implementing the Revised Plan on Management Area 17 lands. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

17-1. The area is managed to meet the visual quality objective of partial retention in the middleground as viewed from the Appalachian National Scenic Trail; of retention in the foreground of Jackson River; and modification elsewhere.

Fire

17-2. Prescribed burning would be utilized to meet specific resource needs within parameters identified in the *COMMON STANDARDS* for prescribed fire.

Integrated Pest Management

17-3. Control of insect and disease outbreaks may be considered to meet the objectives of this management area.

Minerals

17-4. The area is available for oil and gas leasing and development with standard stipulations. Other leasable minerals and common variety minerals are also available.

Recreation

17-5 Lands managed for timber production are managed under two recreation opportunity classes. All lands adopt a roaded modified recreation opportunity class except those viewed as middleground from the Appalachian National Scenic Trail which have an adopted roaded natural recreation opportunity class. See the recreation opportunity map accompanying the Revised Plan

Roads

17-6. Roads constructed for timber harvesting may either be left open, closed, or closed seasonally, but in a manner that protects soil and water or meets the management objectives of the area.

17-7 Roads are designed to the lowest standard necessary to remove the timber. Connecting routes between timber roads may be designed and constructed to jointly meet needs of OHV and timber forwarding equipment.

17-8. Road locations and densities should meet timber access needs and provide opportunities for OHV use in some areas.

Timber

17-9. On lands with a site index of 70 or higher for oak or equivalent, the area is managed to provide the following species as high quality sawtimber: northern red oak, black oak, white oak, chestnut oak, scarlet oak, yellow poplar, basswood, cucumber, maple, ash, white pine.

17-10 Lands with the following site indices are managed for quality sawtimber:

Upland hardwoods	70+ oak
Cove hardwoods	70+ oak, 90+ yellow poplar
White pine	60+ white pine

17-11. On lands managed for quality sawtimber, diameter objectives are:

Upland hardwoods	16"	80 years
Cove hardwoods	18"	80 years
White pine	20"	80 years

17-12. Rotation ages for even-aged systems vary between the following ranges:

Upland hardwoods	80 to 120
Cove hardwoods	70 to 90
White pine	60 to 80

17-13. The Forest strives for the following percent ranges of suitable forest land in the 0- to 10-year age classes where even-aged systems are applied.

Upland hardwoods	8 to 13
Cove hardwoods	11 to 14
White pine	13 to 25

17-14. Salvage of dead or dying trees can occur from existing or new roads to provide for public safety and maintain forest types that are most threatened by insect or disease attack. These would be oak-hickory forest types. Ground based or helicopter logging methods could be used.

17-15. When performing TSI, thinning or site preparation, grapevine control is only considered in stands with site index of 60 or more. Generally, stands are treated only when grapevines exceed 40 stems per acre or occur in at least 5 percent of tree crowns Any such treatments do not significantly reduce grapevine densities below these levels. Based on site conditions, other considerations include retaining some existing arbors and felling trees of low commercial value to create additional arbors.

Wildlife

17-16. Up to four water sources per square mile may be developed if free flowing water is not present. Springs and seeps will not be altered.

17-17. Up to 5 percent of the area may be provided as temporary grassed openings from seeded skid trails, closed roads, or landings if sufficient openings do not occur as adjacent farmlands or utility rights-of-way. Existing wildlife developments may continue to be maintained.

17-18. Old homesites, open areas, and landform features that provide unusual habitats are managed as key wildlife areas.

MANAGEMENT AREA 18
Riparian Areas (Streams and Lake Shorelines)

Because of the uniqueness of riparian areas and the associated ecological, social, and economic benefits, riparian areas on the Forest are managed as a separate management area to protect and enhance these unique resource values.

Riparian areas are an important component of the Forest ecosystem because of the large number of species of plants and animals they support and the associated ecological, social, and economic benefits. Functioning riparian ecosystems are healthy, diverse, productive and self-sustaining Riparian dependent resources and values are given priority.

Riparian areas have variable widths that are determined by ecologically significant boundaries rather than arbitrary distances On-the-ground conditions determine the width of individual riparian areas Riparian areas consist of aquatic areas, wetlands, and riparian ecosystems associated with ponds, lakes, and perennial streams. The Federal Manual for Identifying and Delineating Jurisdictional Wetlands is used to delineate wetlands, subject to 404 provisions of the Clean Water Act. The extent of riparian ecosystems is determined on-the-ground using features of soil, landform, and vegetation (See Appendix K) No feature is used alone to delineate these ecosystems. Characteristics indicative of these ecosystems are:

1. Soils – dark colored Entisols, Inceptisols and Mollisols;

2. Landform – the floodplain and first terrace;

3 Vegetation – the presence of wetland plants classified as obligates or facultative wetland species as defined by the U.S. Fish & Wildlife Service in the National List of Plant Species that Occur in Wetlands: Northeast (Region 1). (Reed, P.B., Jr. 1988).

This estimated 21,000-acre management area does not include riparian areas where legal or administrative mandates restrict certain activities Areas with mandates include existing wildernesses and roadless areas recommended for wilderness study (**Management Area 8**) and the Little Laurel Research Natural Area (**Management Area 4**). Management direction for the riparian areas in these management areas is contained in the standards for the appropriate management area Management direction for intermittent streams is located under Common Standards.

The Desired Future for All MA 18 Land

Water quality meets or exceeds state standards, for aquatic biodiversity and beneficial downstream uses.

The desired aquatic habitats maintain aquatic biodiversity and contain water quality, food and necessary habitat for all life stages of native fish and economically important non-native species. There are sufficient amounts and sizes of woody debris that provide self-sustaining habitat complexity and diversity. Pool habitats occupy approximately 35 percent to 65 percent of available habitat. Streams supporting cold water assemblages of fish and aquatic macroinvertebrates have 125 to 300 pieces of large woody debris (LWD) per stream mile, a maximum water temperature of 69 degrees fahrenheit, dissolved oxygen values greater than 7.0 ppm, and sedimentation rates that are in equilibrium with the watershed and stabilize or improve the biological condition of the stream (EPA's Rapid Bioassessment Protocol II).

Streams supporting cool or warmwater fish assemblages and aquatic macroinvertebrate communities have 75 to 200 pieces of LWD per stream mile, a water temperature regime within 2 degrees fahrenheit of ambient, dissolved oxygen values greater than 7.0 ppm or saturation values and sedimentation rates that are in equilibrium with the watershed and stabilize or improve the biological condition of the stream (EPA's Rapid Bioassessment Protocol II).

Vegetation (both living and dead) in these systems is taxonomically diverse with both horizontal and vertical structural diversity consisting of distinct vegetation layers from the water surface to the canopy top. A contiguous forested canopy of vegetation comprised of mixed ages is present and sustained through openings created both naturally and artificially. Riparian diversity can be enhanced by habitat differences along the length of the ecosystem. Edges, successional patterns, vertical layering, and unique microhabitat are components of riparian areas that enhance the biological diversity.

The abundance and structural diversity of plant communities in riparian areas provide stable, complex, and self-sustaining habitats for various life stages of wildlife. Riparian areas provide thermal cover, foraging areas, and hiding, resting, breeding and rearing opportunities. Examples of such species include, but are not limited to: wood duck, beaver, river otter, brook trout, sunfish, woodcock, gray squirrel, Louisiana waterthrush and a wide variety of other avian species

Dispersed recreation opportunities, such as hunting, fishing and viewing wildlife, are generally associated with riparian areas. Impacts to riparian areas are possible but are minimized by limiting the size and location of the recreation. Activities are monitored and, where necessary, controlled to minimize impacts on the riparian area.

Because riparian areas are interwoven throughout all other management areas, there is a strong relationship to the desired future condition of adjacent management areas. These relationships are both socially and biologically driven In some of the wildlife emphasis management areas, riparian areas assist in providing food, den trees, and cover. In management areas for developed or dispersed recreation, riparian areas may provide opportunities for recreation and, in some management areas where adjacent stands are managed for timber, they may provide a source of high value wood products and, at the same time, create a small opening to sustain the desired riparian ecosystem.

Natural variation and succession of plant communities occurs. Rehabilitation of past and future impacts (both natural and human-caused) may be necessary to protect valuable resources and to enhance the recovery of riparian form and function Geomorphic and soil bioengineering, vegetation management, and other rehabilitation techniques should follow ecological principles and emphasize the recovery of the diversity and complexity of vegetation

Monitoring is sufficient to detect impacts to riparian function and water quality.

Standards for All MA 18 Lands

Adherence to the following standards is required when implementing the Revised Plan on Management Area 18 lands These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

18-1. The area is managed to meet the visual quality objective of retention.

Facilities

18-2. Proposed facilities are located outside of riparian areas unless no practical alternative exists.

Fisheries

18-3. Streams are managed in a manner that results in sedimentation rates that stabilize or improve the biological condition category of the stream (EPA's Rapid Bioassessment Protocol II) Reference· EPA, Rapid Bioassessment Protocols For Use in Streams and Rivers: Benthic Macroinvertebrates and Fish. EPA/444/4-89-001, May 1989.

18-4. Debris naturally occurring in streams is removed only when degrading fisheries habitat or when unacceptable damage is created to facilities such as bridges and culverts. The need for removal is determined on a case by case basis.

18-5 Stream structure work is conducted to protect or enhance native fisheries resources or streams suitable for managing non-native trout species. Structure work should emphasize natural looking habitat improvement structures Heavy equipment use in the stream is limited to the amount of time absolutely essential for the project.

18-6. Channel stability of perennial streams is protected during management activities.

18-7. Corridors for cable logging in adjacent non-riparian areas cross riparian areas (including wild trout streams) after consultation with the appropriate state and Forest Biologists.

18-8. Full suspension is required when yarding logs across perennial streams using cable logging systems.

18-9. Fish are stocked to meet sports fisheries management objectives as long as viable native fish populations are maintained.

Cold Water Habitat

18-10. Cold water streams are managed in a manner that results in 125 to 300 pieces of large woody debris (LWD) per stream mile.

18-11 Cold water streams are managed in a manner that results in a maximum summer water temperature of 69 degrees fahrenheit or no more than a one degree fahrenheit rise over ambient.

18-12. Cold water streams are managed in a manner that results in dissolved oxygen values greater than 7.0 ppm

18-13. In cold water habitat, activities that adversely affect trout spawning are avoided from October 1 to April 1 in brook trout and brown trout streams and/or March 15 to May 15 in rainbow trout streams. Any necessary in-stream disturbance activities within these time limits must have consultation with state and Forest biologists

18-14. Mitigation for acid deposition is allowed for protection of existing aquatic species or for restoration of lost aquatic species on a site-specific basis.

18-15. Stocking hatchery trout in wild brook trout streams (Class I and Class II in Virginia and streams capable of producing 15 lb./ac. of wild trout in West Virginia) is discouraged. The Forest Service will cooperate with the State Agencies.

18-16. Impoundments are prohibited on wild trout streams.

Cool Water/Warm Water Habitat

18-17. Streams are managed in a manner that results in 75 to 200 pieces of large woody debris (LWD) per stream mile.

18-18. Streams are managed in a manner that results in a water temperature regime within 2 degrees fahrenheit of ambient

18-19. Streams are managed in a manner that results in dissolved oxygen values greater than 7.0 ppm or saturation levels.

18-20. In cool water/warm water habitats, activities that adversely affect spawning are avoided from April 15 to June 15. Any necessary activities within these time periods must have consultation with state and Forest fisheries biologists

18-21. Impoundments are allowed on a case-by-case site specific evaluation if appropriate certification is obtained from the appropriate Federal and State Agencies. Impoundments are designed to allow complete draining. A downstream catch basin is constructed for fish salvage

18-22. Stream and lake structures, fish attractors, lake fertilization and/or fish feeding are encouraged to increase productivity. Tire reefs are not used in areas where the water level periodically drops and exposes them to view. Fish feeders are placed on lakes out of sight of swim sites and other heavily used developed recreation facilities

Integrated Pest Management

18-23 Control of insect and disease outbreaks may be considered to prevent adverse impacts to the desired future condition of riparian areas.

Minerals

18-24 The area is available for oil and gas leasing. Drilling pads or production facilities are located outside the riparian area with appropriate erosion control measures.

18-25. Other leasable minerals and common variety minerals are generally restricted but can be available on a case-by-case basis. Availability depends on the nature and degree of disturbance planned

Recreation

18-26 The riparian area is managed to provide recreation opportunities compatible with the ROS classification of the adjoining management area(s) provided it is compatible with an assigned VQO of retention.

18-27. Lands within this management area are managed under three recreation opportunity classes. Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 1). Lands inventoried as semi-primitive non-motorized remain semi-primitive non-motorized. See the recreation opportunity map accompanying the Revised Plan.

18-28 Trails and campsites causing unacceptable resource damage are closed and rehabilitated.

18-29 Soils are stabilized on eroded recreational sites through revegetation, traffic control, or closing of site.

18-30. Trails and campsites are located constructed, and maintained so as to cause minimum impacts to stream bank and other riparian values.

18-31. Riparian areas that are located in the foreground zone of the Appalachian National Scenic Trail (**Management Area 6**) are managed to retain their natural condition with minimal human intervention. Management activities are limited and designed to meet site-specific deficiencies in the desired future condition of riparian dependant resources.

Soils

Where soils in riparian areas are disturbed by management activities, revegetation measures begin implementation within 14 days of the start of disturbance. When outside the seeding season, initial treatments may be of a temporary nature, e.g. armoring the exposed area against the impacts of raindrops and surface runoff.

Stream Protection

18-32. Staged revegetation is used in riparian areas on sites where excessive sedimentation is likely to occur. Permanent vegetation is established and maintained on cut and fill slopes unless rock or other conditions will not permit vegetation to grow.

Vegetation Management

18-33. Rehabilitation of past and future impacts (both natural and man caused), with vegetation management is allowed to enhance the recovery of the diversity and complexity of vegetation. Riparian dependent resources and values are given the highest priority.

18-34. Salvage of dead or dying timber can occur in riparian areas as ong as riparian values are protected and the desired future condition is maintained or can be met.

Wildlife

18-35. Management activities are conducted to enhance riparian-dependent species.

The following management area prescriptions sometimes contain different and additional standards depending on which management area prescription is assigned to the riparian area.

MANAGEMENT AREA 18A

Those riparian areas that are adjacent to **Management Areas 4, 6, 9, 10, 12, 20** and unsuitable portions of **Management Areas 7, 11, 13, 14, 15, 16, and 17** are managed to enhance unique resource values Management activities are designed to meet site specific needs in the desired future conditions.

MA 18A Standards

In addition to standards that apply to all MA 18 lands and the applicable Common Standards at the end of this chapter, the following standard applies to land allocated to Management Area 18A.

Timber and Other Vegetation

18-36. These riparian areas are classified as unsuitable for timber production.

MANAGEMENT AREA 18B

Those riparian areas in the Forest that are adjacent to the suitable portions of **Management Area** 7, 11, **13, 14, 15, 16, and 17** are managed toward the desired future conditions while allowing limited harvest of timber products

MA 18B Standards

In addition to standards that apply to all MA 18 lands and the applicable Common Standards at the end of this chapter, the following standards apply to land allocated to Management Area 18B.

Fisheries

18-37. No timber production is programmed in riparian areas along wild trout streams (Class I, II, III, and IV waters in Virginia, and West Virginia streams capable of producing 15 lb/ac of wild trout.)

Timber and Other Vegetation

18-38 The first 66 feet of the riparian area is unsuitable for timber production. The remaining riparian area is classified as suitable for timber production that meets or is capable of meeting the desired future condition of the riparian areas and capable of blending with the desired future condition of adjacent management areas. Vegetation in riparian areas is managed as follows:

a. The first 66 feet of the riparian area from the edge of stream banks is classified as unsuitable for timber production. The highest priority is to manage vegetation to meet the desired future condition of the aquatic resources (fisheries and aquatic dependent animals and plants). Identification of vegetation to treat (overstory and understory) is determined by

site specific analysis Up to 20% of the overstory may be removed along non-native trout streams when adjacent to management areas where timber is suitable and if riparian dependent resources can be maintained.

b. The remaining riparian zone is classified as suitable for timber production and for appropriate treatments that blend with the DFC of adjoining areas. Vegetation is managed in a manner that benefits terrestrial dependent animals and concurrently provides high quality forest products except where aquatic zones such as seeps, depressions, and old channel beds exist. In the latter cases, managing for aquatic dependent resources is the highest priority.

c. In riparian areas less than 66 feet wide, the entire area is classified unsuitable for timber production. Management outside that area follows the applicable streamside management zone standards found in *Common Standards* at the end of this chapter.

18-39. In areas classified suitable for timber production, silviculture harvesting methods other than clearcutting are permitted. The degree of canopy opening allowed and the desired trees and other vegetation retained is determined after site specific analysis.

MANAGEMENT AREA 18C

This management area contains those riparian areas in the Forest that are adjacent to or within a distance of one mile upstream of the following municipal water supplies (Lynchburg Reservoir, Coles Run Reservoir, Mills Run Reservoir, Clifton Forge Reservoir, Skidmore Reservoir, Staunton Reservoir, and Elkhorn Lake). The lands within this management area are classified unsuitable for timber production.

MA 18C Standards

In addition to standards that apply to all MA 18 lands and the applicable Common Standards at the end of this chapter, the following standards apply to land allocated to Management Area 18C.

Recreation

18-40. Recreational opportunities are closely monitored for adverse effects on water quality.

18-41. When causing adverse effects on water quality, camping and/or vehicles are excluded from the Streamside Management Zone.

Timber and Other Vegetation

18-42 These riparian areas are classified as unsuitable for timber production

Lake Shore

18-43. Adjacent to municipal reservoirs, a lakeside management zone shall exist that extends at least 100 feet from the shore for land slopes of 10 percent or less, 150 feet for slopes of 11 percent to 45 percent, and 200 feet for slopes greater than 45 percent.

MANAGEMENT AREA 20
Administration, Utilities, Communications

This 4,000-acre (all non-forest) management area contains the administrative sites, utility corridors, and communication sites on the Forest. The management area objectives, desired future condition, and standards for administrative sites, utility corridors, and communication sites are listed below.

Administrative Sites

The Forest contains eight administrative sites: Warm Springs Office Complex, James River Work Center, Pedlar Work Center, Dry River Work Center, Deerfield Work Center, Lee Work Center, and Lemon Hollow Work Center. The administrative sites are managed to economically serve the needs of district personnel while protecting the capitol investment in these facilities.

The Desired Future

Administrative sites present a pleasant appearance to visitors and staff. Sites are efficient, aesthetically pleasing and accessible to people with disabilities.

Standards

Adherence to the following standards is required when implementing the Revised Plan on Administrative Sites. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

20-1. Administrative sites lie in retention VQO zones. Sites are managed to retain the rural character of the surrounding lands.

Facilities

20-2. OSHA regulations, Health and Safety Code Handbook requirements, and all local, state, and building codes are complied with

20-3. Facilities are maintained to provide safe and efficient operations.

Integrated Pest Management

20-4. Forest insect and disease outbreaks may be controlled to prevent tree mortality and reduce hazards.

20-5. Removal of insect and disease damaged trees in administrative sites is considered when trees pose a safety hazard to the public or improvements.

Minerals

20-6. Administrative sites are available for oil and gas leasing with "No Surface Occupancy" stipulations. They are not available for other leasable minerals and common variety minerals.

Fire

20-7. Fire response is immediate control.

Recreation

20-8. Administrative sites are managed under a rural recreation opportunity class.

Utility Corridors

Utility corridors are the areas requiring at least 50 feet of right-of-way to accommodate a utility. This area includes all major electric and gas transmission as well as the area included in the Federal Energy Regulatory Agency license for the Virginia Power Back Creek Pumped Storage Project. Local energy distribution lines are not included in this management area, but rather are part of the management area in which they are physically located

The Desired Future

Corridors are prime areas for the Forest user to view varieties of wildlife. Corridors are managed to retain naturally occurring vegetation that is allowable within individual operating guidelines Low growing vegetation is favored in electric rights-of-way where the height of the vegetation conforms with safe operating requirements of the utility. Interspersed grass cover will also be found to enhance variety of habitat. Gas lines have established grass cover that aids detection of gas leaks quickly as well as produces multiple resource benefits.

Compatible multiple uses are encouraged. Where possible, existing corridors are expanded as needed rather than creating additional areas.

Standards

Adherence to the following standards is required when implementing the Revised Plan in Utility Corridors. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

20-9. The area is managed to meet a visual quality objective of modification.

20-10. Visual resource management techniques are used to mitigate adverse impacts as described in Agriculture Handbook 478, National Forest Landscape Management, Volume 2, Chapter 2, Utilities

Facilities

20-11. Management plans for utility rights-of-way are prepared in cooperation with the permittee. These plans outline desired methods for maintenance insofar as possible.

20-12. Right-of-way grants for utilities are, to the extent practicable, confined to existing designated corridors. The Forest Supervisor may establish additional designated corridors on a case-by-case basis based on site-specific analysis and disclosure.

20-13. When facilities are requested, the existing corridors are expanded to accommodate proposed uses where possible.

20-14. Requested improvements to public road systems are allowed to increase public safety and reduce environmental impacts within accepted engineering standards.

Fire

20-15. Suppression responses for wildfire are confinement, containment, or control.

20-16. Utility poles, towers and other facilities are protected from prescribed fire.

Integrated Pest Management

20-17. Forest insect and disease outbreaks may be controlled to prevent tree mortality and reduce hazard.

20-18. Ground application of herbicides is permitted in Common Standards 113 through 144 at the end of this chapter.

20-19. Upon approval by the appropriate Forest Officer, aerial herbicide application is allowed to maintain utility transmission lines in rugged, remote, and uninhabited terrain where other methods are impractical. For best control of herbicide placement, only helicopters with microfoil boom, or other similar technology which produce large droplets, may be used. Aerial application use depends on whether the above minimum criteria can be met, as well as environmental and social factors identified in the site-specific analysis. Maximum application rates (pounds/acre) of active ingredient (which do not require additional analysis beyond that already given in the Vegetation Management FEIS) are in Table 2-13.

20-20. Each aerial herbicide application must have an operations plan approved by the Forest's air safety officer who must ensure that: (a) adequate precautions are taken to protect the crew, including equipment certification and hazard identification; (b) areas to be aerially treated are clearly marked; and (c) methods used to avoid buffers and other sensitive areas are safe and effective.

Minerals

20-21. Utility corridors are available for oil and gas leasing with No Surface Occupancy stipulations.

20-22. Utility corridors are not available for other leasable minerals and common variety minerals.

Recreation

20-23. Utility Corridors are managed under a roaded modified recreation opportunity class.

20-24. Public use is allowed as long as it does not constitute a safety hazard or interfere with the permitted use.

20-25. Public off-road vehicle use is prohibited, except at designated crossings.

Soil

20-26. Prompt drainage measures, closures and revegetation is done if mechanical treatments leave insufficient ground cover to control erosion by the end of the spring or fall seeding season which ever comes first after the treatments are completed.

20-27. For corridor maintenance, no mechanical equipment is used for vegetation management where unacceptable soil disturbance would occur.

Water

20-28 No herbicide is aerially applied within 200 horizontal feet, nor ground-applied within 30 horizontal feet, of lakes, wetlands, or perennial or intermittent springs and streams. No herbicide is applied within 100 horizontal feet of any public or domestic water source Selective treatments (which require added site-specific analysis and use of aquatic-labeled herbicides) may occur within these buffers only to prevent significant environmental damage such as noxious weed infestations. Buffers are clearly marked before treatment so applicators can easily see and avoid them

Wildlife

20-29 The Forest works with utility special-use permittees to establish vegetation management objectives (such as wildlife, watershed, recreation, visual quality) for location of new utility lines and maintenance of existing ones. These objectives determine maintenance techniques and strategies.

20-30. Low-growing shrubs and/or grasses are established and maintained in utility corridors (power and gas transmission lines) where wildlife and aesthetic objectives are met

20-31. As much as possible, utility corridors are managed to protect and enhance wildlife habitat.

20-32. Direct wildlife habitat improvements are encouraged.

Communications Sites

The Forest contains 10 communication sites. There are four major sites: Big Mountain, Elliott Knob, Great North Mountain, and Rocky Mountain. There are six secondary sites: Duncan Knob, Narrowback, North Mountain, Reddish Knob, White Grass Knob, and Signal Knob.

Communications sites are managed to minimize the adverse impacts of the sites on other resources. Further requests for communications sites are evaluated on a case-by-case basis.

The Desired Future

Each site is developed and utilized to its greatest potential, thus eliminating or at least reducing the need to develop additional sites on the Forest. Consolidation of site users is occurring, thus reducing number of antennas and structures. Management direction for each site is to eliminate/reduce user signal interference. Use fees are assessed based on fair market value determined either by appraisal or market survey.

Standards

Adherence to the following standards is required when implementing the Revised Plan on Communications Sites. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

20-33. The area is managed to meet a visual quality objective of modification.

20-34. Landscape management methods are used to mitigate adverse impacts.

20-35. The assigned ROS class is compatible with a VQO of modification as shown in FSM 2311.11, Exhibit 1, 6/1/90.

Facilities

20-36. Public use is allowed as long as it does not constitute a safety hazard or interfere with the permitted use.

20-37. Use of existing sites is maximized to minimize the need for additional sites.

20-38. Tower clutter is reduced by utilizing existing and proposed towers to accommodate as many users as possible within technical constraints. When new facilities are constructed on a site, the Forest allows for as much expansion as possible.

20-39. All authorizations comply with requirements of the Radio Quiet Zone.

20-40. Special use permits may be issued on a case-by-case basis when not in conflict with management area objectives and only after other options have been evaluated.

	20-41. Management requirements for permittee access roads are specified in the designated use permit.
Fire	20-42 The suppression response is control.
Integrated Pest Management	20-43. Forest insect and disease outbreaks may be controlled to prevent tree mortality and reduce hazard.
Minerals	20-44 Communications sites are available for oil and gas leasing with "No Surface Occupancy" stipulations.
	20-45. Communications sites are not available for other leasable minerals nor for common variety minerals
Recreation	20-46. Communication sites are managed under a roaded modified recreation opportunity class.
Wildlife	20-47. Activities at high elevation sites are conducted in a manner that insures minimal disturbance to sensitive species.

MANAGEMENT AREA 21
Special Management Areas

This 59,000-acre management area contains four Special Management Areas: Big Schloss, Laurel Fork, Little River, and Mount Pleasant. These areas contain a variety of unique natural resources where a mixture of compatible management emphases is deemed the wisest management. Because of their unique features, complexity, and degree of interest, these areas are designated as Special Management Areas (SMAs). Each SMA is described separately. The standards that apply to the entire management area are discussed at the end of the description and desired future condition for each of the four special management areas. All lands in this management area are classified as unsuitable for timber production.

BIG SCHLOSS

The 20,200-acre Big Schloss Special Management Area on the Lee Ranger District also contains the Big Schloss Roadless Area (described in greater detail in Appendix C of the FEIS). This area encompasses significant recreational, historic, biological and geological values that can be managed harmoniously to provide a mixture of amenity benefits for the public.

Big Schloss contains unique geologic features that qualify portions for designation as a Geologic Area. In particular, there are sandstone outcrops at Big Schloss, Little Schloss, Halfmoon and a series of white rock cliffs along the east facing slopes of Paddy Mountain.

Big Schloss was used for the release of peregrine falcons during the reintroduction of this species. Because of the likelihood of falcon nesting, the area around Big Schloss could qualify as a Biological Area.

Big Schloss also contains a number of excellent recreational opportunities. The Big Blue Trail, a 250-mile trail connecting the Appalachian Trail (AT) in Shenandoah Park to the AT again in Pennsylvania, traverses Big Schloss . There is an existing system of trails connecting to the Big Blue Trail which make many circuit routes possible. The old wagon road up Little Sluice Mountain to Mill Mountain is part of the Forest transportation system and is open to motorized traffic It also serves as a trail location. Big Schloss is used for hiking, horseback riding, mountain bike riding, and hunting. It is heavily hunted for deer, bear, turkey, and small game. There is established use of four wheel drive vehicles on the Little Sluice road to Mill Mountain including the hunting season when this route is also used for camping by many of the hunters.

Big Schloss also contains a number of historic features. Sugar Knob cabin, an historic site, is located in the area near the top of Sugar Knob at the head of Little Stony Creek. It was a cabin for the lookouts that manned Halfmoon and Paddy Mountain lookouts. The cabin is made of native stone and is presently under

special use permit to the Potomac Appalachian Trail Club The Club operates the cabin on a reservation system for trail users.

The Big Schloss Special Management Area forests have recently received heavy mortality from gypsy moth. There are areas about 2,000 acres in size where tree mortality is as high as 95 percent. As the vegetation continues to age, there is additional mortality from gypsy moth, other insects, diseases and other causes.

The Desired Future for Big Schloss

The Big Schloss Special Management Area is managed to maintain a natural appearance. Natural processes determine the condition of the ecosystems found in the majority of the area.

The area supports a high level of dispersed recreation use centered on a well-developed trail system. A feeling of solitude and back-country experience is provided. Improvements such as trailhead facilities, vault toilets, hardened trails, dispersed campsites, and measures to provide for riding stock use may be provided to protect the resources commensurate with anticipated use levels.

Visitors find the Big Schloss Special Management Area contains a number of unique historic and geological features that make it an excellent destination for a visit to the Forest Although most access is limited to non-motorized means (including mountain bicycles). Motorized access (primarily by four-wheel drive vehicles) occurs along the Little Sluice Road There are opportunities for primitive recreation and some opportunity for solitude.

Some vegetation manipulation may be accomplished, i.e. prescribed burning to benefit a variety of wildlife species, to reduce fuel loading and/or to reduce fuel continuity, and for fire-dependent plant species. Some small wildlife improvements, such as waterholes and clearings, may be constructed. Projects benefitting wildlife can best be described as gentle-on-the-land and would not appreciably reduce the roadless nature or primitive appearance of the Big Schloss Special Management Area.

Although the area is classified as unsuitable for timber production, some harvesting of fuelwood is permitted along perimeter roads Salvage of timber killed by gypsy moth or other catastrophes may occur. Harvesting of timber using ground-based logging systems is limited to skidding distance from existing roads. Helicopter logging may be considered within one-half mile of the perimeter using landings along existing boundary roads or in management areas adjacent to the Big Schloss Special Management Area. All salvage is conducted in such a manner that the roadless character and primitive appearance of the Big Schloss Special Management Area are not significantly modified.

LAUREL FORK

The 10,000-acre Laurel Fork Special Management Area on the Warm Springs Ranger District contains all of the Laurel Fork Roadless Area (The roadless area is described in greater detail in Appendix C of the FEIS.) A narrow corridor west of Forest Development Road (FDR) 106 on the western edge of the area, and the Locust Springs Picnic Area are in management areas 7 and 12 and not part of this management area. This area encompasses significant biological, recreational and mineral values that can be managed harmoniously to provide special benefits to the public.

Laurel Fork is unique in the state of Virginia resulting, in part, from its location on a high, stream-dissected plateau of Alleghany Mountain. The elevations, ranging from 2,700 feet to over 4,000 feet, have given rise to a forest of northern hardwoods and red spruce, quite unlike the Appalachian oak forest that dominates the rest of the Forest.

Laurel Fork contains biological features not commonly found in the state of Virginia. On the western side of Laurel Fork, 6,172 acres are recommended for designation as an SIA-Biological by the Virginia Division of Natural Heritage. Slabcamp and Bear Wollow drainages located within the area have also been identified as candidates for possible RNA designation.

The Laurel Fork Special Management Area is also valuable because of its subsurface natural resources. The western part of Laurel Fork contains part of the Thornwood-Horton Gas Field. Gas reserves were discovered at a depth of roughly 5,200 feet. On neighboring Monongahela National Forest in West Virginia, drilling began in 1961 and ceased in 1964; five gas wells were drilled in this geologic structure. Currently, these gas wells located in this remote field are shut-in, awaiting a natural gas pipeline. The Thornwood-Horton gas field has the potential for both natural gas production and later, as a natural gas storage area for the low demand summer months. Most of this field, as presently defined, lies in West Virginia, but part of the field is within the Laurel Fork area. Additional drilling could expand the area within the known gas field to other parts of Virginia.

Issued gas leases cover 94 percent (approximately 9,768 acres) of the Laurel Fork Special Management Area. Depending on their respective issuance dates, these leases are set to expire between 1996 and 1998, unless production is established. Federal oil and gas lease BLM-A-0022918 (containing 2,168 acres in the western portion of Laurel Fork) is within the known geologic structure of the field and is being held under a communitization agreement (CA) with the Bureau of Land Management (BLM) of the U.S. Department of Interior. This communitization agreement supersedes the original lease and determines the rules for the production of natural gas. The CA does not have an expiration date.

The Desired Future for Laurel Fork

The Laurel Fork Special Management Area is managed in a manner that maintains and enhances the unique biological values in the western half of the area, that permits the continued leasing for valuable gas reserves, and affords the public opportunities to visit and enjoy a unique and scenic part of the Commonwealth of Virginia.

Most of the Laurel Fork Special Management Area continues to offer opportunities for primitive, non-motorized recreation use in a fairly remote setting. There is currently an extensive trail network that provides opportunities for nature study, hunting, fishing, hiking and camping in a remote and primitive setting.

This area contains one of the finest examples of northern boreal natural community complexes in Virginia and is the only representative of the Alleghany Plateau Ecoregion within the Commonwealth. At least 25 species of plants and animals have their only known occurrence in Virginia within this area. This is due to the fact that the flora and fauna represented here are distinctly northern in affinity with many species at or near their southern distributional limits This area is on the east slope of Alleghany Mountain and consists of a series of small watersheds draining eastward into Laurel Fork of the Potomac River drainage. Elevations range from 3,000 feet to 4,000 feet and are distinguished by a cool, wet climate. Stream headwaters are in northern hardwood/red spruce forests and flow through extensive beaver ponds and meadows. This mosaic of community types is typical of Virginia. In this area are several state (Virginia) and federally-listed species including the Virginia northern flying squirrel, snowshoe hare, and water shrew. The special botanical and zoological features west of Laurel Fork are managed to maintain and, where appropriate, enhance habitat for these unique species.

Late successional and old growth stands of red spruce and adjacent northern hardwoods are maintained for the northern flying squirrel as well as for other species that require this habitat such as the fisher, golden crowned kinglet, and saw-whet owl. Early and mid-successional habitat is maintained and created by selective thinning, prescribed burning, and removal of planted red pine stands to create a mosaic of habitats that enhance conditions for the snowshoe hare and magnolia warbler. Early successional habitat can also be enhanced by maintaining beavers in drainages where they now occur and expanding into adjacent drainages Beavers can maintain the mosaic of wetlands where several species of dragonflies rare to Virginia occur Riparian areas are managed to enhance aquatic conditions suitable for brook trout and other riparian dependent species such as the water shrew.

Although some potential for natural gas development exists, it is low at this time If development occurs, facilities are designed and located to protect biological

values. Maintenance and restoration of development provides opportunities for wildlife habitat.

Vegetation management is performed in compliance with the guidelines of the recovery plan for the Virginia northern flying squirrel and for the snowshoe hare Some manipulation of vegetation through prescribed burning and some minor wildlife improvements (such as waterholes and clearings) are constructed to benefit wildlife species. Any projects benefitting wildlife could be described as gentle-on-the-land and not appreciably reducing the roadless nature or primitive appearance of the Laurel Fork Special Management Area. Non-native plantations of red pine are present. At some point, these may be removed and returned to native vegetation.

As the vegetation continues to age in the Laurel Fork Special Management Area, there is natural mortality. Most of the Laurel Fork Special Management Area develops characteristics of older vegetation.

Although the Laurel Fork Special Management Area is classified as unsuitable for timber production, some harvesting of fuelwood may be permitted along FDR 106 and FDR 457. There may be some vegetation management opportunities associated with the elimination of the non-native red pine plantations and the perpetuation and expansion of the native red spruce. Salvage of timber killed by gypsy moth or other natural or human-caused catastrophes is permitted on portions of Middle Mountain accessible from FDR 457 and along the roadside corridor of FDR 106. This salvage is conducted in such a manner that the roadless character and primitive appearance of the Laurel Fork Special Management Area are not significantly modified.

FDR 457 along Middle Mountain on the eastern-most side of the Laurel Fork Special Management Area is proposed for approximately 1 1 miles of relocation to improve its current alignment and secure legal public access. Public access is to end at Christian Sod. Also, an access parking lot and road to provide fishing access to Laurel Fork are planned off State Route 642. Construction requires a right-of-way. Motor vehicle use by the public is limited to FDR 457 on Middle Mountain. Additional primitive campsites are needed along FDR 457 as vehicle use and camp sites are eliminated in the fields along FDR 457.

LITTLE RIVER

The 22,200-acre Little River Special Management Area on the Dry River Ranger District contains most of the Little River Roadless Area described in greater detail in Appendix C of the FEIS. Within this large special management area is the Reddish Knob Electronic Site, part of Management Area 20, and the Reddish Knob Observation Site that is in Management Area 12.

The Little River Special Management Area encompasses the Little River watershed above Hearthstone Lake as well as drainages along the upper reaches of the North River, the Skidmore Forks, Stony Run, Coal Run, Big Run, and Wolf Run. Parts of the Little River Special Management Area have a history of damaged stream channels and debris slides which can be attributed to steep slopes and intense storms. It was the focus of a very intense rain storm, estimated 12-inch rainfall in a 24-hour period, occurring in 1949. This storm caused mass soil movement. The area has not fully stabilized and remains a hydrologic problem area

Due to its relatively large size, steep topography and dense vegetation, the Little River Special Management Area offers excellent opportunities for primitive, non-motorized recreation in a setting of solitude and serenity. There are a number of trails that provide excellent access to the interior of the area. A portion of the Wild Oak Trail, a National Recreation Trail, passes through the area Trails 423 and 431 are also used for motorized administrative access. FDR 427 is seasonally open to motorized use.

The Little River Special Management Area also offers scenic values. Spectacular vistas of the Shenandoah Valley are provided from many of the high ridges and knobs Reddish Knob is particularly well known as a popular observation site and offers good opportunities for hang gliding.

The Desired Future for Little River

The Little River Special Management Area offers a variety of recreation experiences that are in harmony with protecting unique biological and primitive recreation opportunities.

The Little River Special Management Area offers habitat for remote species that require large blocks of unfragmented habitat. There may be some manipulation of vegetation through prescribed burning and some small wildlife improvements (such as waterholes and clearings) may be constructed to benefit wildlife species. Projects benefitting wildlife can be described as gentle-on-the-land and do not appreciably reduce the unfragmented habitat, roadless nature, or primitive appearance of the Little River Special Management Area.

Areas within the Little River Special Management Area have received heavy mortality from gypsy moth. As the vegetation continues to age, there is additional mortality from other insects, diseases and other causes. Most of the Little

River Special Management Area develops characteristics of an older ecosystem. Human activities are limited in scope on much of the area.

Although the Little River Special Management Area is classified as unsuitable for timber production, some harvesting of fuelwood is permitted along perimeter roads. Salvage of timber killed by gypsy moth or other catastrophes may occur. Harvesting of timber using ground-based logging systems is limited to skidding distance from existing roads Helicopter logging may be considered within one-half mile of the perimeter using landing along existing boundary roads or in management areas adjacent to the Little River Special Management Area. All salvage is conducted in such a manner that the roadless character and primitive appearance of Little River Special Management area are not significantly modified.

Visitors find the Little River Special Management Area offers excellent opportunities for primitive, unconfined recreation in a natural, remote setting. Most access is limited to hiking, horseback, and mountain bikes. Seasonal motorized access (primarily by four-wheel drive vehicles) occurs along FDR 427. New connecting non-motorized loop trails may be needed in the future.

Portions of this management area over 3000 feet in elevation contain habitat occupied by the rare and endemic Cow Knob salamander. Management of these high elevation areas is complementary to the adjoining Management Area 4E (Shenandoah Mountain Special Interest Area-Biological) and protects the Cow Knob Salamander.

MOUNT PLEASANT

The 6,700-acre Mount Pleasant Special Management Area contains most of the Mount Pleasant Roadless Area described in greater detail Appendix C of the FEIS The Mount Pleasant Special Management Area is well known for its prominent mountains, including Mount Pleasant and Pompey Mountain, and the very popular Henry Lanum and Mount Pleasant Trails. Some of the best views on the Pedlar Ranger District are possible from Mount Pleasant. Other features include the small virgin groves of hardwood forest in Little Cove Creek and wild trout streams

The Mount Pleasant Special Management Area offers excellent opportunities for solitude and serenity. This area is very popular for various forms of dispersed recreation including hiking, hunting and fishing. The core of the Mount Pleasant Special Management Area appears relatively remote. There are no trails designated for licensed OHV or ATV use

The Desired Future for Mount Pleasant

The Mount Pleasant Special Management Area offers a variety of recreational experiences that are in harmony with protecting unique biological and primitive recreation opportunities.

Manipulation of vegetation through prescribed burning and small wildlife improvements (such as waterholes and clearings) are constructed to benefit wildlife. Any projects benefitting wildlife could be described as gentle-on-the-land and not appreciably reducing the unfragmented habitat, roadless nature, or primitive appearance of the Mount Pleasant Special Management Area.

As the vegetation within the Mount Pleasant Special Management Area continues to age, there is natural mortality. Most of the Mount Pleasant Special Management Area develops characteristics of older ecosystems. Any abandoned or closed roads are revegetated to protect the wild trout streams in the area.

Although the Mount Pleasant Special Management Area is classified as unsuitable for timber production, some harvesting of personal fuelwood is permitted along perimeter roads.

Visitors find the Mount Pleasant Special Management Area offers excellent opportunities for primitive, unconfined recreation such as fishing, hunting, mountain biking, and horseback riding. Most access is limited to non-motorized means.

Standards for SMAs

Adherence to the following standards is required when implementing the Revised Plan in Special Management Areas. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

Aesthetics

21-1. Special Management Areas are managed to meet a visual quality objective of retention.

Fire

21-2. Prescribed fire may be used to provide animal or plant habitat management and species maintenance or to reduce fuel loading or fuel continuity in areas heavily defoliated by gypsy moth.

Land Exchange and Acquisition

21-3. Inholdings and adjacent lands are acquired as opportunities arise or funding becomes available.

Minerals

21-4. The area is available for oil and gas leasing with surface occupancy highly restricted by using controlled surface use stipulations.

21-5. Reserved/outstanding minerals are acquired when available and subject to availability of acquisition funds.

21-6. Special Management Areas are available for other leasable minerals and common variety minerals on a case-by-case basis.

Recreation

21-7. Special Management Areas are managed under four recreation opportunity classes. Lands inventoried as roaded natural remain roaded natural. Lands inventoried as semi-primitive motorized adopt a recreation opportunity class of semi-primitive motorized (subclass 1) or semi-primitive motorized (subclass 2). Lands inventoried as semi-primitive non-motorized remain semi-primitive non-motorized. See the recreation opportunity map accompanying the Revised Plan.

21-8. "No-trace" camping techniques are promoted.

21-9. Campsites and other areas of concentrated use are managed for a low level of change in natural conditions.

21-10. Where appropriate, interpretive services (trails, signs, viewing areas) are provided to enhance visitors' understanding and appreciation of the area's special values.

21-11. Trails and other recreation facilities are located so as to not disturb the sensitive or unique areas within the management area.

Roads

21-12. No new road construction is permitted except (1) to access approved mineral activities and (2) where the new roads is the only prudent alternative to serve resource needs in other management areas and will minimally impact this management area and (3) relocation of existing roads and (4) provide access

to trailheads and (5) provide access to private land if no other route is feasible. Reconstruction is limited to protection of resource values. Existing system roads or those routes to access wildlife openings may continue to be used.

Soil and Water

21-13 Water quality is maintained at existing or higher levels. Erosion from either natural causes or human use that is contributing to degradation of water quality is controlled.

21-14. Watershed improvement projects are developed and implemented on:

a areas where erosion is due to man-caused activities;

b. critical areas where erosion is due to natural causes.

Timber and Other Vegetation

21-15. In Big Schloss, Laurel Fork and Little River SMAs: Salvage of dead or dying trees can occur from existing roads using ground-based logging systems.

21-16. In Big Schloss and Little River SMAs: Salvage of high quality dead or dying timber (from broad scale mortality from gypsy moth or fire) is permitted with helicopter within one-half mile from perimeter of area only.

21-17. In Mt. Pleasant SMA: harvesting of firewood for personal use is permitted along perimeter roads.

Wildlife

21-18. Existing wildlife habitat improvements can be maintained. Additional improvements are permitted so long as they achieve overall wildlife objectives and do not require any additional road construction.

MANAGEMENT AREA 22
Habitat for Small Game and Watchable Wildlife

This 6,000-acre management area contains lands that are managed intensively for a variety of wildlife species with each area focusing on a theme such as wildlife viewing, environmental education, small game management, or combinations thereof. Associated with this theme is a high level of dispersed recreation use. Easy access in many of these areas facilitates use by people with disabilities.

These areas are generally small in acreage, have easy access, and many have at one time been farm lands Management activities, both past and present, are evident to visitors.

The Desired Future

Management activities are concentrated in these areas to develop their wildlife habitat and associated dispersed recreation potential.

A high proportion of Management Area 22 land is open land classified as unsuitable for timber production.

Habitat management activities to facilitate desired future conditions are allowed and include, but are not limited to, the development of ponds, wetlands, maintenance and improvement of existing fields and hedgerows, development of hiding and nesting cover, planting and maintenance of annuals, fruiting shrubs and trees, and the development and maintenance of forest openings.

Most areas are easily accessible year-round by motorized vehicle, generally being closed only to protect the physical and biological resources. Nonmotorized recreational opportunities abound and include small game hunting, including those with disabilities, wildlife viewing, nature study, and fishing Short interpretive trails are developed where appropriate.

Management activities such as mowing, seeded areas, and other intensive wildlife management practices are obvious to the Forest visitor.

Standards

Adherence to the following standards is required when implementing the Revised Plan on Management Area 22 lands. These standards are in addition to the applicable Common Standards listed at the end of this chapter.

22-1. Grape arbors, old home sites (open areas, orchards), spring seeps, and land-form features that create unusual habitats are managed as key wildlife areas.

Aesthetics

22-2. This area is managed to meet a VQO of partial retention.

22-3. A short term VQO of rehabilitation can be used to restore an area or facility to a condition that meets the visual quality objective of retention. Rehabilitation is applied to travelways and vista points.

22-4. A short term VQO of enhancement may be assigned as appropriate to ensure scenic qualities are optimized.

Fire

22-5. Prescribed fire is allowed to meet habitat requirements for the particular wildlife species featured.

Minerals

22-6. The area is available for mineral leasing with appropriate occupancy stipulations established on a case-by-case basis.

Wildlife

22-7 Open fields may be maintained by burning, mowing, or cultivating. Planting of small grain crops for supplemental wildlife food is permissible.

22-8. The development of natural appearing wildflower meadows is encouraged on former agricultural lands

22-9. Hedgerows are maintained, developed, and enhanced. Key hedgerow species are encouraged, including hawthorns, dogwood, and viburnums.

22-10. Nesting (such as for eastern bluebird, great crested flycatcher), and roosting (for bats) boxes are selectively placed in this management area to facilitate wildlife viewing opportunities and to provide habitat for cavity dwellers.

22-11. Plantings of individual trees and shrubs for wildlife habitat improvement and aesthetic reasons is encouraged.

Recreation

22-12. Watchable Wildlife areas are managed under a roaded natural recreation opportunity class.

22-13. Nature study trails and interpretive facilities are provided and include information signs, wildlife viewing areas and blinds.

22-14. Nature trails are designed and constructed so as to facilitate use by persons with disabilities when feasible and practical.

22-15. Sanitation facilities are constructed where sanitation problems are anticipated

COMMON STANDARDS

The Common standards that follow may apply to several, if not all, management areas. These standards are referenced by number in the preceding management area descriptions. There are no Common Standards for Interpretation Management; see Appendix C, the Forest Interpretation Plan.

1. Projects are evaluated to determine if they are consistent with the management direction in the Revised Plan. This evaluation is documented in the project-level environmental document with a finding of consistency incorporated into the decision document, when one is required.

2. Any decisions on projects to implement the Revised Plan are based on site-specific analysis in compliance with the National Environmental Policy Act (NEPA). This environmental analysis is appropriately documented based on direction in the Council on Environmental Quality *Regulations For Implementing The Procedural Provisions Of The National Environmental Policy Act* (40 CFR Parts 1500-1508) and the *Environmental Policy and Procedures Handbook* (FSH 1909.15).

AESTHETICS

3. Table 3-14 presents contrast reducing techniques that are used in conjunction with vegetation management on the Forest. The capital letters in Table 3-14 relate to descriptions of the techniques. The descriptions follow Table 3-14.

Table 3-14.
Vegetation Management Contrast Reducing Techniques

Vegetation Management Activity	Visual Quality Objective for Contrast Reducing Techniques			Applicable Management Areas*
	Retention	Partial Retention	Modification	
Clearcutting, Removal	No	B, C, D, F, G, H, J, M, N, U, V	L,O,U,V	11, 14, 15, 16, 17
Seed-Tree	A, B, C, D, F, G, H, J, M, N, P, U, V	A, B, C, D, F, H, K, M, N, P, U, V	B,L,M,O,P,U,V	11, 14, 15, 16, 17
Modified Shelterwood	A, B, C, D, F, G, H, J, M, N, U, V	A, B, C, D, F, H, K, M, N, U, V	B,L,M,U,V	7, 11, 14, 15, 16, 17
Salvage	A, B, C, D, F, G, H, K, U, V	A, B, C, D, F, H, K, U, V	B,L,U,V	4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21
Conventional Shelterwood	A, B, C, D, F, G, H, J, M, N, P, U, V	A, B, C, D, F, H, K, M, N, P, U, V	B,L,M,P,U,V	7, 10, 11, 14, 15, 16, 17

Group Selection and/or Single-Tree Selection	A, B, C, D, F, G, H, I	A, B, C, D, F, G, H, I	I	7, 11, 13, 15, 17, 18
Commercial/Non-Commercial Thinning	A, B, C, D, F, G, H	A, B, C, D, F, G, H	A,B	7, 10, 11, 13, 14, 15, 16, 17, 18
Roadside Maintenance	A, B, E, G, S, T, W	A, B, E, S, T, W	A,E,S,T,W,X	All except 8
Permanent Road Construction/Reconstruction	C, G, H, S, T, W	A, B, C, H, S, T, W	A,B,S,T,W	All except 8
Temporary Road/Skid Trail Construction	C, G, H, S, T, W	A, B, C, G, H, S, T, W	A,B,S,T,W	7, 9, 10, 11, 13, 14, 15, 16, 17, 18
Utility Corridor Construction & Maintenance	A, B, C, D, E, G, H, Q, R	A, B, C, D, E, H, Q, R	B, H, Q, R	5, 6, 7, 11, 18
Prescribed Burn	G	G	G	4, 6, 9, 10, 14, 15, 16, 17, 18

*The vegetation management activity listed may not be applicable to the entire management area but to certain portions of it only. Refer to the management area descriptions in Chapter 3

A Trees are selectively removed to improve amenities within high use areas, vista points, and along interpretive trails.

B Flowering and other visually attractive trees and understory shrubs are favored when leaving vegetation

C During temporary or permanent road construction, slash and root wads are eliminated or removed from view in the immediate foreground retention and partial retention zones to the extent possible. Slash may be aligned parallel to roads at the base of fill slopes to collect silt, but only to the extent it provides this function

D Slash is lopped to within an average of 2 feet of ground, when visible within 100-foot zone beyond travel route edge, prior to cutting unit being accepted

E. Stems are cut to within 6 inches of the ground when doing roadside maintenance or at utility crossings

F. Leave tree or unit marking is applied so as to not be visible within 100 feet of sensitivity level 1 and 2 travel routes

G Consider scheduling work outside of major recreation seasons on roads leading to recreation facilities.

H Special road and landing design is used When possible, log landings, roads and bladed skid trails are located out of view to avoid bare mineral soil observation from sensitivity level 1 and 2 travel routes.

I. An actual opening size up to 1.5 acres is allowed

J An actual opening size up to 10 acres is allowed in the foreground zone and 25 acres in middleground and background zone in sensitivity level 1 & 2 travel routes

K An actual opening size up to 25 acres with inclusions is allowed

L An actual opening size up to 40 acres with inclusions is allowed

M Along sensitivity level 1 and 2 travel routes, openings should be spaced at a minimum of 1000 feet apart next to the travel route

N Along remaining sensitivity level 1 and 2 travel routes in management area 7, openings of up to 200 feet are allowed

O Along sensitivity level 2 travel routes, openings of up to 400 feet are allowed.

P Removal of overstory is delayed until understory is 10 feet in height

Q Utility rights-of-ways are located and maintained to conform with natural patterns of vegetation

R Overhead utility lines and support towers are screened where possible

S The visual impact of roads is blended so that they remain subordinate to the existing landscape character in size, form, line, color, and texture.

T Gravel pits and borrow areas are excluded from seen area of visually sensitive travelways and viewing points

U No adjacent regeneration cutting is allowed until dominant and codominant species reach 20 percent of height of tallest adjacent stands for even-aged timber harvest cutting methods.

V Openings are shaped and oriented to contours and existing vegetation patterns to blend with existing landscape characteristics Edges are shaped and/or feathered where appropriate in retention and partial retention "seen areas " No geometric shapes are used

W. Cut and fill slopes are revegetated

X Mowing or bush hogging is accomplished prior to roadside herbicide treatment.

AIR

4 Federal, state and local air quality regulations are applied in facilities management.

5. Performance requirements concerning air quality are incorporated in permitted activities that could affect air quality such as minerals, oil, gas or other developments on National Forest lands.

6 Locations of high air pollutant concentrations are determined using existing emissions and air quality monitoring data, personal observations, dispersion modeling and professional consultation.

7. The current condition of forest resources is established in locations for high air pollutant concentrations.

8. A monitoring system is established for resources that can be affected by air pollution (soil, water, air and vegetation).

9 Routine damage surveys are conducted in areas of high air pollutant concentrations.

10. Damage to resources is correlated with air pollutant concentrations.

11. Effective working relations are established with local, state, and federal air regulation agencies and other federal land managers.

12. A procedure for expressing concerns resulting from monitoring and surveys to the air regulatory agencies is established and maintained.

13 Standards for air quality related to wildfire and prescribed fire are found in the Common Standards for Fire.

CAVES

14 Caves may be managed in partnership with the appropriate state authorities. A public education program ensures an understanding of the value of these irreplaceable resources

15. Significant and potentially significant caves are protected and managed in accordance with the Federal Cave Resources Protection Act of 1988, which protects their location. Surveys are conducted to determine the significance of all caves which have been found on the Forest, and the list is periodically updated.

16. A management plan will be developed for classified caves occurring in areas affected by management activity. It includes a map of the cave to understand its geology, relationship with the surface, and other caves; a list of its biota and their food sources; and their susceptibility to disturbance; a catalog of its resources such as speleothems and speleogens; a determination if there are archeological or paleontological resources that need protection; an estimate of its current recreation use level and trend, research and monitoring programs, and a cleanup or restoration program Access is determined by the capacity of caves to withstand the impacts of visitation, and specific standards are developed on a cave-by-cave basis.

17. Until a significant cave list is completed, caves are protected from two types of potential damage subterranean impacts (impacts from within the cave, chiefly recreation), and surface impacts (damage from surface activities). Damage from visitor traffic, vandalism, and carelessness may occur in caves. Trash, litter, trampling, broken speleothems, graffiti, and human body waste are the most prevalent damage.

18. 200 feet vegetation buffers are maintained around direct drainages into caves. This includes sinkholes, cave collapse areas known to open into a cave's drainage system, and perennial, intermittent, or ephemeral streams flowing into caves.

19. There are no ground-disturbing activities and trees are not harvested in a 200 foot radius around cave entrances.

20. The use of caves for disposal sites or the alteration of cave entrances is prohibited except for the construction of cave gates or similar structure to ensure closures.

21. Management activities within any area draining into a cave are limited if they may affect the cave ecosystem through sedimentation, soil sterilization, the addition of nutrients or other chemicals (including pesticides, herbicides, and fertilizers), or change the cave's natural hydrology.

22. Diversion of surface drainage into caves is prohibited.

23. Measures for the protection of caves are incorporated into project plans for road construction, timber harvest, tree planting, blasting near caves, and activities which could change cave temperatures and drainage patterns.

24. Scientific or educational use of caves may be permitted by the Forest Supervisor.

25 Communication and cooperation between the Forest Service and caving organizations is fostered. Exchanged information is not made public if it could lead to the degradation of sensitive caves.

26. Laws protecting caves from illegal relic collectors and vandalism are vigorously enforced.

27. Forest caves are evaluated using the rating system in Appendix D of the Revised Plan. The system allows significance values to be assigned to various cave resources. The assigned values are used to determine cave classification and to determine cave significance under the implementation regulations of the Federal Cave Resources Protection Act of 1988.

28. As new caves are discovered, they are temporarily managed as Class 1 until an analysis of resource values is completed.

CULTURAL RESOURCES

29. The Forest undertakes a systematic program of cultural resource inventory, evaluation, and preservation aimed at the enhancement and protection of significant cultural resource values in compliance with 110(a)(2) of the Historic Preservation Act of 1966 as amended (1980). Integration of cultural resource management concerns is emphasized, as is coordination with the public, scientific community, and appropriate Native American and other ethnic groups.

Inventory

30. The inventory of cultural resources is scheduled on National Forest System lands, giving priority to areas with high potential for disturbance and areas with high potential for significant historic and prehistoric sites.

31. As a minimum requirement, an inventory project is conducted within a project area prior to the signing of the decision document for any earth-

disturbing activity, land exchange, or other activity that could affect cultural resources.

32. For projects involving the conveyance, exchange, or interchange of lands under the "Small Tracts Act" (P L. 97-465; 96 STAT 2535), the Programmatic Memorandum of Agreement between the USDA Forest Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (1985) is consulted.

33. Projects requiring cultural resource inventory prior to implementation include, but are not limited to, the construction or expansion of roads, bridges, wildlife and fisheries ponds, reservoirs, sand and gravel pits, parking areas, and trails; the implementation of timber sales and decking areas, oil, gas, mineral, and sand and gravel explorations that require the development of drill pads, roads, trails, and test pits; the construction of new structures individually or within groups of existing structures, or the remodeling of existing structures that are at least 50 years old and may meet the eligibility criteria for the National Register of Historic Places; the development or modification of campgrounds and other recreation facilities. Cultural resource inventory also will be required in the case of designated wilderness where natural deterioration of sites, or damage from visitor use may occur

34 Nonground-disturbing activities that do not impact cultural resources previously identified by professional archaeologists and that include, but are not limited to, pesticide application and routine maintenance of roadways and trails currently in use may be implemented without survey or evaluation.

35. Cost-effective survey strategies are designed, utilizing locational modeling and thematic studies to improve efficiency.

36 Cultural resource standards and inventory processes are designed to conform with the U.S. Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation.

Inventory of Project Area. The Project Area is reviewed for presence of cultural resources listed or eligible for inclusion in the National Register of Historic Places (NRHP). The Forest undertakes one or more of the following actions to determine this:

Site survey
Review of FS files
Review of maps
Review of State Historic Preservation Officer (SHPO) files

Examine photos
Search archives
Interview informants

Evaluation

37. Identified cultural resources are evaluated in relation to criteria published in 36 CFR 60 for eligibility to the National Register of Historic Places.

38. Evaluations are scheduled and conducted if a project would have any effect on a cultural resource potentially eligible for the National Register of Historic Places. Evaluations are scheduled and conducted if the responsible official and SHPO disagree on whether a cultural resource is potentially eligible for the National Register of Historic Places.

39. Evaluations are scheduled in a timely manner (before the project can proceed) when a proposed project cannot be delayed or relocated, or if properties are deteriorating and have not been evaluated.

40. A determination of effect must be carried out in the event that a cultural resource determined eligible for or included on the National Register of Historic Places cannot be avoided, or the project delayed, and if the proposed project could affect the property either beneficially or adversely.

41. Determination of effect process is carried out in consultation with the appropriate SHPO in accordance with 36 CFR 800.

42. A consultation with the SHPO and Advisory Council on Historic Preservation is in order when it is determined that the project would affect an eligible site, and the project cannot be relocated or modified to avoid the site.

43. Unavoidable destruction of eligible sites must conform to processes designated by the National Historic Preservation Act as outlined in 36 CFR 800.

Preservation

44. Projects are designed to avoid, minimize, or mitigate adverse effects on potentially significant cultural resources. In-place protection of identified sites is the minimum requirement until site significance is determined.

45. The nature and degree of damage to cultural resources due to visitor use and natural deterioration is assessed. Protective measures are identified and implemented.

46. Incidents of vandalism and/or theft are investigated with emphasis on prosecution of guilty parties.

47. Deterioration that affects the significant qualities of cultural resources that are eligible for the National Register of Historic Places is prevented or mitigated within availability of funds.

48. Protection and mitigation measures are developed on a case-by-case basis. Field measures include, but are not limited to, signing, road closure, fencing, vegetative screening, and withholding locational information.

49 Under the appropriate laws, antiquities permits are issued, or volunteer agreements entered into, with qualified academic institutions or other organizations for the study and research of cultural resource sites. Activities that are consistent with policy and management objectives are permitted.

50. A preservation/maintenance plan is developed for historic administrative and recreational facilities.

51. The implementation and effectiveness of protection and mitigation measures prescribed for cultural resources are monitored.

52 Photo-points of sensitive sites are established to document protective and mitigative measures

Curation

53. The Forest works to comply with the curation standards set forth in the Secretary of Interior's Guidelines for curation. In the interim, all artifacts recovered on the Forest are curated and stored under locked security at the Forest Cultural Resources Depository

Enhancement

54. Interpretive facilities and projects are developed in compliance with the 1988 amendments to the Archeological Resource Protection Act Opportunities for both on-site and off-site interpretation of cultural resources are identified

55. The national "Windows of the Past" program is implemented to improve public understanding of our heritage, to raise public awareness of the fragile and irreplaceable nature of cultural resources, and to provide enhanced public recreation opportunities.

56. Opportunities are provided for the public to observe or to participate in all phases of Forest Service heritage management The "Passport in Time" program is utilized to involve amateur and professional volunteers in selected aspects of preservation and management efforts. Public outreach and involvement efforts are emphasized with local schools and organizations Partnerships are developed with external organizations, groups, and individuals to provide a public service through cultural resources

FIRE

Wildfire

57 A level of protection is provided that results in the least cost of presuppression, suppression, and net value change (cost efficient level) on all management areas except those where management direction requires a more intense level of protection. The cost efficient level of protection is determined through a Level II Fire Analysis Process.

58. The efficient fire program budget is identified by the Level II Fire Analysis and is implemented through the annual fire management action plan.

59. The suppression response is either confinement, containment, or control depending on level of fire intensity and whether private property or public safety is at risk.

a. The suppression response may be either confinement, containment, or control for intensity level 1 fire.

b. The suppression response is always control where life, public safety, or private property is threatened and, for intensity level II and III fires.

60. Planned initial action of wildfire considers the impact of smoke on public health and safety and welfare. Smoke dissipation and the possibility of fog formation are considered when determining mop-up standards for fire suppression.

Prescribed Fire

61. Prescribed fires are conducted under the direct supervision of a burning boss with fire behavior expertise consistent with the project's complexity. All workers must meet health, age, physical, and training requirements in FSM 5140, and use protective clothing and equipment.

62. Any prescribed burning is conducted in a manner that is in compliance with Virginia and West Virginia burning laws.

63. A written site-specific plan for all prescribed burns is prepared by trained resource specialists and approved by the appropriate Forest Service line officer prior to project implementation. This plan includes a description of treatment area, burn objectives, weather factors, and fuel moisture conditions, and resource coordination requirements. Coordination requirements include provisions for public and worker safety, burn day notification of appropriate agencies and persons, smoke management to comply with air quality regulations and protect visibility in smoke-sensitive areas, protection of sensitive features, as well as fireline placement, specific firing patterns, ignition methods, and mop-up and patrol procedures. A post-burn evaluation compares treatment results with plan objectives.

64. On lands suitable for timber production, underburns in shortleaf, pitch, and table mountain pine stands are not done until pines are 10 to 15 feet tall or 3 to 4 inches in diameter at ground level

65. On lands suitable for timber production, underburns are not done in commercial yellow pine-hardwood stands, and inclusions until dominant and codominant hardwood stems reach 5 to 6 inches in diameter at ground level Only low intensity, dormant season fires with flame lengths of 2 feet or less are allowed

66. On lands suitable for timber production, underburns are not done in commercial hardwood-pine or hardwood stands, and inclusions until hardwood stems reach 8 to 10 inches in diameter at ground level. Only low intensity, dormant season backing fires with flame lengths of 2 feet or less are allowed.

67. On lands suitable for timber production, underburns are not done in commercial white or Virginia pine stands until they have formed a thick, corky bark Only low intensity, dormant season backing fires with flame lengths of 2 feet or less are allowed.

68. Critical values of the Keetch-Byram Drought Code (Cumulative Severity Index) are established to eliminate prescribed fires during drought periods. Burning is allowed only on days when the Drought Code is less than this critical value.

69 Burns are done so they do not consume all litter and duff or alter structure and color of mineral soil on more than 20 percent of the area. Steps taken to control soil heating include use of backing fires on steep slopes, scattering slash piles, and burning heavy fuel pockets separately. Growing season underburns are permitted on the same site on a 3-year cycle.

70 Severely eroded forest soils are not prescribed burned.

71. Where needed to prevent erosion, water diversions are installed on firelines during their construction, and the firelines are revegetated after the burn.

72 Special measures are undertaken to protect water quality and wetlands from prescribed fire Firelines are constructed with minimal disturbance.

73. Firelines which expose mineral soil are not located within riparian areas unless tying into lakes, streams, or wetlands as fire breaks at designated points. Low intensity fires with less than 2-foot flame lengths are allowed to back into riparian areas, as long as they do not kill trees and shrubs that shade the stream.

74. Firelines around wetlands are used only when the water table is so low that the prescribed fire might otherwise damage wetland vegetation or organic matter. Where practical, previous firelines are reused.

75. If a fireline is required next to a wetland, it is located in the upland vegetation zone and not in the wetland zone except to tie into a natural firebreak.

76 The best current available and emerging smoke management technology is used Forest Service Smoke Management Guidelines (Regional Supplement 91-1) is used as the best available reference to help make management appraisals regarding minimizing impacts.

77. Smoke management guidelines are used to reduce smoke emissions. When feasible, backing and flanking fires are used instead of heading fires, and burning is done when duff and large fuels are moist and small fuels are dry. All burns are completed during the active burning period and mopped up as soon as practical after completion.

78. Smoke management guidelines are also used to enhance smoke dispersion Burning is done when the atmosphere is thermally neutral to slightly unstable, not during pollution alerts, stagnant or humid weather, or inversions. Burning is done only when.

a. air quality or visibility standards in smoke-sensitive areas such as highways, airports, populated areas, and Class I areas are not violated from smoke from the fire; and

b. atmospheric mixing height is at least 1,650 feet, transport windspeed is at least 9 mph, and background visibility downwind is at least 5 miles.

79 Prescribed burns are planned and executed to enhance site conditions and avoid significant damage to habitat of any threatened, endangered, or sensitive species.

80. When the objectives for a given management area or part of a management area do not include the production of commercially valuable tree species or stems (lands classified as unsuitable), then prescribed burning can be accomplished under broader parameters to meet specific resource objectives and without long-term soil impairment.

81. Prescribed burning is not normally used after initial regeneration cuts in uneven-aged management systems have been made.

Urban/Wildland Interface

82. Representatives of the George Washington National Forest cooperate with the Virginia and West Virginia departments of forestry and local fire authorities to address the following objectives:

a Localities and developers are encouraged to plan for fire protection in their initial development plans, and to provide designs and specifications for roads, water, fuel treatment, and structures.

b. Public awareness is generated in regard to risks of wildland fire to homes in the interface.

c. Pre-attack planning is recommended in and around existing subdivisions.

GRAZING

83. Grazing is permitted in order to maintain a pastoral setting on areas historically grazed or on open cultivated areas. Grazing is not allowed in general forested areas

INTEGRATED PEST MANAGEMENT

84. Integrated Pest Management (IPM) principles are used during site-specific analysis. IPM is a decision-making and action process which includes biological, economic, and environmental evaluation of host-pest systems to manage pest populations.

85. IPM principles that stress problem prevention are used to set strategies for vegetation management projects No action, or doing nothing, is an option on all projects in compliance with NEPA

86. IPM strategies involve a comprehensive systems approach to silvicultural, wildlife, fuel treatment, recreation and corridor management practices that emphasizes *prevention* of pest problems.

Pesticides

87. Environmental conditions favorable for precise application of the pesticide to the treatment areas are identified in the pest management documents and are monitored during implementation of the treatment.

88. Pesticides are utilized under environmental conditions which minimize off-site drift or contamination.

89. Pesticides are not used in a manner that would adversely affect threatened, endangered, proposed, or sensitive species.

90. The potential risk to humans and the environment is minimized by applying pesticides only according to label instructions, Forest Service policies, and other federal regulations Application is supervised by a certified pesticide

applicator. Areas treated with pesticide are signed and label instructions for pesticides must be followed.

91. Workers who apply pesticides are trained to ensure minimum impacts and maximum effectiveness. Only those methods that assure proper application of pesticides are used.

Gypsy Moth

92. IPM is used to protect resources from damage caused by the gypsy moth (reference *Gypsy Moth Suppression and Eradication FEIS – 1985* and *Appalachian Integrated Pest Management FEIS – 1989*).

93. Intervention treatment, including insecticide application, is considered where threatened, endangered, proposed, or sensitive species may be adversely impacted by the gypsy moth.

94 Gypsy moth suppression may be considered in areas containing high value sawtimber on lands suitable for timber production. Unique or rare ecosystems may also be considered when all or part of the ecosystem is likely to be severely affected by gypsy moth if no action is taken. Such unique ecosystems include native trout streams, old growth forest stands, T&E habitats and special interest areas.

95. The development, improvement, or experimental testing of natural enemies to both high population treatment tactics (insecticide application) and low population treatment tactics (mating disruption, sterile insect release fungal application, insecticide application, and mass trapping – Reference *Appalachian Integrated Pest Management FEIS – 1989*) may be considered in all forest areas except Wilderness, areas under study for possible wilderness inclusion and designated special areas.

Mitigation Measures

96. Insecticides known to have adverse impacts on aquatic ecosystems are not applied within 200 feet of perennial streams or open bodies of water.

97. A notice of intent to apply insecticides or other intervention tactics is posted on signs prior to treatment. Signs are placed along roads and trails at major entry points to the treatment area. For wilderness areas, the notice of intent is placed outside the wilderness area at major trailheads. Wilderness areas have signs in place at least one week prior to treatment. Signs inform visitors of the type of intervention tactic and the time span in which application may occur, thus allowing visitors the option of minimizing or avoiding exposure to the treatment.

98. Treatment of developed recreation areas such as picnic areas and campgrounds or dispersed areas of high concentrated use are scheduled during

low-use periods, or the areas are temporarily closed in order to minimize human exposure to the treatment Signs are posted in these areas at least 24 hours before treatment begins. Signs provide information on scheduled treatment dates and type of treatment.

99. Treatment of dispersed recreation areas accessible by trails have signs posted at all major points of entry. Signs are in place at least 24 hours before treatment begins The signs provide information on date and type of treatment in order to allow visitors to minimize or avoid exposure

Silvicultural Treatments for Gypsy Moth and Oak Decline

100 Silvicultural treatments of high value forest stands can be utilized to regenerate mature stands and stands that are highly vulnerable to oak decline or to gypsy moth defoliation and mortality (e.g., stands with a high oak component or stands with a moderate to high incidence of oak decline), to reduce the susceptibility and vulnerability of forest stands, and to salvage timber from damaged stands. Stands proposed for silvicultural treatment for gypsy moth and oak decline are rated using risk and hazard rating procedures currently available for gypsy moth and risk and hazard rating procedures under development for oak decline. Anticipated changes in stand susceptibility and vulnerability ratings would be documented in project-level environmental documents.

101. Monitor population levels through egg mass surveys or male moth trapping to determine density, quality, and trend

102 Utilize stand vulnerability rating for gypsy moth and oak decline to determine priority of stand regeneration to meet multiple-use objectives where defoliation has not occurred.

103. Silvicultural treatments may be considered to reduce the susceptibility and vulnerability of forest stands ahead of gypsy moth defoliation

a Treatment to protect trees throughout the cutting cycle.

b. Even-aged timber harvest cutting methods, such as clearcutting, shelterwood regeneration or seed tree regeneration, may be considered to obtain regeneration of stands ahead of gypsy moth defoliation. Regeneration of stands with oak decline may be considered. Shelterwood regeneration may require insecticide or fungal treatment to protect the leave trees until sufficient regeneration is obtained.

c. Silvicultural treatments may be considered to improve the long-term productivity and mast production capability of forest stands affected by oak decline Thinning is avoided in forest stands affected by oak decline

d Intermediate harvest cutting methods, such as commercial thinning, may be considered to maintain tree vigor and manipulate stand species composition to culturally reduce stand susceptibility and vulnerability unless in the case of Gypsy Moth, defoliation is imminent within 3 years.

e. Release and precommercial thinnings may be considered to maintain tree vigor and manipulate species composition to culturally reduce eventual commercial stand susceptibility and vulnerability

f. In stands to be regenerated or in areas critical for hard mast production, maintain trees and stands in vigorous, healthy condition to minimize impending defoliation impacts. Emphasize treatments that will provide diverse species mix with an oak component objective of 50% or less at 50 years. Treatments should provide for rapid stand regeneration prior to gypsy moth population buildup

104. Inventory high priority areas (unique ecosystem recreation area, high value timber stands) impacted by gypsy moth defoliation during low populations period and prior to next planning cycle to ensure accurate vegetative data.

105. Thinning, shelterwood and seedtree cuts should be deferred in areas where gypsy moth populations are increasing to, or are at, damaging levels (>1,400 egg masses per acre)

106 Salvage harvest will strive to leave a partial forest canopy by retaining nonsusceptable species and minimal oak trees with fair to good crown condition, which may potentially bear genetic resistance or tolerance to gypsy moth.

Southern Pine Beetle (SPB)

107. Integrated Pest Management (IPM) is used to reduce tree mortality caused by southern pine beetle (SPB) – (reference the Southern Pine Beetle FEIS 1987).

108. In pine stands adjacent to Wilderness, where spot spread from Wilderness is possible, priority is given to reducing or eliminating potential losses to SPB.

109. The cut-and-hand-spray technique must only be used according to general direction set forth in Forest Service Manual Chapter 2150, Pesticide-Use Management. Label instructions for pesticides registered for beetle control must be followed.

110 Stands of pine trees are not sprayed with insecticides, for SPB control.

Herbicides

111. Herbicides are applied according to labeling information and the site-specific analysis done for projects. This labeling and analysis are used to

Labeling

choose the pesticide, rate, and application method for the site. They are also used to select measures to protect human and wildlife health, non-target vegetation, water, soil, and threatened, endangered, proposed, and sensitive species. Site conditions may require stricter constraints than those on the label, but labeling standards are never relaxed

Choice of Herbicide

112. Only herbicide formulations (active and inert ingredients) and additives registered by EPA and approved by the Forest Service for use on national forests are applied.

113. Herbicides and application methods are chosen to minimize risk to human and wildlife health and the environment. No class B, C, or D chemical (Table II-1 of the *Final Environmental Impact Statement—Vegetation Management in the Appalachian Mountains*) may be used on any project without the approval of the Regional Forester Whenever possible and effective, class 4 or 5 mineral oil is used in place of diesel in mixtures for application

Application

114 No herbicide is broadcast on rock outcrops or sinkholes. No soil-active herbicide with a half-life longer than 3 months is broadcast on slopes over 45 percent, erodible soils, or aquifer recharge zones. Such areas are clearly marked before treatment so applicators can easily see and avoid them.

115. Aerial application with herbicides is allowed only in utility corridors Reference page 8 of the *Record of Decision - Final Environmental Impact Statement—Vegetation Management in the Appalachian Mountains*.

Application Rate

116 Herbicides are applied at the *lowest* rate effective in meeting project objectives and according to guidelines for protecting human and wildlife health. Application rate and work time must not exceed *typical* levels (appendix A, tables 4-4 to 4-6 of *Final Environmental Impact Statement—Vegetation Management in the Appalachian Mountains*) unless a supplementary risk assessment shows that proposed rates do not increase risk to human or wildlife health or the environment beyond standards discussed in Chapter IV of *Final Environmental Impact Statement—Vegetation Management in the Appalachian Mountains*. Typical application rates (lbs/ac) of active ingredient are·

Table 3-11.
Typical Application Rates of Active Ingredient in Approved Herbicides and Carrier - in Pounds/Acre Active Ingredients

	FOSAMINE	DICAMBA	GLYPHOS	TEBUT
ML	7.8	2.0	1.5	1.0
MG				1.0
HG				
HF		2.0	1.0	4.0
HB				
HS				4.0
HC		1.5	1 3	

	HEXAZ	FUEL OIL	IMAZAPYR	LIMONENE
ML	4.0	2.0	0.75	0.9
MG	4.0			
HG	4.0			
HF	4.0	1.5	0.75	0.9
HB		1.0		0.9
HS	4.0			
HC			0.75	

KEY:
ML = mechanical liquid treatment
MG = mechanical granular treatment
HG = manual granular treatment
HF = manual foliar broadcast treatment
HB = manual basal treatment
HS = manual soil-spot treatment
HC = manual cut-surface treatment
HEXAZ = hexazinone
GLYPHOS = glyphosate
SULFOMET = sulfometuron methyl

Table 3-11. (Continued)
Typical Application Rates of Active Ingredient in Approved Herbicides and Carrier - in Pounds/Acre Active Ingredients

	PICLORAM	SULFOMET	TRICLOPYR/a	TRICLOPYR/e
ML	0.7	0.17	4.0	4.0
MG				
HG				
HF	0 4	0 06	2 0	2.0
HB				4.0
HS				
HC	0 3		4.0	

Application Method

117 Public safety during such uses as viewing, hiking, berry picking, and fuelwood gathering is a priority concern. Method and timing of application are chosen to achieve project objectives while minimizing effects on non-target vegetation and other environmental elements. Selective treatment is preferred over broadcast treatment. Application methods from most to least selective are

1) Cut surface treatments
2) Basal stem treatments
3) Directed foliar treatments
4) Soil spot (spot around) treatments
5) Soil spot (spot grid) treatments
6) Manual granular treatments
7) Manual/mechanical broadcast treatments

Mitigation Measures for Herbicide Use

118. No herbicide is aerially applied within 300 feet, nor ground - applied within 60 feet, of any known threatened, endangered, proposed, or sensitive plant Buffers are clearly marked before treatment so applicators can easily see and avoid them.

119. No soil-active herbicide is applied within 30 feet of the drip line of non-target vegetation (e.g , den trees, hardwood inclusions, adjacent stands) within or next to the treated area. Side pruning is allowed, but movement of herbicide to the root systems of non-target plants must be avoided Buffers are clearly marked before treatment so applicators can easily see and avoid them.

Prescribed Burning of Treated Areas

120. Areas do not undergo prescribed burning for at least 30 days after herbicide treatment.

Drift Control

121 Weather is monitored and the project is suspended if temperature, humidity, or wind becomes unfavorable as follows

Table 3-12.
Unacceptable Weather Conditions For Herbicide Application

	Temps Higher Than	Humidity Less Than	Wind (at Target) Greater Than
Ground:			
Hand (cut surface)	N.A	N A.	N.A.
Hand (other)	98F	20%	15 mph
Mechanical (liquid)	95F	30%	10 mph
Mechanical (granular)	N.A	N A.	10 mph
Aerial· Granular	N.A	N A.	8 mph

122. Nozzles that produce fine droplets are used only for hand treatment where distance from nozzle to target does not exceed 8 feet.

Water

123 Application equipment, empty herbicide containers, clothes worn during treatment, and skin are not cleaned in open water or wells Mixing and cleaning water must come from a public water supply and be transported in separate labeled containers.

124. Aquifers and public water sources are identified and protected by consulting with States to ensure compliance with their ground water protection strategies.

125. No herbicide is aerially applied within 200 horizontal feet, nor ground-applied within 30 horizontal feet, of lakes, wetlands, perennial or intermittent springs and streams No herbicide is applied within 100 horizontal feet of any public or domestic water source. Selective treatments (which require added site-specific analysis and use of aquatic-labeled pesticides) may occur within these buffers only to prevent significant environmental damage such as nox-

ious weed infestations Buffers are clearly marked before treatment, so applicators can easily see and avoid them.

Herbicide Use Safety

Refer to Method Specific Management Requirements and Mitigation Measures, pages 11 through 15 in *Final Environmental Impact Statement - Vegetation Management in the Appalachian Mountains.*

Safety

126. Forest Service workers who handle herbicides must wear a long-sleeved shirt and long pants made of tightly woven cloth that must be cleaned daily. They must wear a hard hat with plastic liner, waterproofed boots and gloves, and other safety clothing and equipment required by labeling. They must bring a change of clothes to the field in case their clothes become contaminated.

127. Each Forest Service crew must take soap, wash water separate from drinking water, eyewash bottles, and first aid equipment to the field.

128 Contractors ensure that their workers use proper protective clothing and safety equipment required by labeling for the herbicide and application method.

129. Workers must not walk through areas treated by broadcast foliar methods on the day of application

130. Supervisors must ensure that monitoring is adequate to prevent adverse health effects. Workers displaying unusual sensitivity to the pesticide in use are medically evaluated and, if tested as sensitive to the pesticide in use, are reassigned to other activities. Female workers do not use backpack sprayers containing tebuthiuron.

131 The potential risk to humans and the environment is minimized by applying herbicides only according to label instructions, Forest Service policies, and other Federal regulations. Application is supervised by a certified pesticide applicator Areas treated with insecticide are signed and closed to firewood collection Workers who apply herbicides are trained to ensure minimum impacts and maximum effectiveness.

132. Notice signs (FSH 7109 11) are clearly posted, with special care taken in areas of anticipated visitor use. People living within one-fourth mile of an area to be treated aerially are notified during project planning and shortly before treatment.

133. No herbicide is broadcast within 100 feet of private land or 300 feet of a private residence, unless the landowner agrees to closer treatment. Buffers are clearly marked before treatment so applicators can easily see and avoid them.

134. No herbicide is aerially applied within 200 horizontal feet of an open road or a designated trail. Buffers are clearly marked before treatment so applicators can easily see and avoid them.

Control of Spills

135. During transport, herbicides, additives, and application equipment are secured to prevent tipping or excess jarring and are carried in a part of the vehicle totally isolated from people, food, clothing, and livestock feed.

136. Only the amount of pesticide needed for the day's use is brought to the site. At day's end, all leftover pesticide is returned to storage.

137. Pesticide mixing, loading, or cleaning areas in the field are not located within 200 feet of private land, open water or wells, or other sensitive areas.

138. During use, equipment to store, transport, mix, or apply herbicides is inspected daily for leaks.

139. Containers are reused only for their designated purpose. Empty herbicide containers are disposed of according to 40 CFR 165.9 *Group I & II Containers*

140. Accident preplanning is done in each site-specific analysis. Emergency spill plans (FSM 2109.12, chapter 30) are prepared. In the unlikely event of a spill, the spill is quickly contained and cleaned up, and appropriate agencies and persons are promptly notified.

Supervision and Training for Herbicide Use

141. A certified pesticide applicator supervises each Forest Service application crew and trains crew members in personal safety, proper handling, and application of herbicides, and proper disposal of empty containers.

142. Each Contracting Officer's Representative (COR), who must ensure compliance on contracted herbicide projects, is a certified pesticide applicator. Contract inspectors are trained in herbicide use, handling, and application.

LAW ENFORCEMENT

143. Wildfires are investigated by trained personnel to determine cause of ignition. If a fire is determined to be man-caused, it is investigated by trained law enforcement personnel.

144. Violations of State and Federal laws are investigated by trained law enforcement personnel

145. Emphasis is placed on the prosecution of persons who violate federal laws and state laws on National Forest lands.

146. Violation of laws is addressed through proper enforcement procedures by enforcement personnel.

147. Enforcement personnel emphasize monitoring areas of concentrated human use, with occasional patrols in areas of lighter human use such as wilderness, to ensure compliance with established rules and regulations

148 Applicable traffic laws are enforced. Forest enforcement officers cooperate with state and local authorities to ensure safety standards are implemented

149. The Forest cooperates with state and local agencies through the use of Cooperative Law Enforcement (PL 92-82) and other federal Interagency Memorandum of Agreements.

150. The threat to the public safety and the welfare of property and resources of the United States caused by those persons violating provisions of the pertinent controlled-substance laws and other laws administered and enforced by designated agents and officers of the Forest Service is minimized.

MINERALS

151. Where reserved or outstanding mineral rights are involved, the mineral owner is encouraged to implement all surface-disturbing activities outside riparian areas

152 The exercise of reserved rights is in accordance with the applicable state and federal laws and secretary's rules and regulations

153 The exercise of outstanding rights is in accordance with terms of the deed of separation and applicable state and federal laws and regulations.

154. Proposals for mineral exploration and development are considered in coordination with other resource values. Forest officers work cooperatively with the public and appropriate state and federal agencies on requests for mineral activities while insuring that environmental concerns are fully considered.

155. Any approved mineral activities include appropriate reclamation plans Plans will consider opportunities to enhance the desired future condition of that particular management area.

156. Common variety mineral materials are used for in-service use when practical as a substitute for more expensive processed material The Forest regulates the sale and free use of common variety materials.

RECREATION
Trails

157. The trail system is managed to provide for a variety of trail users and experience levels.

158. Trails are closed to motorized recreation use unless designated otherwise.

159. The Share-the-Trail concept is actively promoted with hikers, horseback riders, and mountain bikers using the same trail unless resource damage or user safety prohibits.

160. Low standard roads and travelways may be used to augment horse, mountain bike, OHV and general hiking demands.

161. The trails Transportation Information System is periodically updated to document use and maintenance needs.

162. Rights-of-way across private land are secured when opportunities exist. Priority is given to existing system trails which cross private land without the benefit of a right-of-way.

163. Trail brochures are developed that depict, at a minimum, trailheads, trail locations, and private land boundaries.

164. To ensure the appropriate level and type of maintenance is performed on individual trails, a maintenance level is assigned as part of the Transportation System Plan.

165. Motorized use of the trail system is permissible for administrative purposes, emergencies, at road crossings, when the trail is specifically designated for motorized use, or when the trail is on an existing open public road.

166. Management activities along system trails shall be implemented with sensitivity to the experience of the users. Appropriate techniques to mitigate the effects of management activities is addressed during site specific project analysis. Measures to mitigate the effects of activities might include vegetative screening; the temporary re-routing of trail segments; temporary trail closure, avoidance and reclamation; and timing of project implementation to reduce impacts during high use periods.

167. Trail maintenance activities are commensurate with the existing ground conditions and the level of use the trail receives. The priority for performing trail

maintenance activities is to: correct unsafe conditions, prevent resource and trail damage from occurring, and fully restore the trail to the planned design standard

168. Volunteers, groups and individuals, are encouraged to help construct, maintain, and monitor the trail system.

169. Trail planning, construction and maintenance is consistent with the Trails Handbook (FSH 2309 18)

170. Information concerning trails and trail use opportunities is posted at campgrounds and picnic areas in the close vicinity of a system trail.

171 Trail signing is consistent with the Sign Handbook (FSH 7109 11) and EM-7100-15, Standards for Forest Service Signs and Posters.

172. Trail markers and/or blazes are maintained to provide the public with clear trail delineations. No more than one trail marker should be visible in either direction at one time during leaf-on seasons. Ninety degree or greater changes in direction should be indicated with two markers, one right above the other This type marking does not apply to Wilderness (Management Area 8)

173. Loop opportunities are emphasized when considering trail construction.

174. When feasible to do so, and consistent with other management activities, trailhead parking is provided where roads open to public vehicular travel intersect system trails. Trail/road intersections are adequately signed.

175 The first priority for the construction and maintenance of interpretive trails is near or adjacent to high use areas such as campgrounds, visitor centers, picnic areas, or District offices. Providing accessibility to persons with disabilities is considered when developing interpretive trails.

176. To the extent practical, combining interpretive trails with other trail uses such as general hiking, horse and ATV use is avoided.

177. Interpretive messages or themes for a trail are designed to achieve management objectives, develop user awareness, and promote enjoyment of the area.

Licensed OHV Use

178. OHV/ATV stream crossings are prohibited except at designated crossings where bridged or where approaches are graveled a minimum of 50 feet from edge of stream

179. OHV use is available on roads open for public use and on routes specifically designated as open to OHV use. OHV use on open public roads is limited to vehicles and operators that are in compliance with motor vehicle laws of the state. For additional direction on OHV use, see Management Area 11 standards.

ROADS

180. Right-of-way grants for arterial/collector roads are, to the extent practicable, confined to existing designated corridors.

181. The Forest Supervisor may establish additional designated corridors on a case-by-case basis based on site-specific analysis and disclosure.

182. Management requirements for permittee access roads, where roads are included in the authorization, are specified in the designated use permit.

183. Maintenance, reconstruction, and relocation of an existing road is allowed to reduce environmental damage and to improve user safety.

184. Construction of parking areas along heavily traveled roads is emphasized to improve safety and minimize environmental impacts

185. Permanent vegetation, preferably native to the mid-Appalachian area, is established and maintained on roadbeds of intermittent service roads when they are closed. Cut and fill slopes of all roads have permanent vegetation established.

186. Closed system roads are managed on a case-by-case basis for linear wildlife strips, foot travel, horseback, mountain bike or other non-motorized use.

187. Closed roads are revegetated with non-invasive vegetation, preferably native to the mid-appalachian area for erosion control and wildlife habitat. Fescue is not used unless it is critical for erosion control

188. Roads are designed and constructed to the lowest standard necessary to meet management area objectives.

SOIL AND WATER

Floodplains and Wetlands

189. The Water Resources Council prescribed eight-step decision-making process is used in applying the floodplain management Executive Order (EO 11988).

190. Design, construction, or rehabilitation of Forest Service real property is in accordance with the standards and criteria outlined in the National Flood Insurance Program.

191. Flood hazards are identified by placing appropriate signs or other means of conspicuous delineation showing the highest past flood level and probable 100-year flood heights in identified flood hazard areas and in public use areas which have suffered flood damage. Priority is placed on those areas where flood warning time is minimal, or where critical structures and facilities are involved.

192. Methods in Chapter 20, FSH 2509.17, are used for delineation of floodplains. For critical actions, such as hazardous substance (e.g., pesticide) storage, 500-year floodplains are determined by the process outlined in "Procedures for Estimating the Depth of the 500-year Flood on the George Washington National Forest."

193. Proposed land exchanges/acquisitions are analyzed for their effects on floodplains and wetlands

194 Where floodplains or wetlands are involved, appropriate protective restrictions are included in the conveyance documents for lease, easement, right-of-way, or disposal to nonfederal public or private parties (Forest Service Manual 2527.4).

195. For proposed actions involving wetlands, reasonable alternatives are developed and evaluated and a determination is made as to whether the "no action" alternative is better than other alternatives

196. For wetland identification, the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* and guidance in FSM 2527, R8 Supp 37 are used.

197. Order I Soil Resource Inventories are developed for all intensive project activities, (i.e., permanent road construction, work center construction, developed recreation construction).

198. Order II surveys are developed on all National Forest lands by the end of this planning period (10 years).

199. Eroding lands are inventoried, improved, and maintained These areas are identified in the Watershed Improvement Needs Inventory.

200. Any project must comply with permitting requirements of Section 404 of the Clean Water Act for (1) construction activities that may alter or obstruct navigable waters and (2) the discharge of dredge or fill materials into the waters of the United States

Designated Stream Crossings

201. Vehicles or equipment are allowed to cross streams at designated crossings only.

202. The use of construction equipment in streams is limited to the amount of time absolutely essential for completion of the project.

203. Protected streamcourses are designated in the timber sale contract.

204. Stream crossings are designed to allow upstream trout passage where potential upstream habitat exists. Passage is generally for a 5-inch trout (minimum spawning size).

205. Needs to provide fish passage for fish other than trout is determined on a case-by-case basis.

206. In any project, water quality is protected from nonpoint-source pollution through use of standards that meet or exceed preventive "best management practices" (BMP's). Implementation of these standards, monitoring and evaluation of their application and effectiveness, and adjustment of practices as needed is done to protect beneficial water uses. These standards are applied to all activities.

207. The use of fescue for soil stabilization is avoided due to its detrimental effect on wildlife. Where use of fescue is considered necessary, endophyte-free seed will be planted.

208 The Forest stays current with Virginia and West Virginia "best management practices" (BMPs) and erosion and sediment control regulations and amends the Forest Plan if BMP modifications or regulation changes become more restrictive than Revised Plan standards.

209. The Forest complies with the state water quality standards and anti-degradation policies.

210. Impoundments are allowed on intermittent streams on a case-by-case, site-specific evaluation. Impoundments are designed to allow complete draining. A downstream catch basin is constructed for fish salvage.

211. To maintain soil productivity when managing forest resources, the organic or litter layer, topsoil, and root mat should be left in place over 85 percent of the area of the planned activity. This practice insures the protection of the physical, chemical, and biological needs of the soil to maintain and improve productivity.

212. Where soils are disturbed by management activities, appropriate revegetation measures are implemented within 14 days of termination of disturbance. When outside the seeding season, initial treatments may be of a temporary nature, e.g., armoring the exposed area against the impacts of raindrops and surface runoff.

Timber Harvesting

213. A dispersed skidding pattern is established that does not severely compact or erode the soil resource.

214. Soils with high compaction potential are not logged during wet weather to avoid rutting.

215. Whole tree harvest is not allowed.

216. Project plans and their environmental analyses which plan to conventionally harvest timber recognize and specifically analyze conditions and situations where soil productivity may be impaired long term. These conditions are listed as: soils less than 20 inches to bedrock, extremely stony surfaces, and conditions established by the soil inventory where K-value (soil erodibility factor) and continuous slope indicates the T-Factor (allowable soil loss) is exceeded.

Stream Protection

217. Logging and/or road construction operations are constructed in such a way as to prevent debris from entering protected streams. Prompt removal, within 48 hours, is equivalent to prevention except where specified otherwise (Title 62, Chapter 20, sections 62.1-194.2, Code of Virginia).

218. Roads are located outside riparian areas unless no alternative exists. Stream-crossings are allowed at designated crossings only

219. Fords associated with new road construction are not used in any trout streams without site-specific environmental analysis When fords are used, at least 50 feet of gravelled approaches are provided. Erosion stone or larger rock is used to increase road bearing strength at the water/land interface.

220. To prevent erosion, fill around road crossings and culverts is stabilized by riprapping, planting, mats, etc. Revegetation measures are implemented on fill slopes over culverts as soon as possible after completion. Artificial sediment trap buffers are created by installing barriers, fences, etc. as required.

221. Construction of permanent crossings is completed on all streams as soon as possible after work has started on the crossing. Portions of roads on either side of stream crossings that would potentially contribute sediment to the stream are gravelled. Special precautions are taken on Hayesville soils.

222. Generally, permanent structures or temporary stringer bridges on permanent abutments are provided when crossing wild trout streams.

Streamside Management Zones

223. Ground-disturbing activities are allowed within the filter strips if the action alternative will cause more resource damage. These activities are minimized and effective sediment trapping structures such as silt fences, brush barriers, hay bale barriers, gravelling, etc. are required. Sediment control, prior to or simultaneous with the ground-disturbing activities, is provided.

224. Disturbance from vehicular use, campsites, parking areas and other use within the filter strip is limited so as to result in less than 5 percent of the area with bare soil exposed.

225. Precautions are used with any resource management activity to assure minimal soil disturbance.

226. Vehicle exclusion zones are provided to protect riparian areas from ground disturbance (Table 3-13).

227. Filter strips are left between areas of severe soil disturbance (roads, landings, and bladed skid trails) and all lakes, wetlands and perennial streams (Table 3-13).

228. Shade strips are left to maintain ambient water temperature regimes and maintain moist habitats. Up to 20% basal area removal of dominant and codominant trees is allowed if desired future conditions are maintained (Table 3-13).

Table 3-13.
Streamside Management Zones [Widths (in feet) required from each bank or edge of lakes, wetlands, and perennial streams] for Vehicle Exclusion Zones (VZ), Filter Strips (FS) and Shade Strips (SS).

Slope	0-10%	11-20%	21-45%	45%+
VZ	66	66	66	66
FS	66	66	100	200
SS	66	66	66	66

Intermittent Streams

229. Timber harvest can be conducted along intermittent tributaries that flow into wild trout streams if the desired future condition of the wild trout stream is not adversely affected. Harvest is regulated by Streamside Management Zone standards (Table 3-14).

230. Vehicle exclusion zones are designated along all intermittent streams to provide protection from disturbance by ground-skidding vehicles (Table 3-14).

231. Filter strips are left between areas of soil disturbance (roads, landings, and bladed skid trails) and all intermittent streams (Table 3-14).

Table 3-14.
Streamside Management Zones [Widths (in feet) from each bank of intermittent streams for Vehicle Exclusion Zones (VZ), Filter Strips (FS), and Shade Strips (SS).]

Slope	0-10%	11-20%	21-45%	45%+
VZ	33	33	33	33
FS	33	33	50	100
SS	33	33	33	33

232. Ground-disturbing activities are allowed within the filter strips if the alternative will cause more resource damage. These activities are minimized and effective sediment trapping structures such as silt fences, brush barriers, hay bale barriers, gravelling, etc. are required. Sediment control, prior to or simultaneous with the ground disturbing activities, is provided.

233 Up to 50 percent basal area removal of dominant and co-dominant trees is allowed on intermittent streams if desired future conditions are maintained. Retain all trees on the immediate lip of the stream bank where roots provide structural stability to the stream channel.

234. Springs or permanent seeps are protected from disturbance during management activities. Exact size and shape is determined by on-the-ground conditions, i.e., soils, vegetation, hydrology.

SPECIAL USES AND ACCESS EASEMENTS

235. Existing needed authorizations can continue. Authorizations that expire are reviewed for compliance with management area objectives prior to either extending or issuing a new authorization.

236. Each new request is evaluated on a case-by-case basis for consistency with management area objectives and public need.

237. Authorizations are not granted when suitable alternative facilities can be secured.

238. Expanded use of existing facilities is preferred over development of new facilities.

239. Recreation residences are not allowed.

THREATENED, ENDANGERED AND SENSITIVE SPECIES

240. A Biological Assessment (BA) is done as a part of a site-specific environmental analysis to determine if and how a project affects federally listed (endangered and threatened) and federally proposed species. A Biological Evaluation (BE) is done as a part of a site-specific environmental analysis to determine if and how a project affects those species designated as sensitive by the Regional Forester.

This assessment and/or evaluation considers all available inventories of threatened, endangered, and sensitive species occurrences and suitable habitat in the project area. When adequate inventory information is unavailable, it is to be obtained by on-site field surveys when the site has high potential for occupancy by a threatened, endangered, or sensitive species

241. Requirements and measures for activities affecting threatened or endangered species are detailed in species recovery plans and FSH 2609.23R. Recovery plans have been prepared for the eastern cougar, Virginia northern flying squirrel, bald eagle, American peregrine falcon, shale barren rockcress, swamp pink, James spinymussel, Indiana bat, and Virginia big-eared bat. A recovery plan is pending final approval for northeastern bulrush. A chapter in FSH 2609.23R has been prepared for the bald eagle.

242. If, either with or without informal consultation with the Fish and Wildlife Service, it is determined that a proposed project would not affect federal designated threatened or endangered species, the concurrence of the FWS is not required. If it is determined that a proposed project would have beneficial, insignificant or discountable effects to federal designated threatened or endangered species (the "not likely to adversely affect" determination under the Endangered Species Act), the concurrence of the FWS is required prior to making a project decision. If it is determined that a proposed project would have

adverse effects to federal designated threatened or endangered species (the "may effect" determination under the ESA), formal consultation should be initiated and completed with the FWS prior to any decision to implement the project.

243. If it is determined that a project may have adverse effects to individual of a sensitive species, evaluate whether the overall species' survival or population viability on the planning unit, are at risk. Contact appropriate State agencies, Natural Heritage Programs, and other appropriate cooperators or species authorities to identify conservation measures that might be implemented. On the Forest it is recognized that individuals of a sensitive species may be affected but the goal is to prevent negative population trends that would result in Federal listing.

244 Stands that contain a red spruce component are managed to increase the red spruce component. In such an instance, the activities must comply with the recovery plan for the Virginia Northern flying squirrel.

245. The current list of Regional and Forest Sensitive Species is found in Appendix L of the Revised Plan. This list will be updated with additions and/or deletions annually.

246. Eagle nests are protected from disturbance with a minimum of a 1/2 mile buffer restricting management activity. Refer to the recovery plan for eagle for the specifics on the management in the 1/2 mile buffer.

TIMBER

Suitability

247. Any projects involving regeneration harvesting are evaluated to determine if the proposed harvest units are located on lands suitable for timber production as identified in the Revised Plan. This evaluation is documented in the project-level environmental analysis document with a finding of suitability incorporated into the decision document.

248. Any projects involving regeneration harvesting on lands identified as unsuitable for timber production in the Revised Plan are evaluated to determine that (1) such harvesting is necessary to protect or enhance multiple use values other than timber production and (2) such harvesting is consistent with the management direction for the appropriate management area. The decision document contains this finding.

Mechanical Equipment

249. Timber stand improvement (TSI) and reforestation practices with mobile mechanical equipment is not allowed.

Salvage

250. Timber can be salvaged as a result of natural catastrophic events, such as fire, insect and disease, wind, ice, or snowstorm, only when it can be done without damaging any identified values of the area.

251. The size of openings allowed for harvesting timber on lands suitable for timber production as a result of fire, wind, ice, snow, and insect attacks will be determined on a case-by-case basis rather than established opening size limits.

252. Salvage of dead or down trees by personal use permit for fuelwood purposes is allowed Forestwide from existing roads, except for the following management areas:

4 (Historical, geological and Research Natural Areas only)
8 (Wilderness and Wilderness Study Areas)
12 (Developed Recreation Areas)
20 (Administrative sites, Utility Corridors and Communication Sites)

253. Salvage of dead, dying or degrading trees can occur to utilize high value products for the economic and social well being of local communities, where such vegetative manipulation helps meet the desired future condition of the management area.

254. Post-harvest treatments permissible on lands suitable for timber production with site index 70+ are:

a. Installation of tree shelters on existing advanced reproduction of hardwood species.

b. Planting of hardwood species at approximately 45 feet spacing (22 trees/ac) where natural advanced reproduction is inadequate.

c. Release of trees in tree shelters from competing vegetation.

255. Post-harvest treatment includes planting naturally or historically occurring pine species on site index 50 or 60 land where desirable susceptible hardwood or pine advance reproduction is not adequate. Use a 15 foot spacing to achieve a net survival of about 160 trees per acre.

256. Felling without removal of dead, dying or degrading trees can occur in any management area to provide for public safety

257. Following salvage situations, mixed stands of hardwood and pine will be managed to facilitate natural species diversity including both naturally or historically occurring pine and hardwood species.

Regeneration Harvest Methods

258. The decision document for any project utilizing clearcutting contains a determination that clearcutting is the optimum method to meet the goals, objectives, desired future condition, and standards for that management area as described in the Revised Plan.

259. Harvesting of trees to meet the desired future condition of a particular management area may occur prior to rotation age. For regeneration cuts, harvesting cuts are not scheduled prior to culmination of mean annual increment.

260. The decision document for any project utilizing other even-aged regeneration harvest methods (including seed tree, shelterwood, or modifications of these methods) contains a determination that such even-aged regeneration harvest methods are appropriate to meet the goals, objectives, desired future condition, and standards for that management area as described in the Revised Plan.

261. Specific locations of lands allocated to uneven-aged management are shown on the special feature map.

Regeneration of Stands

262. Timber harvesting on lands suitable for timber production must be done under a regeneration harvest method where adequate stocking of desirable species* is expected to occur within 5 years after the final harvest cut ** The new stand must have adequate stocking as described in the following table. These apply to both artificial and natural means of stand regeneration. Where natural means are used and stand re-establishment has not been accomplished within 3 years after committing the stand to regeneration, the stand is re-examined for further treatment needs.

* Desirable species are the species comprising the management type prescribed for the newly established stand. The management type for any regenerated stand is selected based on site conditions and the goals, objectives and desired future condition of the appropriate Management Area as described in the Revised Plan.

** Five years after final harvest cut means: 5 years after clearcutting; 5 years after final shelterwood overstory removal; 5 years after seed tree removal; 5 years after group selection.

Table 3-15.
Restocking Standards

Forest Type	Minimum Level	Desired Level	Maximum Level
	Number of Stems per Acre[1]		
White Pine	150	250-300	500
Mixed pine–hardwood	200	400-600	900
Hardwoods	150	250-300	500
Yellow Pine	300	500-700	900

[1]The levels are guides and must be used in conjunction with professional judgement to determine acceptable restocking levels for a specific site.

263. Practices are planned so as to have the desired species uniformly distributed over the area of the regenerated stand. Up to 15 percent of the total regenerated area may contain stocking of desirable species falling below the lower stocking level, provided the stand as a whole contains a level of average stocking above the minimum level.

Cultural Treatments to Stands

264. Pine forest types can be regenerated artificially or naturally to native pine species that are commonly occurring within the local watershed. Pine-hardwood forest types can be regenerated artificially or naturally to mixed pine-hardwood stands of native species that are commonly occurring within the local watershed.

265. Pine and hardwood stands may receive release and weeding necessary to meet growth rates and stocking levels established in the *Restocking Standards* table. Stands are considered for release when the desired seedlings are not free to grow or when competing growth threatens to overtop and compete directly for sunlight, moisture, and nutrients.

266. Precommercial thinning of pine (usually done before age 10 to 15 years) is considered when stem density exceeds the maximum level of restocking standards.

267. Species composition and tree vigor are maintained in stands at a level that will reduce susceptability to gypsy moth damage.

268. Hardwood stands, where codominant trees of seedling (not sprout) origin are 25 feet or taller, are considered for precommercial thinning.

269. In management area prescriptions where a mixed pine/hardwood type is the management objective, release or precommercial thinning is designed to favor best quality stems of desired species, which includes both hardwood and pine. Best quality includes consideration of origin (sprout or seedling), form, and species.

270. The thinning of stands that lie between group cuts is considered on a site-specific basis. Leave basal area is determined on site-specific evaluation of the stand.

271. Stand tending treatments are carried out through precommercial thinning, timber stand improvement, and thinning to maintain proper stocking and growth of desirable species.

272. Pre-harvest site preparation is performed when appropriate to enhance opportunities to obtain desirable species. A range of methods, including herbicides may be used.

273. Post-harvest site-preparation is performed to obtain either artificial or natural regeneration of desirable species. A range of methods, including herbicides may be used.

274. Artificial regeneration with genetically improved seedlings, when available, is used when regenerating pine or pine-hardwood stands and pine is the prescribed management type.

Dispersion of Even-Aged Openings

275. Even-aged regeneration methods (clearcut, shelterwood, and seed tree) will be separated from each other by a minimum distance of 330 feet (5 chains). "Removal cuts" (in this case, the practice of commercially removing the overstory, usually a mixed oak stand containing scattered white pine sawtimber, from a naturally established white pine seedling-sapling understory/midstory) are also regeneration cuts to which these dispersion requirements apply.

276. The area between these regeneration cuts must support a stand of vegetation such that it is not classified as an opening (except in cases of natural openings, powerline, gas line, road and other rights-of-way, and wildlife openings).

277. If the minimum distance (330 feet) between openings adversely impacts harvesting during future entry, then adjustment of present opening size or shape should be considered in addition to increasing the minimum distance.

The best overall long-term location of roads, skid trails, landings, and openings for lands suitable for timber production in the area must be considered for cost-effectiveness and adequate resource protection.

278. There are no dispersion requirements for openings created by uneven-aged regeneration harvest methods except that, at a minimum, an operable size of area suitable to timber harvest at another entry shall be left.

Duration of Even-Aged Openings

279. The earliest an even-aged regeneration cut is scheduled next to a past even-aged harvest area is after the past area has been regenerated and is no longer considered an opening.

280. An opening appears regenerated and is no longer an opening when the certified reestablished stand has reached a height that is approximately 20 percent of the height of the tallest adjacent stand.

a. Heights in both the regenerated stands and adjacent stands are based on the average height of the dominant and codominant trees.

b. Determination of the height relationships is made at the time of developing a specific project plan This determination should show whether the appropriate height has been reached or whether the appropriate height is projected to be reached by the time of treatment.

c. The percentage relationship is allowed to vary up or down for specific stand situations where an interdisciplinary planning team, following the NEPA process, recommends to the responsible official that adjusting the percentage leads to better attainment of the overall objectives of multiple-use management.

281. Even-aged regeneration harvest cuts may be scheduled next to uneven-aged stands at any time.

Maximum Size of Even-Aged Openings

282. The maximum size of openings for all management types for clearcut, shelterwood, modified shelterwood, and seed tree harvest cutting methods is 40 acres in Virginia and 25 acres in West Virginia.

283. These size limits may be exceeded on an individual timber sale basis after 60-days public notice and a review by the Regional Forester.

284. A removal cut, when applied as a harvest method to remove the overstory from a naturally established white pine seedling-sapling stand, is considered as a regeneration harvest method for the purpose of maximum opening size limitations and dispersion.

Size of Uneven-Aged Openings

285. The maximum size of a group cut opening is determined by the height of the bordering dominant trees. When the center of the opening begins to receive the same duration of full sunlight as a clearcut, then the opening is of maximum size. This maximum size opening can have a diameter of 2 to 2-1/2 times the height of bordering trees, depending on degree and aspect of slope.

Cultural Treatments

286. Cultural treatments such as thinning, weeding, and other partial cutting may be utilized where they are intended to increase the rate of growth of remaining tree species, favor commercially valuable tree species, favor species or age classes which are valuable for wildlife or less susceptible to gypsy moth, or achieve other multiple-use benefits.

287. Site preparation with handtools can be used if needed to provide stump and root sprouting

Temporary Roads and Skid Trails

288. Temporary roads and skid trails are revegetated after silvicultural activities are completed.

Wildlife Coordination

289. In timber sale areas located in Management Areas 14 and 15, 7-8 years of quiet period is provided between the end of one set of major companion projects and the start of another.

a. A set of companion projects is defined as several practices associated with each other, such as road construction, timber sale(s), post timber sale work, and road closure. Companion projects will normally last two to seven years.

b. A project or set of companion projects is major when the sustained use of heavy equipment occurs for six months of the year or more and/or will directly impact 50 acres or more of a compartment-sized area.

c. Other activities such as drilling a single gas well, firewood cutting, timber stand improvement, wildlife habitat improvement, hauling through an area, or administrative traffic are not defined as major projects and do not count against the quiet time standard.

d. Compartments will be the normal area for applying the quiet time standard. In the event that a major project occurs in more than one compartment, a project area will be defined and mapped during project planning for the purpose of applying the quiet time standard. It will remain the same for the entire re-entry cycle

VEGETATION

290. Any decision document for projects involving the use of vegetation management practices contains a finding that these management practices are in compliance with the seven requirements found at 36 CFR 219.27(b).

WEEDS

291. Weeds are managed under directions specified in FSM 2080 1-2082 *describing noxious weed management.*

WILDLIFE

292. Prescribed burns are allowed when meeting specific objectives such as restoration of habitat for threatened, endangered, and sensitive species, re-establishing natural ecosystems, site preparation, and wildlife habitat improvement.

293. Wildlife stand improvement (WSI) seeks to improve vegetation species composition in timber stands and to develop wildlife habitat areas for game and nongame species. A variety of woody and herbaceous species suited to site conditions and burning regime are maintained to assure year-round quality habitat.

294. Closed roads and wildlife habitat improvements are revegetated with non-invasive vegetation (preferably native to the mid-Appalachian area) for erosion control and wildlife habitat Fescue is not used unless as a last resort in erosion control.

295 For understory species WSI, proper management allows full sunlight on 30 percent of the forest floor. For hardwood overstory WSI, thinning encourages full crown development, vigorous growth, and soft or hard mast production. When thinning stands older than 30 years, stems are favored which show positive indication of bearing soft or hard mast.

296. During TSI, WSI, and site preparation, selected groups of overstory and understory vegetation are protected and managed to assure a variety of soft mast, hard mast, and cover species. During site preparation, active and potential den trees are retained in clumps (at least 1/2 acre per 20 acres) if they are not provided in adjacent stands or inclusions. During TSI and WSI, all recognized den trees are protected. In addition, during TSI, WSI, and site preparation, an average of at least two standing dead snags are retained per acre in the form of large hardwood trees (greater than 12 inches) when possible Appropriate treatments are used to create snags where natural snags are lacking.

297. Soft mast understory species such as dogwood and serviceberry over two inches DBH are retained where available and when their abundance does not inhibit adequate stand regeneration

298 Out-year timber sale scheduling for timber sales located in Management Areas 14 and 15 is coordinated with VDGIF and WVDNR in order to provide the maximum degree of dispersion possible and minimize the degree of motorized disturbance.

299. To insure early input, wildlife and fisheries management activities (prescribed burning, wildlife opening management, roads management, etc.) are coordinated with VDGIF and WVDNR on an annual or an as-needed basis.

300. Multi-year wildlife/fisheries implementation plans are developed for each ranger district in cooperation with VDGIF and WVDNR.

Road Density

301. The road density goals for wildlife management areas are calculated as follows:

a. Calculate the total area for the individual management area in question.

b. Divide the total acres by the number of miles of open Forest Service system roads that penetrate the area. Boundary roads are not used in the calculation

c. Open roads are defined as any system road that is open for the general public to use anytime during the year. For activities not related to projects designed to meet resource objectives, for example, gathering firewood following a timber sale, may be linked to meeting project objectives.

CHAPTER 4

IMPLEMENTATION OF THE REVISED PLAN

INTRODUCTION

The purpose of Chapter 4 is to provide information on how the Revised Plan will be put into practice, or implemented This chapter also discusses both National Forest Management Act (NFMA) and National Environmental Policy Act (NEPA) requirements which must be met when site-specific projects and activities are done to implement the Revised Plan.

LEGAL REQUIREMENTS

The National Forest Management Act (NFMA) states "Resource plans and permits, contracts, and other instruments for the use and occupancy of National Forest System lands shall be consistent with the land management plans. Those resource plans and permits, contracts, and other such instruments currently in existence shall be revised as soon as practicable to be made consistent with such plans. When land management plans are revised, resource plans and permits, contracts, and other instruments, when necessary, shall be revised as soon as practicable Any revision in present or future permits, contracts, and other instruments made pursuant to this section shall be subject to valid existing rights" [USC 1604(i)].

IMPLEMENTATION THROUGH PROJECTS

The Revised Plan will be implemented through a series of project-level decisions based on appropriate site-specific environmental analysis and disclosure. The Revised Plan does not contain a commitment to the selection of any specific project. Instead, it determines what types of projects are permissible and under what conditions on different portions of the Forest. For instance, the Forest Plan may determine that portions of specific management areas are suitable for timber production. It does not make decisions on the specifics of any particular timber sale that could occur on lands suitable for timber production Such decisions must be based on appropriate site-specific analysis and appropriate disclosure during project-level implementation

The projects chosen to implement this Revised Plan should be those which lead to goals, objectives and the desired future conditions described in Chapters 2 and 3. There is, however, no specific requirement that a project must contribute to achievement of the goals, objectives, and desired future conditions. Any project that is in compliance with the standards in Chapter 3 of this document may be selected for implementation.

As described in Chapter 5, the ID Team will evaluate how the selection of projects is achieving the goals, objectives and desired future conditions of the Revised Plan.

COMPLIANCE

Upon the signing of the Record of Decision for the *Environmental Impact Statement for the Revision of the Land and Resource Management Plan for the George Washington National Forest*, responsible Forest officers will begin to assess existing resource plans and permits, contracts, and other instruments for compliance with the standards listed in Chapter 3 of this document Normally, such resource plans and permits, contracts, and other instruments not in compliance with the appropriate standards shall be amended or revised The responsible Forest Officer, however, retains the right to amend the Revised Plan to permit certain existing resource plans and permits, contracts, and other instruments to be in compliance with the amended Forest Plan.

Any resource plans, permits, contracts and other instruments not yet implemented will be assessed for compliance to the standards in Chapter 3 of this document prior to any decision. Normally, such resource plans, permits, contracts and other instruments not in compliance with the appropriate standards will be made consistent before a decision is made. The responsible Forest Officer, however, retains the right to amend the Revised Plan to permit certain existing resource plans and permits, contracts, and other instruments to be in compliance with the amended Forest Plan

The Forest Standards in Chapter 3 of this document contain a standard that requires an evaluation and finding for any project. The finding of consistency must be incorporated into the decision document when one is required.

The Revised Plan serves as the single land and resource management plan for the Forest; all other management plans are replaced or incorporated by this direction. A number of other plans have been (or will be) developed to give additional, more specific guidance to management activities These are developed "under the umbrella" of direction established in this Plan. These other plans are needed for site specific information or to carry out the direction in this Revised Plan. Some examples of these include:

- Fire Management Action Plans
- Wilderness Implementation Schedules
- Biological Area Management Plans
- Wild and Scenic Rivers Management Plans
- Caves Management Plan
- District Fish and Wildlife Implementation Plans

- Cooperative Agreement for Fish and Wildlife Management between the Forest and Virginia Department of Game and Inland Fisheries and West Virginia Department of Natural Resources

This Revised Plan supersedes the previous land and resource management plan approved for the Forest in 1986.

The Revised Plan incorporates Records of Decision for the following environmental documents:

- Final EIS on Vegetation Management in the Appalachian Mountains (1989).
- Final EIS for Suppression of Southern Pine Beetle (1987).
- Final EIS for Gypsy Moth Suppression and Eradication (1985).
- Final EIS for Appalachian Integrated Pest Management (1989).

Subject to existing rights, all other contracts (except as noted below for timber sale contracts) will be brought into compliance with the Revised Plan generally within three years after the Revised Plan is enacted or as otherwise specified in Forest Standards.

Timber

All timber sales offered for sale will be in compliance with management direction in the Revised Plan. Timber sales under contract prior to issue of the Revised Plan will be administered under provisions of the existing contracts. Changes to existing timber sale contracts may be proposed on a case-by-case basis where over-riding resource considerations are present.

All reforestation, timber stand improvement and related silvicultural activities proposed will be in compliance with management direction in the Revised Plan. Existing contracts for nontimber sale silvicultural work issued prior to the approval of the Revised Plan will continue to be administered under provisions of the pre-existing contracts. Changes to pre-existing contracts may be made on a case-by-case basis when over-riding resource considerations exist. Ongoing silvicultural work being accomplished by Forest Service crews will immediately comply with direction upon approval of the Revised Plan

Recreation

Issue of new recreation special use permits or re-issue of existing annual recreation special use permits will be consistent with the management direction in the Revised Plan on the first issue or re-issue date following implementation of the Revised Plan

Re-issue of existing term recreation special use permits will be consistent with management direction in the Revised Plan on the first re-issue date or the first proposed permit transfer date following implementation of the Revised Plan

Minerals

New mineral lease applications, permits, contracts and operating plans will be evaluated for consistency with the Revised Plan as they are received or proposed All existing permits and operating plans will be reviewed for consistency with the standards in the Revised Plan within three months Operators and permittees will be notified of any necessary, appropriate modifications The circumstances under which an operating plan can be modified are detailed in 36 CFR 228

Minerals material sales now under contract will be administered under the provisions of the existing contracts Changes to these may be proposed on a case-by-case basis where overriding resource protection considerations are present

The Forest Service has no authority to modify stipulations attached to existing mineral leases

Lands

Issue of new special use permits or reissue of existing special use permits will be consistent with management direction in the Revised Plan Term permits will be consistent with management direction in the Revised Plan on the first re-issue date or the first proposed permit transfer date following implementation of the Revised Plan

All future land ownership adjustment proposals will be evaluated for consistency with the Revised Plan as they are received or proposed.

Facilities

All new contracts for constructing or reconstructing facilities (including roads and buildings) will be in compliance with management direction in the Revised Plan. Any construction or reconstruction projects under contract prior to issue of the Revised Plan will be administered under provisions of the existing contracts. Changes to existing contracts may be proposed on a case-by-case basis where over-riding resource considerations are present

Range

Issue of new term grazing permits or re-issue of existing term grazing permits will be consistent with Forest Plan direction on the first issue or re-issue date following implementation of the Revised Plan.

Wildlife

All Fish and Wildlife Projects included under the Sikes Agreement between the Forest and Virginia Department of Game and Inland Fisheries and West Virginia Department of Natural Resources will be consistent with management direction in the Revised Plan.

WHAT IS DECIDED IN THE REVISED PLAN

The Revised Plan is a programmatic document that deals with the management of the George Washington National Forest for the next 10 to 15 years. One might ask what is decided in the Revised Plan. These decisions are:

1. To establish Forest-wide multiple use goals, objectives and standards, including estimates of the goods and services expected [36 CFR 219.11(b), resource integration requirements of 36 CFR 219.13 to 219.26, and the requirements of 36 CFR 219.27];

2 To establish management areas with multiple-use prescriptions containing objectives, desired future condition and standards [36 CFR 219.11(c)];

3 To identify land that is suitable for timber production [36 CFR 219.14];

4. To establish Forest-wide Allowable Sale Quantity (ASQ) and the Timber Sale Schedule [36 CFR 219.16];

5 To allocate twenty-four roadless areas to management areas which permit a range of multiple uses [36 CFR 219.17];

6 To recommend St. Marys Addition, The Priest and Three Ridges Roadless Areas for wilderness study [36 CFR 219.17];

7. To identify six areas for additions to the Research Natural Area (RNA) System [36 CFR 219.25];

8. To establish a monitoring and evaluation process [36 CFR 219 11(d)],

9. To determine what lands are made available for leasable mineral development [36 CFR 228.102(d)];

10. To designate "Special Interest Areas".

The approval of the Revised Plan puts into place a dynamic management plan for making future decisions. In addition to providing multiple-use goals, the Revised Plan has some features of a "zoning ordinance" as it permits, prohibits, and establishes standards which regulate activities.

It is not possible to have a plan which completely satisfies all public concerns about management of the Forest. Nor is it realistic to believe that at one point in time, all questions regarding national forest land use and management can be answered The Forest planning process is never completed. The progress

of science leads to discovery of new relationships and new information about natural environments Public needs and desires change over time To be useful, forest plans must establish a management system for future decision-making. As future amendments and revisions are made, the Revised Plan will continue to improve.

NFMA PROJECT REQUIREMENTS

There are a number of NFMA requirements which could not be completed within the Revised Plan. The ID Team identified the following NFMA requirements which must be met during project-level implementation based on site-specific analysis for any project to which they apply·

1. Determination that clearcutting is the optimum timber harvest method or other even-aged timber harvest methods are appropriate;

2. Site-specific location of riparian areas, wetlands and 100-year floodplains;

3 Any justification of stands to be converted from hardwood or hardwood-pine forest types to pine or pine-hardwood management types or vice-versa

4 The final location of lands suitable for timber production must occur as part of the site-specific analysis. This procedure is explained in Appendix A.

NEPA PROJECT REQUIREMENTS

Under the guidance of the Revised Plan, projects will be developed to most effectively accomplish management goals. Projects and activities designed for implementation under the Revised Plan will be subject to environmental analysis to assure compliance with NEPA. The NEPA analysis process begins once these individual projects have been identified

Project-level environmental analyses will tier to the Revised Plan and Final Environmental Impact Statement (FEIS). The FEIS for the Revised Plan is an aid to project-level NEPA compliance.

Project-level decisions require site-specific environmental analysis Common project-level decisions include whether or not, and if so, in what way, timber will be harvested in a given area, a campground will be constructed, or a fisheries structure will be installed The form of documentation for such analysis will be consistent with the Council of Environmental Quality Regulations (40 CFR 1500-1508), Forest Service Environmental Procedures Manual, and handbook. A NEPA document in the form of an Environmental Impact Statement (EIS) or Environmental Assessment (EA) will be prepared, or if the analysis shows neither the activity nor the impacts to be significant and the activity conforms

to the list of categories in Forest Service Manual 1950, the analysis would be categorically excluded from documentation in an EIS or EA.

NEPA analysis of the proposed actions should provide the documentary basis for NFMA findings on consistency, suitability, clearcutting, even-age management, and vegetation manipulation. This NEPA analysis and documentation leads to project decision-making that fully complies with NEPA, NFMA, and all other applicable regulations

INVOLVING THE PUBLIC IN PROJECT

The public will have opportunities to be involved in decisions about specific projects.

The implementation regulations for NEPA state that one purpose of the procedures is to "...insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality . Most important, NEPA documents will concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail." [40 CFR 1500.1(b)]

Environmental analyses and/or documentation of project-level actions will address the site-specific issues within the scope of the Revised Plan, EIS, and Record of Decision.

ROLE OF COOPERATORS

Cooperators play a vital role in project planning. The advice and recommendations of cooperators will be sought early-on in the planning process for site-specific projects Even though cooperators are legally prohibited from being members of the decision making team, their comments will be given full consideration during the site specific analysis.

BUDGET PROPOSALS

The Revised Plan provides the basis for developing multi-year program budget proposals. The budget is used for requesting and allocating the funds needed to carry out the planned management direction. Accomplishment of the annual program is the incremental implementation of the management direction in the Revised Plan. Depending on final budgets, outputs and activities in individual years may be significantly different from those shown in Chapter 2. Cost and accomplishment data will be utilized to update and revise data bases and modify budget proposals.

The Forest program development and budget process consists of evaluating fixed and variable cost activities, and capital investment projects. Fixed cost activities include those necessary to ensure public safety and environmental protection, and to maintain existing capital assets at certain levels of service and availability Additionally, long-term management planning and resource inventories, general administration costs, and other costs that cannot be assessed on a per-unit basis are included in fixed cost activities

Variable cost activities generally include those with outputs or uses that can be controlled or changed For instance, certain costs may vary relative to the miles of trail construction proposed in an alternative.

Capital investments entail monies spent to provide or improve a facility or product for continued or future use.

The Revised Plan's average annual budget proposal is displayed in Appendix F

AMENDMENTS

The Revised Plan can be amended at any time during its existence Such amendments are necessary to ensure that the Plan remains a viable, flexible document for managing the Forest.

Errata sheets may be issued if necessary to correct spelling or grammatical errors which may lead to confusion in the Revised Plan . Such changes are not considered amendments.

The Revised Plan may also be amended as part of a project-level decision where a change or adjustment in the Revised Plan is appropriate for that project but is not applicable to the entire Forest. Examples of such changes might be adjustments to standards or modifications of management area boundaries.

If it is determined during project design that the best method of meeting the management area goals of the Revised Plan is in conflict with either Forest or management area standards, the Forest Supervisor may approve a project-specific amendment to the Revised Plan

REVISION

This Revised Plan will be revised on a 10-year cycle or at least every 15 years It may also be revised whenever the Forest Supervisor determines that conditions or demands in the area covered by the Revised Plan have changed significantly or when changes in RPA policies, goals, or objectives would have a significant effect on the Forest-level programs In the monitoring and evaluation process, the interdisciplinary team may recommend a revision of the Forest Plan at any time.

Future revisions are not effective until considered and approved in accordance with the requirements for the development and approval of a Forest Plan. The Forest Supervisor will review the conditions on the land covered by the Revised Plan at least every 5 years to determine whether conditions or demands of the public have changed significantly. Revisions must be approved by the Regional Forester.

CHAPTER 5

MONITORING AND EVALUATION

INTRODUCTION

The Plan will be monitored by collecting information about actual projects, activities and practices executed "on the ground" to implement the Plan. Evaluation of this information will provide useful and valid indicators to the public and Forest Service decisionmakers of whether the Plan remains sufficient to sustain a diverse, healthy and productive Forest.

As such, monitoring and evaluation (M&E) are our quality control mechanisms. Increased knowledge helps us manage with greater skill and sensitivity to the need for change. By providing information about results of Plan implementation to the public and to Forest Service decisionmakers, M&E helps keep the Plan current, effective and responsive to public issues, agency concerns, new information, legal and policy requirements, and changes in resource conditions.

OBJECTIVES

Our monitoring and evaluation program helps us keep the commitments we made in the Forest Plan These commitments include assessing whether or not:

- Projects are implemented in compliance with the project design, Forest Plan direction, and/or the NEPA decision document.
- Forest-wide and Management Area standards are followed;
- Plan standards are effective;
- Plan goals and objectives are met;
- Emerging public issues are being addressed;
- Research needed to ensure practices do not impair land productivity is identified;
- New information, including laws, regulations, and Forest Service directives, is assessed quickly on how it affects the Plan;
- Plan implementation is moving towards the desired future condition;
- Assumptions, relationships, and decisions were, and continue to be valid in light of new information or changing conditions.

PROCESS

The monitoring process is designed to satisfy the preceding objectives. Simply stated, the process determines if we did what we said we would do; if it worked; and if it was the correct or best way to do it. The process includes collecting, analyzing and evaluating information; documenting and reporting the findings; and responding to these findings through the management decisions we make.

The process recognizes the critical roles of new scientific information and public participation in maintaining a viable, dynamic Forest Plan The Forest uses an interdisciplinary approach, integrating the knowledge and skills of multiple resource specialists, research scientists, and the public in the monitoring and evaluation process.

Monitoring is a two-step process similar to other actions we take in implementing the Forest Plan. The first "step" is the basic, over-all monitoring program displayed in Tables 1-19 in this Chapter. The second "step" is the detailed, site-specific project monitoring that is done at the ground level.

Monitoring will ensure that the environmental effects of actions on the ground are acceptable. This requires:

- Determining how well we've followed our own rules, or standards, when implementing a project;
- Determining the effects of our projects conducted under those rules;
- Determining whether or not adherence to the Plan standards produces the desired and predicted results.

Next, monitoring will evaluate whether we are achieving objectives (outputs) at the levels estimated in the Plan. If we are not achieving those levels, we have the obligation to find out why. If it is because of limitations imposed by the standards, then we must re-assess the standards to ensure that they are not more restrictive than necessary. If they are not and if it becomes apparent that actual outputs will be substantially less than Plan estimates during the first decade, we must inform our public and amend the Plan.

Monitoring will also determine whether or not we are producing desired resource values, uses and products in ways that sustain the diversity and productivity of ecosystems

We'll also monitor certain activities to validate whether assumptions used in the planning process are correct.

In addition, we'll look at the big picture to see how new information, such as changing policies and laws or research results, have affected the Plan and whether it needs changing to respond to those situations.

TYPES OF MONITORING

There are three types, or levels, of monitoring: implementation, effectiveness, and validation. How they interact is detailed in Figure 1.

Implementation Monitoring

Implementation monitoring answers the question "Did we do what we said we would do?" It is the simplest, most basic level of monitoring, usually conducted by Forest and Ranger District as part of their routine assignments. Implementation monitoring determines whether or not projects and activities are executed in compliance with project design, associated NEPA documents, and Forest Plan objectives and standards.

All projects will be subject to implementation monitoring. The results of implementation monitoring may lead to effectiveness monitoring, especially in sensitive areas and cases of high resource value, unusual risks, public issues and agency concerns.

Effectiveness Monitoring

Effectiveness monitoring answers the question, "Did the project/activity work?" Effectiveness monitoring determines whether projects, activities and practices are effective in meeting Forest Plan management direction, objectives and standards.

Effectiveness monitoring occurs on a limited basis and is conducted after implementation monitoring has determined that the project/activity has been properly implemented. Effectiveness monitoring may lead to Validation monitoring if results indicate that basic predictions, assumptions or coefficients are questionable.

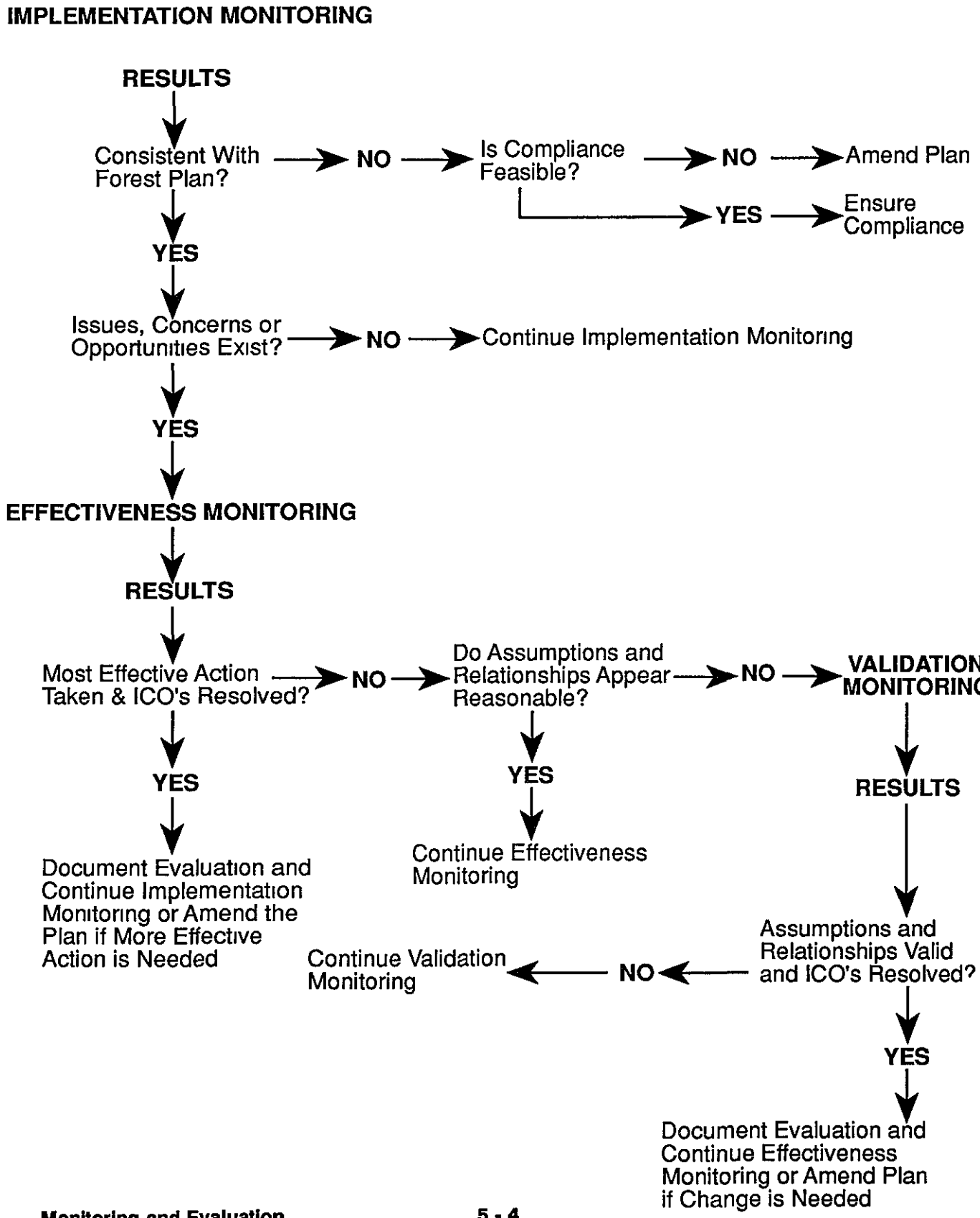
Validation Monitoring

Validation monitoring answers the questions, "Are initial Forest Plan data, assumptions, coefficients, prescriptions, standards used in the development of the Plan still valid? "Is there a better way to meet Plan goals and objectives?" Validation monitoring assesses the continuing validity of the Plan in light of new information and research, changing policy and resource conditions.

Validation monitoring will be conducted to collect data about the effects of projects and practices not already reasonably substantiated through less intense types of monitoring or existing research. Validation monitoring is the most complex form of monitoring. It requires scientific, statistical methods and longer timeframes for results. It will often be coordinated with Forest Service Research and other partners.

FIGURE 1.

MONITORING EVALUATION PROCESS



EXPECTED PRECISION AND RELIABILITY

NFMA implementing regulations require the monitoring plan to include a description of the expected precision and reliability of the monitoring process. In this context, "precision" is interpreted to be an indication of how accurate the monitoring results are expected to be, and "reliability" is interpreted to be an indication of how reproducible the monitoring results are expected to be.

Both of these factors will vary from one monitoring item to another. Some items are readily quantifiable, such as the number of fish habitat improvement projects completed in a given year. Such items can be monitored with very high precision and reliability. Other items are extremely difficult to quantify, due to inherent measurement difficulties or because the Forest Plan objective is not specifically quantified. An example is whether the wildlife standards reduce or eliminate adverse human effects from Forest Service activities on important habitats. In some such cases, it is neither technically nor economically feasible to obtain very precise and reliable monitoring results. On the whole, the Forest monitoring program was developed to produce results that (1) are as precise and reliable as practicable, given the inherent measurement problems involved, and (2) meet management's and the public need for information to determine whether or not changes in the Plan or management activities are necessary. As new monitoring techniques are developed, they will be adopted to improve the precision, reliability, and efficiency of the monitoring and evaluation program.

ANNUAL PROGRAM

The basic monitoring program displayed in Tables 1-19 does not show all Forest monitoring activities. The basis program focuses on the broad aspects of Plan implementation. Detailed Monitoring and Evaluation Schedules will be developed for each major item shown in the Tables. The Detailed Schedules will include specific monitoring, evaluation and reporting direction for each item to be monitored. (A sample Detailed Monitoring and Evaluation Schedule is included at the end of this chapter.)

The monitoring program also includes collecting and evaluating information documented in regular inventory surveys, attainment reports, environmental analysis reports and integrated management review reports.

Coordination with the public, colleges and universities, other government agencies, and research scientists will be an important part of the monitoring program. Because of the complexities and uncertainties of resource management, the Forest relys on many sources for information, data, input and feedback.

NFMA specifically requires that we monitor and evaluate at least the following. The Forest monitoring program includes many others.

– Actual versus planned objectives, costs, practices and their associated effects be compared;
– Significant changes in land productivity be determined;
– A determination be made on whether seedlings are growing in sufficient numbers following harvesting;
– The suitability of the Forest for timber production is re-evaluated every 10 years;
– A determination is made on whether harvest area size limits be continued;
– The Forest be able to assure that insect and disease problems don't increase to damaging levels;
– Population trends for certain wildlife or plants are determined;
– How management on the Forest affects adjacent land owners and vice versa be determined;
– Research needs be known; and
– Changes in Forest conditions or public demands be identified.

To be able to rely on current work forces to complete needed monitoring, we will have to simplify and focus on what is most important.

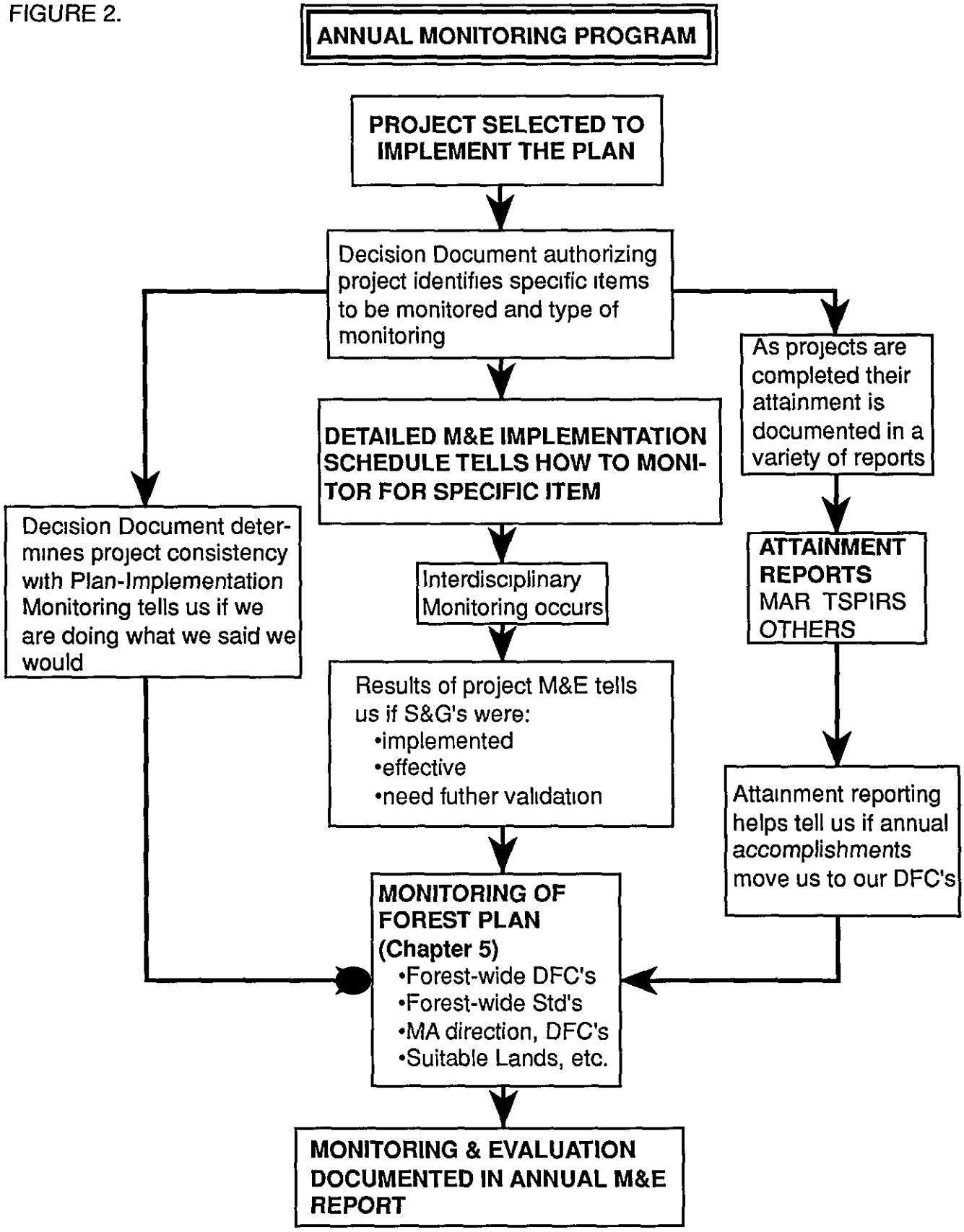
Project Monitoring

Project monitoring is a key part of overall Plan monitoring It indicates the progress we are making towards achieving Plan goals and objectives and helps implement future projects more effectively.

Project monitoring is conducted under the umbrella of the Forest Plan monitoring program since projects must be consistent with the Plan and since no single project can address all the monitoring questions listed in Tables 1-19.

Project monitoring will also continue to be determined in the NEPA/Project planning process. The decision document that authorizes a project will establish which, if any, specific items will be monitored for that particular project. The decision document may also include the type of monitoring that will be done for that project. Figure 2 below depicts how the annual monitoring program works.

FIGURE 2.


ANNUAL MONITORING PROGRAM
PROJECT SELECTED TO IMPLEMENT THE PLAN
Decision Document authorizing project identifies specific items to be monitored and type of monitoring
As projects are completed their attainment is documented in a variety of reports
DETAILED M&E IMPLEMENTATION SCHEDULE TELLS HOW TO MONITOR FOR SPECIFIC ITEM
Decision Document determines project consistency with Plan-Implementation Monitoring tells us if we are doing what we said we would
Interdisciplinary Monitoring occurs
ATTAINMENT REPORTS
MAR TSPIRS
OTHERS
Results of project M&E tells us if S&G's were:
•implemented
•effective
•need futher validation
Attainment reporting helps tell us if annual accomplishments move us to our DFC's
MONITORING OF FOREST PLAN
(Chapter 5)
•Forest-wide DFC's
•Forest-wide Std's
•MA direction, DFC's
•Suitable Lands, etc.
MONITORING & EVALUATION DOCUMENTED IN ANNUAL M&E REPORT

MONITORING DESIRED FUTURE CONDITION

The Revised Plan has established desired future conditions for each management area. Collectively, these desired future conditions describe what the public and the agency want the Forest to be like and to look like in the future when goals and objectives of the Plan are achieved.

To determine whether or not Plan implementation is achieving the desired future condition, the Forest will evaluate monitoring findings against the desired future conditions of each Management Area. The desired future condition will be the measuring stick or barometer against which the overall accomplishment of the Plan will be measured. Specific, measurable items/conditions that indicate whether or not desired future condition is being achieved will be monitored.

Tables 1 through 18 display the monitoring program associated with each management area. To avoid repetition, some of the monitoring items that are common to many, if not all, management areas are displayed in Table 19.

TABLE 1. Monitoring the Desired Future of Management Area 4 - Special Interest/Research Natural Areas

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
BIOLOGICAL AREAS Areas that contain unique biological values are protected	Individual implementation schedules are developed for each of the SIAs - Biological	Were individual implementation schedules for each Biological SIA prepared? (I)	Number of plans prepared each year	Minimum of four Plans prepared each year is not met	Report yearly. Evaluate in 5 Years.
	Vegetation may be manipulated for the management of the biological values identified as well as for any threatened, endangered, or sensitive species, and their habitat.	Was vegetation manipulated for the management of the area's biological value or for threatened, endangered, or sensitive species or their habitats? (I)	Any vegetation manipulation that occurs	Vegetation manipulation must be designed to achieve the desired future described for this management area.	Report yearly. Attainment ongoing.
Cow Knob and Tiger salamanders are protected, maintained and restored.	Population trends of management indicator species are determined	Were viable populations maintained in suitable habitat? (E)	Mark-recapture and plot surveys as measured every 2 years	Negative population trends in two consecutive surveys	Report every two years. Monitor minimum of 10 years
HISTORIC SITES All historic sites that are potentially eligible to the National Register of Historic Places are protected.	Projects are designed to avoid, minimize, or mitigate adverse effects on potentially significant cultural resources.	Were potentially eligible sites protected from disturbance? (I)	Visual evidence of disturbance from management activities based on annual inspection of sample sites	No evidence of damage to sites.	Report yearly Attainment every year.
	Existing National Register sites are protected from natural or man-caused deterioration	Are existing National Register sites protected? (I)	Visual evidence of disturbance from management activities based on annual inspection of sample sites.	No evidence of damage to sites.	Report yearly Attainment every year

TABLE 1. Monitoring the Desired Future of Management Area 4 - Special Interest/Research Natural Areas (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
GEOLOGIC SITES All unique or special examples of geologic phenomena, geologic process and landform are protected.	Projects are designed to avoid, minimize, or mitigate adverse effects on geologic sites	Were geologic sites protected from disturbance? (I)	Visual evidence of disturbance from management activities based on annual inspection	No evidence of damage to sites	Report yearly Attainment every year

TABLE 2. Monitoring the Desired Future of Management Area 5 - Sensitive Viewsheds

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
VISUAL QUALITY The natural and rugged setting of the steep slopes of Massanutten Mountain are retained	Management practices are limited to those that maintain the visual quality objective (VQO) of retention	Did management practices result in attaining a VQO of retention? (E)	Visual confirmation from Interstate 81 that the VQO of retention is being met. Measurement is every 5 years.	Visual quality does not meet the definition of retention	Report every five years. Desired future presently exists and will be retained.
	A short-term VQO of enhancement can be assigned	Where was a short-term VQO of enhancement assigned to address rehabilitation needs? (I)	Areas needing enhancement based on fifth year assessment.	Viewshed does not meet the definition of retention	Report every five years Desired future presently exists and will be retained.

Legend:

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 3. *Monitoring the Desired Future of Management Area 6 - The Appalachian Trail*

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
VISUAL QUALITY The visual experience and landscape character seen from the Appalachian National Scenic Trail (AT) is maintained or enhanced	Management practices are limited to those that maintain the VQO of retention	Did management practices result in attaining a visual quality objective of retention? (E)	Visual confirmation from the AT that the visual quality objective of retention is being met. Measurement is every 5 years	Visual quality does not meet the definition of retention	Report every five years Desired future presently exists and will be retained
	A short-term VQO of enhancement can be assigned.	Where was a short-term VQO of enhancement assigned to address rehabilitation needs? (I)	Areas needing enhancement based on fifth year assessment.	Viewshed does not meet the definition of retention	Report every five years. Desired future presently exists and will be retained.
Adjoining lands seen from the AT are managed for multiple use in a manner that reasonably harmonizes with and is complementary to the Trail experience	Lands outside the management area are managed in accordance with the adopted VQO	Are management practices visible from the AT at least meeting the adopted VQO of the applicable management area? (E)	Visual confirmation from the Appalachian Trail five years after the record of decision for the Revised Plan has been signed.	Management practices do not meet the adopted VQO	Report every five years. Desired future will be attained within ten years.

Legend:
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 4. Monitoring the Desired Future of Management Area 7 - Scenic Corridors/Highland Scenic Tour

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
VISUAL QUALITY The scenic resources of the Forest are maintained and, if necessary, rehabilitated or enhanced	Management practices are limited to those that maintain the VQO of retention or partial retention on the Scenic Corridors displayed in Table 3-3 and on the Highland Scenic Tour.	Did management practices result in attaining the appropriate VQO? (E)	Visual confirmation from the Highland Scenic Tour and the Scenic Routes displayed in Table 3-3 that the appropriate VQO is being met. Measurement is every 5 years.	Visual quality does not meet the definition of retention or partial retention	Report every five years Desired future presently exists and will be retained
	A short-term VQO of enhancement can be assigned	Where was a short-term VQO of enhancement assigned to address rehabilitation needs? (I)	Areas needing enhancement based on fifth year assessment.	Viewshed does not meet the the definition of retention or partial retention	Report every five years Desired future presently exists and will be retained.

Legend·

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 4. Monitoring the Desired Future of Management Area 7 - Scenic Corridors/Highland Scenic Tour (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
TIMBER Regulated harvesting of timber products on lands suitable for timber production is used to accomplish timber, wildlife, visual, and other resource objectives	Any projects involving timber harvesting are evaluated to determine if the proposed harvest units are located on suitable acres as identified in the Revised Forest Plan This evaluation is documented in the project-level environmental analysis document with the finding incorporated into the decision document.	Did harvesting occur only on land identified as suitable in the Revised Forest Plan? (I)	Plan consistency statement in each decision document for projects involving timber harvests	Noncompliance with standard.	Report Yearly Attainment every year
	Determine if lands identified as unsuitable for timber production have become suitable.	Were there changes in the amount of land identified as suitable? (V)	Number of acres identified as suitable for timber production based on the criteria listed in Appendix A as measured every fifth year	A change of ± 10 % in land suitability as compared with the 12,000 suitable acres of this management area based on project-level analysis.	Report every five years Attainment occurs within ten years.
	Regeneration harvesting is designed to accomplish improvement of visual resources, provide recreation opportunities, promote safety and provide habitat for watchable wildlife	Is regeneration harvesting designed to meet the desired future? (I)	The rationale for regeneration harvesting in any project-level decision document must explain why regeneration harvesting is needed to accomplish stated purposes Decision documents are monitored yearly.	Any decision to regenerate areas must be consistent with achieving the desired future of the management area.	Report yearly Attainment is within ten years.

Legend

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 5. Monitoring the Desired Future of Management Area 8 - Wilderness/Wilderness Study

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
WILDERNESS The ecosystem is the result of natural succession and natural processes. There is little evidence of visitor use	Appropriate sites are naturalized or rehabilitated. Temporary or permanent site closures are considered when other management techniques are not successful	Have wilderness implementation schedules been prepared or revised, as needed? (I)	Number of Wilderness Implementation Schedules prepared or revised each year	One schedule prepared or revised per year is not met.	Report yearly. Attainment in 5 years.
		Have actions been taken on areas where social and physical impacts exceed the "Limits of Acceptable Change" standards? (I)	Annual inspection of impacted areas to see if actions have been taken.	No action has been taken to correct the impact.	Report every year. Attainment yearly at time of review
		Are areas recovering to a natural and undisturbed appearance due to corrective actions and rehabilitation efforts? (E)	Annual inspection of impacted areas to see if "Limits of Acceptable Change" standards are met.	"Limits of Acceptable Change" standards are not met.	Report every year. Recovery in progress on all impacted areas within 10 years Attainment within 20 years

Legend:

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 6. *Monitoring the Desired Future of Management Area 9 - Remote Highlands*

Monitoring Item *and* Desired Future	*Indicators of* Desired Future	*Monitoring* Questions	Measurement & *Frequency of* Measurement	Threshold of *Acceptable* Change	Reporting Period *& How Long Before* Question is Answered
RECREATION Opportunities are provided for primitive, dispersed recreation experiences that emphasize solitude and challenge	Semi-primitive recreation opportunities requiring primarily unmodified environments with a high degree of challenge and risk while traveling cross-country or on trails is provided.	Are opportunities for primitive recreation and solitude being provided? (I)	SPNM ROS areas meet the criteria for providing primitive recreation Measurement occurs every five years	Failure of inventoried SPNM ROS areas to meet the criteria for SPNM ROS recreation opportunities.	Report every five years Desired Future is attained within ten years
WILDLIFE Wildlife predominate which prefer an unfragmented ecosystem, mature vegetation, or late successional stages of vegetation	Only light-on-the-land management activities occur Existing wildlife habitat improvements can be maintained. Additional improvements are permitted so long as they achieve specific wildlife habitat management objectives.	To what extent are changes to the ecosystem induced by management activities? (I)	Number of acres treated as measured yearly	Management activities which treat more than 10% of the area are not considered light-on-the land.	Evaluate every five years Desired Future attained after many decades

Legend.
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 7. Monitoring the Desired Future of Management Area 10 - Scenic/Recreational Rivers

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
SCENIC RIVERS					
Segments of rivers qualifying for inclusion as Scenic Rivers are managed to retain the attributes that qualify them for scenic river designation	Until designation decisions are made, federal lands associated with eligible river corridors are managed to perpetuate their current conditions. Management activities may enhance conditions, but not reduce the present characteristics below the standards for the river's potential classification.	Have management activities precluded river segments from further consideration as scenic rivers? (E)	Management practices within the scenic river segments are monitored every third year	Presence of management practices that disqualify the river segments for scenic river designation	Report every third year until the suitability evaluation is completed.
River corridor possesses outstanding scenic quality	Scenic river corridors are managed to meet a VQO of retention	Did management practices result in attaining a VQO of retention? (E)	Visual confirmation from the river that the VQO of retention is being met. Measurement is every 5 years	Visual quality does not meet the definition of retention	Report every five years Desired Future presently exists and will be retained.
RECREATIONAL RIVERS					
Segments of rivers qualifying for inclusion as Recreational Rivers are managed to retain the attributes that qualify them for recreational river designation	Until designation decisions are made, federal lands associated with eligible river corridors are managed to perpetuate their current conditions Management activities may enhance conditions, but not reduce the present characteristics below the standards for the river's potential classification.	Have management activities precluded river segments from further consideration as recreational rivers? (E)	Management practices within the recreational river segments are monitored every third year.	Presence of management practices that disqualify the river segments for recreational river designation	Report every third year until the suitability evaluation is completed
The pastoral and developed setting of Recreational Rivers is maintained	The area is managed to meet a VQO of partial retention	Did management practices result in attaining a VQO of partial retention? (E)	Visual confirmation that the VQO of partial retention is being met Measurement is every 5 years	Visual quality does not meet the definition of partial retention	Report every five years Desired Future presently exists and will be retained

Legend.
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 8. Monitoring the Desired Future of Management Area 11 - All-Terrain/Off Highway Routes

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
RECREATION OHV routes provide a satisfactory riding opportunity for licensed OHV users with no uncorrected, significant resource damage occurring	Maintenance is performed to protect the routes and minimize effects to soil and water resources	Are OHV routes being maintained in a manner that minimizes the effects of OHV use? (E)	Areas of soil and water resource damage as monitored yearly	Unacceptable resource damage is not corrected in a timely manner.	Report yearly Correction within 1 year Attainment following year
Identified routes provide a variety of motorized recreation opportunities	Existing featured roads provide challenge and are suitable for high clearance vehicles	Are licensed OHV routes stated in Plan Table 3-5 and Appendix J offering a 4-wheel drive experience which meets the the needs of its users? (E)	One User Survey done during first five years of Plan.	Survey reveals poor route conditions, hazards or user conflicts	Report at end of fifth year of implementation
ATV and motorcycle users enjoy designated routes within four areas on the Forest.	Routes are constructed so as to provide an interesting and enjoyable ride for ATV and motorcycle users	Do constructed motorized routes provide an interesting and challenging ride? (E)	One User Survey done during first five years of Plan.	Survey reveals poor route conditions, hazards or user conflicts	Report at end of fifth year of implementation

Legend:
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 8. Monitoring the Desired Future of Management Area 11 - All-Terrain/Off Highway Routes (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
TIMBER Regulated harvesting of timber products on lands suitable for timber production is used to accomplish timber, motorized recreation, wildlife, visual, and other resource objectives	Any projects involving timber harvesting are evaluated to determine if the proposed harvest units are located on suitable acres as identified in the Revised Forest Plan This evaluation is documented in the project-level environmental analysis document with the finding incorporated into the decision document.	Did harvesting occur only on land identified as suitable in the Revised Forest Plan? (I)	Plan consistency statement in each decision document for projects involving timber harvests	Noncompliance with standard	Report Yearly. Attainment every year.
	Determine if lands identified as unsuitable for timber production have become suitable.	Were there changes in the amount of land identified as suitable? (V)	Number of acres identified as suitable for timber production based on the criteria listed in Appendix A as measured every fifth year	A change of ± 10 % in land suitability as compared with the 3,000 suitable acres of this management area based on project-level analysis	Report every five years Attainment occurs within ten years.
	Roads for timber removal are planned concurrently with possible ATV/OHV route locations and opportunities	Are roads for timber removal also planned and designed to meet motorized recreation objectives? (I)	Miles of constructed roads incorporated as needed into ATV systems	Any decision to remove timber which doesn't consider the motorized recreation desired future.	Report yearly Evaluate at the end of fifth year of implementation

Legend

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 9. Monitoring the Desired Future of Management Area 12 - Developed Recreation Areas

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
RECREATION Developed facilities are safe for visitors	The developed recreation area and its facilities are maintained to a high degree and in a timely manner.	Are developed recreation facilities safe and properly maintained for visitor safety and comfort? (E)	Number of unsafe conditions based on annual inspection	Unsafe conditions are not corrected before facilities are made available to the public	Report yearly. Unsafe conditions are promptly corrected
To the extent practical, developed recreation facilities are accessible to visitors with disabilities.	Sites and facilities are rehabilitated or replaced.	Are existing developed recreation facilities accessible to visitors with disabilities as covered by Federal law? (I)	Accessibility surveys are conducted on all existing developed recreation sites Measured every five years	Inaccessible facilities are reconstructed to permit access to disabled visitors	Report every five years Attainment occurs within ten years
		Are newly constructed or reconstructed developed recreation facilities accessible to visitors with disabilities in accordance with Federal guidelines? (I)	Accessibility survey is part of the design for any developed recreation construction/ reconstruction Measured every five years	Constructed and reconstructed facilities must be accessible	Report every five years Attainment occurs with construction or reconstruction of facilities.

Legend

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 9. Monitoring the Desired Future of Management Area 12 - Developed Recreation Areas (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
RECREATION Facilities are available in a range of development levels	Dry River Dispersed Camp, James River Dispersed Camp Edinburg Gap Dispersed Camp, Pedlar Dispersed Camp, Bucktail Dispersed Camp, Greavers Ridge Camp, Warm Springs Dispersed Camp, Bear Wallow, Lee Rifle Range, Crabtree Meadows and Pedlar Rifle and Archery Range are constructed.	Have proposed new developed recreation sites been constructed? (I)	Number of these facilities constructed Measurement is every five years.	Construction is dependent upon funding and volunteer/ partner interest If funding is not received, Appendix B of the Revised Plan will be amended	Report every five years Attainment within ten years.
	Augusta Springs Camp, Bolar Mountain, Blowing Springs, Camp Roosevelt, Elizabeth Furnace, Greenwood Point, Hidden Valley, Hone Quarry, Longdale, Morris Hill, Reddish Knob Observation/Hanggliding Site, Sherando Lake, and Trout Pond are expanded	Have existing developed recreation sites been expanded? (I)	Number of these facilities expaned Measurement is every five years	Construction is dependent upon funding. If funding is not received, Appendix B of the Revised Plan will be amended.	Report every five years Attainment within ten years

Legend:

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 10. Monitoring the Desired Future of Management Area 13 - Dispersed Recreation Areas

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
RECREATION Dispersed areas of concentrated use are managed to protect and preserve the resources of the areas	Overused sites are rehabilitated and temporary or permanent site closure is considered when other management techniques are not successful	Are dispersed areas of concentrated use resulting in significant damage to the environment? (E)	Amount of damage to vegetation or soil through human activities based on an inspection every five years	Major damage to vegetation or soil is occurring	Report every five years Desired Future occurs within ten years
ECOSYSTEM The ecosystem is generally the result of natural processes on land unsuitable for timber production	Vegetation changes appear subtle and gradual	To what extent are changes to the ecosystem induced by management practices? (I)	Number of acres treated as measured yearly	Management activities which treat more than 10% of the unsuitable timberland area are not considered subtle and gradual.	Evaluate every five years Desired Future attained after many decades
VISUAL QUALITY The appropriate visual quality is retained	The area is managed to meet a VQO of retention in the foregrounds from sensitive travelways and viewing points, and partial retention elsewhere	Did management practices result in attaining the appropriate VQO? (E)	Visual confirmation that management practices are meeting the appropriate VQO Measurement is every 5 years	Visual quality does not meet the definition of retention or partial retention	Report every five years Desired Future presently exists and will be retained

Legend:
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 10. Monitoring the Desired Future of Management Area 13 - Dispersed Recreation Areas (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
TIMBER Regulated harvesting of timber products on lands suitable for timber production is used to accomplish timber, wildlife, visual, and other resource objectives.	Any projects involving timber harvesting are evaluated to determine if the proposed harvest units are located on suitable acres as identified in the Revised Forest Plan This evaluation is documented in the project-level environmental analysis document with the finding incorporated into the decision document	Did harvesting occur only on land identified as suitable in the Revised Forest Plan? (I)	Plan consistency statement in each decision document for projects involving timber harvests	Noncompliance with standard.	Report yearly Attainment every year.
	Determine if lands identified as unsuitable for timber production have become suitable	Were there changes in the amount of land identified as suitable? (V)	Number of acres identified as suitable for timber production based on the criteria listed in Appendix A as measured every fifth year	A change of ± 10 % in land suitability as compared with the 4,000 suitable acres of this management area based on project-level analysis	Report every five years Attainment occurs within ten years.
	Vegetation manipulation may occur to the extent needed to provide safety for visitors or scenic rehabilitation and enhancement	Is regeneration harvesting designed to provide for safety and to provide scenic rehabilitation and enhancement? (I)	The rationale for regeneration harvesting in any project-level decision document must explain why regeneration harvesting is needed to accomplish stated purposes Decision documents are monitored yearly.	Any decision to regenerate areas must be consistent with achieving the desired future of the management area.	Report yearly Attainment is within ten years

Legend

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 11. Monitoring the Desired Future of Management Area 14 - Remote Habitat for Wildlife

Monitoring Item and *Desired Future*	Indicators of *Desired Future*	Monitoring *Questions*	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before *Question is Answered*
WILDLIFE A mature forest environment provides a continuous supply of hard and soft mast; large high value timber products, areas of dense vegetation cover; and *freedom from continued disturbance*	Treatments such as prescribed burning or adding grape arbors may be practiced to increase herbaceous vegetation, browse, berry production, and to rejuvenate bear oak Even-aged timber cutting methods are used to meet wildlife habitat requirements	Did management activities result in attaining the desired habitat? (E)	Number of acres treated as measured yearly Percent in 0-10 age class as measured every fifth year	A change of ± 10 % in acres prescribed burned or harvested as compared with the 614 estimated prescribed burn acres and 52 estimated harvested acres of this management area from FORPLAN analysis.	Report yearly. Evaluate at the end of fifth year of implementation
Motorized vehicle access is controlled between management activities and limited to *ensure that habitat for* disturbance-sensitive species – such as the black bear – is maintained.	The Forest objective is to limit open road densities (all open roads included) to no more than one-quarter mile of open road per 1,000 acres In cases *where stated open road density exceeds one-quarter mile of open road* per 1,000 acres, Forest staff strive to reduce the open road densities to the desired standard	Were open roads in excess of stated density objective closed to public use? (I)	Miles of open road exceeding objective closed to public use as reported yearly	No documented evidence that opportunities were looked for Results indicate no open road mileage can be reduced.	Report yearly Attainment within ten years

Legend

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 11. Monitoring the Desired Future of Management Area 14 - Remote Habitat for Wildlife (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
TIMBER Regulated harvesting of timber products on lands suitable for timber production is used to accomplish timber, wildlife, visual, and other resource objectives.	Any projects involving timber harvesting are evaluated to determine if the proposed harvest units are located on suitable acres as identified in the Revised Forest Plan. This evaluation is documented in the project-level environmental analysis document with the finding incorporated into the decision document.	Did harvesting occur only on land identified as suitable in the Revised Forest Plan? (I)	Plan consistency statement in each decision document for projects involving timber harvests	Noncompliance with standard	Report Yearly Attainment every year.
	Determine if lands identified as unsuitable for timber production have become suitable	Were there changes in the amount of land identified as suitable? (V)	Number of acres identified as suitable for timber production based on the criteria listed in Appendix A as measured every fifth year.	A change of ± 10 % in land suitability as compared with the 48,000 suitable acres of this management area based on project-level analysis.	Report every five years Attainment occurs within ten years
	Through management activities, a variety of age classes are created in even-aged and uneven-aged stands. Areas of regeneration (0-10 year age class) are created to diversify food sources and increase other habitat needs	Is regeneration harvesting designed to diversify food sources and increase other habitat needs? (I)	The rationale for regeneration harvesting in any project-level decision document must explain why regeneration harvesting is needed to accomplish stated purposes Decision documents are monitored yearly	Any decision to regenerate areas must be consistent with achieving the desired future of the management area	Report yearly. Attainment is within ten years.

Legend

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 12. Monitoring the Desired Future of Management Area 15 - Mosaics of Wildlife Habitat with Freedom from Continued Disturbance

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
WILDLIFE A mature forest environment with both temporary and permanent openings provides high quality habitat and forest products, and freedom from disturbance during nesting and brood-rearing seasons	Up to 5 percent of the area should be maintained in grass / herbaceous openings for wildlife Uneven-aged and even-aged timber cutting methods are used to meet wildlife habitat requirements.	Did management activities result in attaining the desired habitat? (E)	Number of acres treated as measured yearly. Percent in 0-10 age class as measured every fifth year.	A change of ± 10 % in acres prescribed burned or harvested as compared with the 2386 estimated prescribed burn acres and 1361 estimated harvested acres of this management area from FORPLAN analysis Percent of grass / herbaceous openings is not met.	Report yearly Evaluate at the end of fifth year of implementation
Motorized vehicle access and management activities are limited in order to provide freedom from continual disturbance during nesting and brood-rearing seasons to species such as the wild turkey	The Forest objective is to limit open road densities (all open roads included) to no more than one mile of open road per 1,000 acres In cases where stated open road density exceeds one-quarter mile of open road per 1,000 acres, Forest staff strive to reduce the open road densities to the desired standard	Were open roads in excess of stated density objective? (I)	Miles of open road exceeding objective	No documented evidence that opportunities were looked for. Results indicate no open road mileage can be reduced.	Report yearly Attainment within ten years

Legend

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 12. Monitoring the Desired Future of Management Area 15 - Mosaics of Wildlife Habitat with Freedom from Continued Disturbance (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
TIMBER Regulated harvesting of timber products on lands suitable for timber production is used to accomplish timber, wildlife, visual, and other resource objectives	Any projects involving timber harvesting are evaluated to determine if the proposed harvest units are located on suitable acres as identified in the Revised Forest Plan This evaluation is documented in the project-level environmental analysis document with the finding incorporated into the decision document	Did harvesting occur only on land identified as suitable in the Revised Forest Plan? (I)	Plan consistency statement in each decision document for projects involving timber harvests	Noncompliance with standard	Report Yearly. Attainment every year
	Determine if lands identified as unsuitable for timber production have become suitable	Were there changes in the amount of land identified as suitable? (V)	Number of acres identified as suitable for timber production based on the criteria listed in Appendix A as measured every fifth year.	A change of ± 10 % in land suitability as compared with the 192,000 suitable acres of this management area based on project-level analysis	Report every five years Attainment occurs within ten years
	Even-aged management will be emphasized to maintain oak regeneration, to create open understory conditions, as well as provide stand diversity throughout the management area.	Is regeneration harvesting designed to provide for the wildlife habitat described in the desired future for the management area? (I)	The rationale for regeneration harvesting in any project-level decision document must explain why regeneration harvesting is needed to accomplish stated purposes Decision documents are monitored yearly	Any decision to regenerate areas must be consistent with achieving the desired future of the management area.	Report yearly Attainment is within ten years

Legend.
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 13. Monitoring the Desired Future of Management Area 16 Early Successional Forested Habitat for Wildlife

Monitoring Item and *Desired Future*	Indicators of *Desired Future*	Monitoring *Questions*	*Measurement* & Frequency of *Measurement*	*Threshold of* Acceptable *Change*	*Reporting Period* & How Long Before *Question is Answered*
WILDLIFE Mosaic of habitats from mature forests to early successional forests with dispersed permanent herbaceous openings is provided	At least 10 percent of the management area should be maintained in the 1-10 year class Even-aged timber cutting methods are used to meet wildlife habitat requirements	Did management activities result in attaining the desired habitat? (E)	Number of acres treated as measured yearly. Percent in 1-10 age class as measured every fifth year	A change of ± 10 % in acres harvested as compared with the 217 estimated harvested acres of this management area from FORPLAN analysis Percent of 1-10 year age class is not met.	Report yearly Evaluate at the end of fifth year of implementation
TIMBER Regulated harvesting of timber products on lands suitable for timber production is used to accomplish timber, wildlife, visual, and other resource objectives	Any projects involving timber harvesting are evaluated to determine if the proposed harvest units are located on suitable acres as identified in the Revised Forest Plan. This evaluation is documented in the project-level environmental analysis document with the finding incorporated into the decision document	Did harvesting occur only on land identified as suitable in the Revised Forest Plan? (I)	Plan consistency statement in each decision document for projects involving timber harvests.	Noncompliance with standard	Report yearly Attainment every year.
	Determine if lands identified as unsuitable for timber production have become suitable	Were there changes in the amount of land identified as suitable? (V)	Number of acres identified as suitable for timber production based on the criteria listed in Appendix A as measured every fifth year	A change of ± 10 % in land suitability as compared with the 27,000 suitable acres of this management area based on project-level analysis	Report every five years Attainment occurs within ten years.

Legend
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 13. Monitoring the Desired Future of Management Area 16 - Early Successional Forested Habitat for Wildlife (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
TIMBER Regulated harvesting of timber products on lands suitable for timber production is used to accomplish timber, wildlife, visual, and other resource objectives.	Regeneration areas are used in combination with other habitats to provide high quality wildlife habitat for wildlife species that prefer early successional habitats with dispersed, permanent herbaceous openings.	Is regeneration harvesting designed to provide for the wildlife habitat described in the desired future for the management area? (I)	The rationale for regeneration harvesting in any project-level decision document must explain why regeneration harvesting is needed to accomplish stated purposes Decision documents are monitored yearly	Any decision to regenerate areas must be consistent with achieving the desired future of the management area.	Report yearly Attainment is within ten years

Legend

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 14. Monitoring the Desired Future of Management Area 17 - Timber Emphasis

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
TIMBER Regulated harvesting of timber products on lands suitable for timber production is used to accomplish timber, wildlife, visual, and other resource objectives	Any projects involving timber harvesting are evaluated to determine if the proposed harvest units are located on suitable acres as identified in the Revised Forest Plan This evaluation is documented in the project-level environmental analysis document with the finding incorporated into the decision document.	Did harvesting occur only on land identified as suitable in the Revised Forest Plan? (I)	Plan consistency statement in each decision document for projects involving timber harvests	Noncompliance with standard	Report yearly Attainment every year.
	Determine if lands identified as unsuitable for timber production have become suitable	Were there changes in the amount of land identified as suitable? (V)	Number of acres identified as suitable for timber production based on the criteria listed in Appendix A as measured every fifth year	A change of ± 10 % in land suitability as compared with the 63,000 suitable acres of this management area based on project-level analysis.	Report every five years Attainment occurs within ten years
	The desired future condition is a balanced age-class distribution of forest stands containing native tree species capable of sustaining high value timber commodity production	Is regeneration harvesting designed to provide for the production of high value timber species and products? (I)	The rationale for regeneration harvesting in any project-level decision document must explain why regeneration harvesting is needed to accomplish stated purposes. Decision documents are monitored yearly	Any decision to regenerate areas must be consistent with achieving the desired future of the management area.	Report yearly Desired future attained after many decades.

Legend:
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 15. Monitoring the Desired Future of Management Area 18 - Riparian Areas with Ecological Widths

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
FISHERIES					
Woody debris provides self-sustaining habitat complexity and diversity.	Cold water streams are managed in a manner that results in 125 to 300 pieces of large woody debris (LWD) per stream mile Cool/warm water streams are managed in a manner that results in 75 to 200 pieces of large woody debris per stream mile	Are activities working towards providing the required amounts of LWD per stream mile? (I)	Number of pieces by wood size per stream mile as measured yearly on sample streams	Noncompliance with standard	Report yearly. Evaluate at end of fifth year of implementation.
		Will these amounts of LWD provide necessary habitat for all life stages of native aquatic species and will it be self-sustaining? (E)	LWD per mile on two streams per Ranger District once amounts are achieved, sampled yearly.	Habitat rating by Virginia Dept. of Game & Inland Fisheries or West Va. DNR stream classification system is lowered	Report yearly Attainment five years after DFC is reached
Habitat is provided to maintain viable populations of brook trout and Centrarchids and their associated cold or warm water ecosystems	Population trends of management indicator species (Brook Trout and Centrarchids) are determined	Were viable populations maintained in suitable habitat? (E)	Fish shocking of population as measured yearly in pounds per acre	Negative population trends in three consecutive surveys	Report yearly. Evaluate in five years
SOIL					
Impacts to riparian areas are possible but are minimized by limiting the size and location of the recreation	Disturbance from vehicular use, campsites, parking areas and other use within the filter strip is limited so as to result in less than 5% of the area with bare soil exposed	Was action taken to limit recreation before bare soil is exposed on more than 5% of the area? (I)	Amount of bare soil in areas of heavy recreation use	Noncompliance with standard.	Report yearly Evaluate in five years

Legend
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 15. Monitoring the Desired Future of Management Area 18 - Riparian Areas with Ecological Widths (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
WATER Water quality meets or exceeds state standards, for aquatic biodiversity and beneficial downstream uses	In any project, water quality is protected from nonpoint-source pollution through use of standards that meet or exceed preventive "best management practices" (BMP's) Implementation of these standards, monitoring and evaluation of their application and effectiveness, and adjustment of practices as needed are done to protect beneficial water uses These standards are applied to all activities.	Were filter strips, shade strips, and vehicle exclusion zones maintained at required widths? (I) Were areas of disturbed soil revegetated by the end of the first growing season? In riparian areas, were revegetation measures implemented within 14 days of disturbance? On roads and skid trails, were appropriate drainage structures installed and maintained? Was the appropriate type of stream crossing used? Were approaches to ford crossings gravelled at least 50 feet on each side of stream? (I)	Numerical Rating by visual examination on 4 projects per Ranger District yearly	Major departure from intent of BMP's as noted on Field Evaluation Form	Report yearly. Evaluate in five years.
		Are BMP's effective in protecting the most sensitive of the State-designated beneficial uses of water, namely, that of native brook trout streams? (E)	Benthic macroinvertebrates from riffles and coarse particulate organic matter collected from sample streams seasonally	Lowering of biological condition by one category as determined by EPA Rapid Bioassessment Protocol II	Report yearly. Evaluate in five years.

Legend:
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 16. Monitoring the Desired Future of Management Area 20 - Administrative Sites, Utility Corridors, and Communication Sites

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
ADMINISTRATIVE SITES Sites are efficient, aesthetically pleasing and accessible to people with disabilities	OSHA regulations, Health and Safety Code Handbook requirements, and all local, state, and building codes are complied with	Do administrative sites meet required regulations? (I)	Annual OSHA inspection.	No code violations. Violations are corrected as quickly as possible.	Report yearly Attainment every year.
UTILITY CORRIDORS Low growing vegetation is favored in electric rights-of-way where the height of the vegetation conforms with safe operating requirements of the utility.	Low-growing shrubs and/or grasses are established and maintained in utility corridors where wildlife and aesthetic objectives are to be met.	Is low-growing vegetation being maintained in electric rights-of-way where wildlife and aesthetic objectives have been established? (I)	Visual inspection at three-year intervals	Noncompliance with standard.	Report every three years Attainment at time of inspection.
COMMUNICATION SITES Communication sites are developed and utilized to their greatest potential, thus eliminating or at least reducing the need to develop additional sites on the Forest	Use of existing sites is maximized to minimize the need for additional sites	Were new communication sites developed? Are existing communication sites being used to the maximum? (I)	Number of available spaces within existing communication sites at the end of five years.	Existing sites approach 90% occupancy Any new communication site	Report at end of fifth year of implementation

Legend

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 17. Monitoring the Desired Future of Management Area 21 - Special Management Areas

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
ECOSYSTEM Big Schloss, Laurel Fork, Little River, and Mount Pleasant contain a variety of unique natural resources	Ensure that the ecosystem generally mimics or is the result of natural processes	To what extent are changes to the ecosystem induced by management practices? (I)	Number of acres treated as measured yearly	Management activities which treat more than 10% of the area are not considered to mimic *natural ecological* processes	Evaluate every five years
BIOLOGICAL VALUES The unique biological values are protected within Laurel Fork, Little *River and Big Schloss*	Vegetation and wildlife management practices are restricted to those necessary to manage habitats and populations *of threatened, endangered, or* sensitive species, and to maintain natural communities This is accomplished in consultation with the USDI Fish & Wildlife Service, the Virginia and West Virginia Natural Heritage Programs, and state wildlife agencies	Were practices used that were necessary to recover threatened or *endangered species* habitats or populations? Were practices used that were necessary to maintain sensitive species habitats or populations? (I)	Condition of habitat for sensitive plant or animal communities *and populations for* threatened and endangered species as measured yearly	Noncompliance with standard	Report yearly Attainment will be ongoing
GEOLOGIC VALUES The unique geologic landform at Big Schloss is protected	Projects are designed to avoid, minimize, or mitigate adverse effects on Big Schloss	Was Big Schloss protected from disturbance? (I)	Visual evidence of disturbance from management activities based on inspection every fifth year	No evidence of damage to sites	Report every fifth year Desired future is presently in place and will be maintained
MINERALS Within Laurel Fork, leasing for valuable gas reserves continues with unique biological values maintained	Lands are generally available for mineral development with special stipulations to protect sensitive areas	Within the Laurel Fork Special Management Area, did leases issued contain special stipulations? (I)	Confirmation that new leases within the Laurel Fork Special Management Area contain special stipulations as reported yearly	Noncompliance with standard	Report yearly Attainment when new leases are issued

Legend
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 17. Monitoring the Desired Future of Management Area 21 - Special Management Areas (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
RECREATION Opportunities are provided for primitive recreation and solitude	Lands within this management area retain their existing recreation opportunity spectrum classification	Are opportunities for primitive recreation and solitude being provided? (I)	SPNM ROS areas meet the criteria for providing primitive recreation Measurement occurs every five years	Failure of inventoried SPNM ROS areas to meet the criteria for SPNM ROS recreation opportunities	Report every five years Desired Future is attained within ten years

TABLE 18. Monitoring the Desired Future of Management Area 22 - Small Game and Watchable Wildlife

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
ECOSYSTEM Wildlife habitat and associated dispersed recreation are developed to their potential	Each area focuses on a theme such as wildlife viewing, nature study, small game management, or combinations thereof	For each unique area, has the theme(s) been identified? (I)	Implementation Schedule developed for each area within 3 years after Plan approval	No implementation schedule has been developed.	Report yearly Attainment in 3 years

Legend

(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 19. Monitoring Items That are Common to Most Management Areas

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
ARCHEOLOGICAL SITES All archeological sites that are potentially eligible to the National Register of Historic Places are protected	Projects are designed to avoid, minimize, or mitigate adverse effects on potentially significant cultural resources.	Were potentially eligible sites protected from disturbance? (I)	Visual evidence of disturbance from management activities based on annual inspection of sample sites	No evidence of damage to sites.	Report every year Desired Future is presently in place and will be maintained
BIOLOGICAL VALUES Old growth is protected	Prior to scheduling any silvicultural practices in old growth forest type group 21 identified as "Present Old Growth" in Table 2-1 and located on lands classified as suitable for timber production, the following will be accomplished the stand will be inventoried by the criteria in FEIS Appendix H, and site-specific analysis and disclosure includes a discussion on the old growth characteristics found, the effects of the action on these characteristics, and the effect the action will have on the contribution of the area to the Forest's "old growth" allocation.	Is each old growth forest type represented in an old growth condition on the Forest? How much and where is the old growth on the Forest? (V)	Acres of old growth forest type group 21 inventoried on suitable timberland as measured yearly	Depends on inventory finding and site-specific analysis, but no total downward trend in acres.	Report yearly Evaluate at end of fifth year of implementation
Yellow Pine community is maintained or enhanced	Burns are planned and executed to enhance site conditions Prescribe burns can be accomplished to meet specific resource objectives	Are associated species of the yellow pine community, dependent on fire or xeric conditions, being maintained and reproducing? (E)	Permanent vegetation plots as measured at 5 and 10 year intervals	Loss of associated species or total fire exclusion	Report at five and 10 years Attainment may be decades away

Legend
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 19. Monitoring Items That are Common to Many Management Areas (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
BIOLOGICAL VALUES Relatively unfragmented late successional forest habitats are maintained	Determine population trends of the indicator species (worm-eating warbler, ovenbird, brown-headed cowbird and pileated woodpecker) and relationship to habitat changes	What are the bird population trends on the Forest? (V)	Level one population surveys in cooperation with U.S. Fish and Wildlife Service breeding bird survey as measured yearly. Acres of late successional habitat as measured at 5 and 10 year intervals	Natural population fluctuations are expected Long-term (5-10 yr) downward trend will result in implementation of Level 2 surveys	Report at end of fifth year of implementation. Attainment in 10 years
Early successional forest habitats are maintained	Determine population trends of the indicator species (common flicker) and relationship to habitat changes	What are the bird population trends on the Forest? (V)	Level one population surveys in cooperation with U S Fish and Wildlife Service breeding bird survey as measured yearly. Acres of early successional habitat as measured at 5 and 10 year intervals	Natural population fluctuations are expected Long-term (5-10 yr) downward trend will result in implementation of Level 2 surveys.	Report at end of fifth year of implementation Attainment in 10 years
Caves are protected	A management plan will be developed for each classified cave	Have all caves been inventoried on the Forest? What is the classification of each cave inventoried? Have management plans been developed for each cave? (I)	Completion of cave management plans within five years of the date of the record of decision of the Revised Plan	Noncompliance with standard	Report at end of fifth year of implementation. All cave management plans will be completed

Legend
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 19. Monitoring Items That are Common to Many Management Areas (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
FIRE A level of protection is provided that results in the least cost of presuppression, suppression, and net value change (cost efficient level)	The efficient fire program budget is identified by the Level II Fire Analysis and is implemented through the annual fire management action plan	Is funding being allocated as indicated by the fire analysis to achieve the desired level of protection? (I)	Funding and Capability Index compared yearly	Variance greater than 10% from Fire Protection Capability Index of 100%	Report yearly Attainment every year
Preattack planning has been completed in the urban / wildland interface	For the urban/wildland interface, representatives of the Forest cooperate with the Virginia and West Virginia Departments of Forestry and local fire authorities Preattack planning is recommended in and around existing subdivisions	Was preattack planning effective in preventing loss of life or homes on private property? (E)	Number of people who die or houses lost due to wildfire for every fire in the urban/wildland interface.	Any loss of life or house from fire originating on the Forest	Report yearly Desired future attained in ten years
INSECT & DISEASE IPM is used to minimize damage from forest pest organism with particular focus on gypsy moth	Destructive insects and disease organisms do not increase to potentially damaging levels following management activities.	Are silvicultural treatments effectively reducing the susceptibility or vulnerability of stands to damaging pests? (E)	Number of oak regenerated at 2nd, 5th, and 10th year	Gypsy moth impacts prohibit adequate oak stocking on more than 5% of projects	Report at the end of fifth year of implementation
		Are intervention treatments effectively reducing the susceptibility or vulnerability of stands to damaging pests? (E)	Annual population estimates	Post treatment population within ± 10% of pre treatment population	Report yearly Evaluate immediately for attainment.

Legend
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 19. Monitoring Items That are Common to Many Management Areas (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
LANDS National Forest ownership is consolidated with particular emphasis placed on acquiring desirable interior tracts	Give priority to exchanges that will consolidate large blocks of National Forest land through acquisition of desirable inholdings and disposal of isolated tracts of National Forest land.	Are available private lands being acquired that have been identified on the land ownership adjustment map? (I)	Acres exchanged or acquired as reported yearly	Tract exchanged or acquired not identified on Land Ownership Adjustment Map	Report yearly. Desired future attained in 50 years
		Were exchanges or purchases effective in consolidating large blocks of National Forest land or disposing of isolated tracts of existing National Forest land? (E)	Acres exchanged or acquired as reported yearly.	Tract acquired did not consolidate ownership or tract disposed was not isolated	Report at end of fifth year of implementation Desired future attained in 50 years
All landlines are located to Forest Service standard	Establish all landlines to Forest Service standards within the first plan period	Is the Forest establishing boundary lines at a rate to meet objectives in Appendix E of the Plan? (I)	Miles of landline located as reported yearly.	Variance greater than 25% from objective	Report yearly Attainment end of 1st 10-yr period.
All landlines are maintained to Forest Service standard.	Maintain established boundary lines on a 10-year frequency.	Is the Forest maintaining boundary lines at a rate to meet objectives in Appendix E of the Plan? (I)	Miles of landline maintained as reported yearly	Variance greater than 25% from objective	Report yearly. Evaluate at the end of fifth year of implementation.
PLAN CONSISTENCY All projects are consistent with the Plan	Projects are evaluated to determine if they are consistent with the management direction in the Plan This evaluation is documented in the project-level environmental document with a finding of consistency incorporated into the decision document	Are projects consistent with the Forest Plan? Are the projects being implemented in accordance with the NEPA documents? (I)	Number of projects or project - level Plan amendments as reported yearly	Noncompliance with NEPA documents or Revised Forest Plan.	Report yearly Attainment every year

TABLE 19. Monitoring Items That are Common to Most Management Areas (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
RECREATION					
Trails will be developed or improved as funding permits.	Outputs shown in the Plan are being accomplished	Are the estimated outputs projected in the Plan being achieved? (I)	Number of Miles of trail constructed or reconstructed as measured yearly.	Variance greater than 25% between projected and actual outputs.	Report yearly Evaluate at end of fifth year of implementation
Trails are maintained to standard	Trail maintenance activities are commensurate with the existing ground conditions and the level of use the trail receives.	Are trails being maintained to the standard necessary to adequately support users? (I)	Miles of trail not to standard as measured yearly.	Any increase in the backlog of trails not maintained to standard	Report yearly Evaluate at end of fifth year of implementation
The "Share The Trail" concept is promoted	The trail system is managed to provide for a variety of trail users and experience levels	Are trails meeting the needs of its users? (E)	One User Survey done during first five years of Plan	Survey reveals poor Trail conditions, hazards, or user conflicts	Report at end of fifth year of implementation
A wide range of recreation opportunities is provided to the Forest visitors	The area is managed to meet the adopted Recreation Opportunity Spectrum (ROS) classification Standards are used in designing and executing management practices in order to successfully meet the assigned ROS.	Are ROS classifications being met in the Management Area? How well do the standards help in meeting the ROS objectives? (E)	Evaluation of 75% of projects yearly.	Any human caused deviations from adopted ROS	Report every five years Desired future presently exists and will be retained.
SOIL					
Soil productivity is protected	To maintain soil productivity while conducting forest management activities, the organic or litter layer, topsoil, and root mat should be left in place over 85% of the area of the planned activity.	Did activities leave in place at least 85% of the soil surface layer, including organic or litter layer, topsoil, and root mat? (I)	Areas of bare soil on 4 projects per Ranger District per year.	Noncompliance with standard.	Report yearly Attainment every year.
		Did exposing up to 15% of the soil cause erosion to exceed the forested T-factor? (E)	Areas of bare soil on one project per Ranger District per year	Soil erosion exceeds forested T-factor	Report every two years Answer in 8 years

TABLE 19. Monitoring Items That are Common to Most Management Areas (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
THREATENED & ENDANGERED SPECIES T & E plant and animal species are protected	Requirements and measures for activities affecting threatened and endangered species are detailed in species recovery plans and FSH 2609 23R	Were requirements outlined in federal species recovery plans implemented? (I)	Species specific populations Frequency depends on species	Evidence that recovery plans are not being implemented.	Report yearly Attainment every year
		Is habitat for all existing threatened and endangered species being maintained or improved with no unwanted habitat alterations / degradations happening? (E)	Species specific populations Frequency depends on species.	Natural population fluctuations are acceptable. Negative trends resulting from management activities will require immediate action	Report yearly Attainment will vary by species based on recovery objectives
TIMBER Allowable Sale Quantity (ASQ) will not be exceeded	Within the planning period, the volume of timber to be sold in any one year may exceed the average annual ASQ so long as the total amount sold for the planning period does not exceed the ASQ	Did the volume sold from suitable timberland in any one year exceed the Average Annual ASQ? Was the total volume sold from suitable land for the first decade less than the decade's ASQ? (V)	Volume chargeable to ASQ as sold yearly.	None Adjust ASQ during next planning period	Report yearly Evaluate at end of fifth year Validate at end of first decade.
		Based on volume harvested, are timber yield coefficients used in FORPLAN accurate? (V)	Stand chargeable volume and stand suitable acres as reported yearly by working group	None Use to adjust coefficients for the next Plan revision	Report at end of fifth year of implementation Validation in 10 years

Legend:
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 19. *Monitoring Items That are Common to Most Management Areas (Continued)*

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	*Measurement &* Frequency of Measurement	*Threshold of* Acceptable Change	*Reporting Period* & How Long Before Question is Answered
TIMBER					
Maximum size limits for harvest areas are those necessary to meet management objectives	The maximum size of openings for all management types on the Forest for clearcut, shelterwood and seed tree harvest cutting methods is 40 acres. (25 acres in West Virginia)	Are the opening size limits needed to meet wildlife habitat or visual quality objectives used more often than the maximum size limit of 40 acres? (I)	Number of harvested stands and their acres by Management Area except for salvage sales	Actual size limit as determined by wildlife habitat or visual quality is exceeded at least 10 % of the time an opening is created.	Report yearly. Evaluate at fifth year of implementation
Lands harvested are adequately restocked	Timber harvesting on suitable lands must be done under a harvest cutting method where adequate stocking of desirable species is expected to occur within 5 years after the final harvest cut.	Are harvested forest lands restocked within five years following harvest? (E)	Number of desirable stems per acre as measured first and third year after harvesting for pine stands and at third year for hardwood stands.	Evidence that land is not restocked within five years following harvest.	End of third growing season following harvest.
	The minimum number of stems per acre for each forest type are 150 for white pine and hardwoods, and 300 for shortleaf pine, virginia pine, and mixed pine - hardwood	Are modified shelterwood harvest cuts regenerating forests to desirable species? (E)	Number of desirable stems per acre and average regeneration height as gathered every 2 years on stands identified for monitoring	Evidence that natural regeneration is not becoming established to meet minimum number of stems per acre	Attainment in 10 Years
Harvested pine forests are adequately restocked.	White pine forest types can be regenerated artificially or naturally to white pine Yellow pine forest types can be regenerated artificially or naturally to yellow pine	Were pine types successfully regenerated to the appropriate forest type? (E)	Forest type as measured first and third year after harvesting	More than 10% of the pine regeneration was not to the appropriate forest type	End of third growing season following harvest.

Legend.

(I) - *Implementation Monitoring*
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 19. Monitoring Items That are Common to Most Management Areas (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
TRANSPORTATION Roads are designed to the lowest standard necessary to meet management area objectives	Roads built or reconstructed in Management areas 7, 11, 13, 14, 15, 16 and 17	Based on acres harvested, are road construction and reconstruction coefficients used in FORPLAN accurate? (V)	Acres harvested and miles of road built or reconstructed each year	None. Use to adjust coefficients for the next Plan revision	Report at end of fifth year of implementation. Validation in 10 years
TRAVEL MANAGEMENT A road system will be maintained that serves the public, meets management needs, and protects resources in a cost-effective manner	Road management is consistent with the management area direction and meets standards in the Revised Plan	Have existing closed roads been opened to public use? (I) Have existing roads currently open to public use been closed? (I)	Total Forest miles open and closed to public motorized use as reported yearly in TIS	Variance greater than 5% from amount of open and closed roads in TIS at the time the Record of Decision is signed.	Report yearly. Evaluate at the end of fifth year of implementation.
		Is the existing compliment of open roads adequate to meet the experiences desired by the motorized recreation user on the Forest? (E)	Yearly Traffic Counts and One User Survey done during first five years of Plan	Comments reveal hazards, resource problems or user conflicts	Report at end of fifth year of implementation
VISUALS Visitors see a forested landscape that appears pleasing to the eye	The area is managed to meet the adopted visual quality objective Contrast reducing techniques are used in designing and executing management practices in order to successfully meet the assigned visual quality objective	Are visual quality objectives being met in the Management Area? How well do the contrast-reducing techniques help in meeting the visual quality objectives? (E)	Visual evaluation of 75 % of yearly projects.	Any human-caused deviations from contrast reducing techniques	Report every five years Desired future presently exists and will be retained.

Legend
(I) - Implementation Monitoring
(E) - Effectiveness Monitoring
(V) - Validation Monitoring

TABLE 19. Monitoring Items That are Common to Most Management Areas (Continued)

Monitoring Item and Desired Future	Indicators of Desired Future	Monitoring Questions	Measurement & Frequency of Measurement	Threshold of Acceptable Change	Reporting Period & How Long Before Question is Answered
WILDLIFE					
Quality hunting opportunities are promoted	Big Game Hunting Demand.	Based on National Forest Stamps sold, are *projected big game* hunting trends accurate? (V)	National Forest Stamps sold as reported yearly by State wildlife agencies	None Use to adjust demand estimates *for the next Plan revision*	Report at end of fifth year of implementation Validation in 10 years
Populations for demand (i e bear, deer and turkey) species are maintained or enhanced	Population Trends	Based on hunter harvest information are the projected population trends for the demand species accurate ? (V)	Hunter harvest information as reported yearly by state wildlife agencies	None Use to adjust model population trend estimates for next plan revision.	Report yearly Evaluate at end of fifth year of implementation
ACCOMPLISHMENT REPORTING					
Outputs/costs shown in the Plan are being accomplished.	Quantitatively compare planned versus actual outputs/costs.	Are the estimated outputs projected in the Plan being achieved? (I)	MAR items as reported yearly.	Variance greater than 25% between projected and actual outputs	Report yearly Evaluate at end of fifth year of implementation.
		Are the costs of implementing the Plan consistent with those projected? (I)	Dollars spent as reported yearly.	Variance greater than 25% between Plan projections and actual unit costs	Report yearly. Evaluate at end of fifth year of implementation.
The use of clearcutting is limited	The decision document for any project utilizing clearcutting contains a determination that clearcutting is the optimum method to meet the goals, objectives, desired future condition, and standards for that management area as described in the Plan	How much is being clearcut? (I)	Acres offered for sale yearly.	Yearly variance greater than 10% between Plan acreage projections and actual accomplishments	Report yearly. Evaluate at end of fifth year of implementation
Timber Harvest Methods other than clearcutting are predominant.	Uneven-age management using individual tree or group selection harvest *cutting methods and even-age management* using the shelterwood timber harvest cutting method may occur.	What are the acres by cutting method within *management areas?* (I)	Acres offered for sale yearly	Variance greater than 25% between *Plan projections* and actual accomplishments	Report yearly Evaluate at end of fifth year of implementation

RESEARCH

Validation monitoring and other complex monitoring questions often require our close coordination with Forest Research Experiment Stations. Research scientists help us design and conduct monitoring studies and analyze and interpret the results. We have identified the following Research needs:

– What is the most cost-efficient, reliable method(s) for collecting wilderness recreation use data? What yearly levels of use are occurring in wilderness?
– What is the most cost-efficient, reliable method(s) for collecting dispersed recreation use data? What yearly levels of use, by RIM activity, are occurring on the Forest?
– What happens to the stands when different timber harvest methods are used to reduce impacts from gypsy moth?
– Can we make the stands less susceptible to gypsy moths even when non-susceptible trees are planted?
– Do regeneration harvest size limits which differ by management areas, significantly affect habitat of management indicator species such as bear or turkey?
– Development of a numerical rating system for each old growth forest type is needed to quantify quality of stands identified based on Forest-wide inventory.
– Identify public attitudes towards visual quality along all sensitivity level 1 and 2 roads.
– Systematic inventory of plant and/or animal communities on the Forest and determination of species rarity and vulnerability to population changes due to natural and man caused influences.
– Identify vegetation and wildlife species composition and abundance changes resulting from gypsy moth defoliation.
– Determination of naturally occurring fire frequency regimes based on dendrochronology studies to establish fire history in all forest types.
– Determine if the endangered Indiana bat actually uses the Forest in the summer.

RESPONSIBILITY

Monitoring and evaluation is an interdisciplinary effort. Project monitoring will be done by personnel at the Ranger District level. Financing will be part of the project costs. District personnel will document their findings and forward the results to the appropriate staff at the Supervisor's Office.

Plan monitoring, as well as some project monitoring, will be done by staff at the Supervisor's Office. Evaluation of the Plan will be done annually by a team of specialists at the Supervisor's Office and documented in a report.

REPORTS

Two types of reports will be prepared.

Annual

Annual reports will summarize monitoring activities conducted during the year and the results obtained. They will address each of the monitoring questions listed in this chapter. Finally, the report will include any recommendations, if necessary, to make activities and their effects consistent with the Plan, including if Plan amendments are warranted.

Five-Year

Because some types of monitoring may not produce valid results in one year, the annual monitoring reports can at most present preliminary results of such studies, and may only summarize their status. Where preliminary results are available, they will be examined to determine if changes are needed in the data collection and storage procedures Final results of these activities will be reported in an evaluation report to be prepared after the revised Plan has been in effect for five years. The five-year evaluation report will summarize the findings of all long-term monitoring activities, and include a comprehensive review of implementation of the Plan.

BUDGET

Monitoring is an integral part of the total management process. That means that a year's activities under the Forest Plan are not completed until the monitoring of the effects of those activities, as specified in this chapter, is completed. This has two implications for budgeting First, the costs of monitoring and evaluation will be included in our annual requests. Second, if the Forest is not given sufficient dollars from Congress to complete all necessary monitoring and evaluation, then it will either (a) reduce its planned activities or (b) figure out a way to conduct monitoring in a more efficient manner

The budget to implement the Forest Plan is found in Appendix F.

EXAMPLE

DETAILED IMPLEMENTATION SCHEDULE

MONITORING ITEM	**TIMBER**
DESIRED FUTURE	Lands harvested are adequately restocked.
INDICATOR OF DESIRED FUTURE	Timber harvesting on suitable lands must be done under a harvest cutting method where adequate stocking of desirable species is expected to occur within 5 years after the final harvest cut. The minimum number of stems per acre for each forest type are: 150 for White Pine and hardwoods, and 300 for Shortleaf Pine, Virginia Pine, and Mixed Pine - Hardwood. (Plan Standard #996, page 2-173)
WHAT'S THE QUESTION(S)?	1. Are harvested Forest lands restocked within five years following final harvest? 2. Are modified shelterwood harvest cuts regenerating forests to desirable species?
TYPE OF MONITORING	Effectiveness
A. Management or Other Areas Where Question Applies	1. Those management areas where it is permissible for the modified shelterwood harvest method to occur. 2. Only stands cut using the modified shelterwood harvest method. 3. Only stands with Site Index 60 or 70 for Upland Oak.
B. Risk Assessment	Because the amount of funding available for monitoring is presently uncertain, the Forest divided desirable monitoring into two funding levels. Priority will be given to monitor Site Index 70 stands first, if money is not available to monitor both Site Index 60 and 70 stands. This risk analysis places highest priority on monitoring Site Index 70 stands. They will have the highest likelihood and highest cost for committing management errors.
C. Sampling Methodology	All units cut using the modified shelterwood harvest method in the identified sales (See Item J.) will be measured using procedures that follow. Permanent plots will be established by District personnel right after site prep is finished. Following initial cutting the modified shelterwood stand will be examined to determine: (a) whether the area was restocked to an acceptable level of trees, (b) the proper (desirable) species, and (c) growth rates for the desirable species.

Three options are available to the District to get the data. In option 1, Districts can collect their own data and submit the information to the Forest Silviculturalist.

In option 2, a service contract can be issued by the SO every two years to collect the data.

In option 3, a Challenge Cost Share agreement can be pursued with Dabney Lancaster College's Forestry Class for them to do this monitoring.

Stands that use any other harvest method will only be monitored at prescribed intervals stated in the Silvicultural Exam and Prescription Handbook.

One plot per 5 acres harvested will be established. A total of 120 plots will be established.

Directions to each plot center will be documented. A GIS map of units involved will be prepared.

Metal fence post will be used to establish plot centers.

All plots will be located at least 1 to 1 1/2 tree heights from the edge of the units.

Regeneration plot size will be 1/100th of an acre.

Sampling Design: 90 percent probability of being within 100 desirable stems per acre of the true mean.

D. Type of Data To Be Collected

While all is not necessary to answer the questions, the following data will be collected at each plot or determined beforehand.

A. *BASIC STAND INFORMATION*

Ranger District/ Compt. & Stand
Forest Type/ Stand Condition Class
Management Type/ Site Index
Aspect/ % Slope
Soil Type
Gypsy Moth Defoliation Impacts (yes or no)
Oak Decline Symptoms Present (yes or no)
Deer Browsing (high/medium/low)
Estimated Sawtimber Harvest BA
Estimated Roundwood Harvest BA
Estimated Residual BA 12"+ DBH
Estimated Residual BA 12- DBH
Date Stand Harvesting Began
Date Stand Harvesting Completed
Type Site Preparation
Date Site Preparation completed

B. *RESIDUAL BASAL AREA INFORMATION*
(with 10 factor prism)

	Evergreen		*Deciduous*	
Date	*Evergreen*	*Mast Producers*	*Non-mast*	*Total*
Year 0				
Year 2				
Year 4				
Year 6				
Year 8				
Year 10				

C. *LIVE REGENERATION INFORMATION*
(# PER ACRE) -- 2 ft. height min.

		Desirable			
Date	*Oak*	*Other*	*Acceptable*	*Undesirable*	*Total*
Year 0					
Year 2					
Year 4					
Year 6					
Year 8					
Year 10					

D. *AVERAGE REGENERATION HEIGHT INFORMATION*
(Nearest Foot)

Date	*Oak*	Desirable *Other*	*Acceptable*	*Undesirable*	*Total*
Year 0					
Year 2					
Year 4					
Year 6					
Year 8					
Year 10					

E. Expected Precision and Reliability

Based on sampling decision, precision and reliability of data is expected to be high.

F. Reporting Period

Data will be collected every 2 years and summarized in the Forest's detailed monitoring report.

G. Lead Responsibility

Collecting: Districts
Compiling: Forest Silviculturalist
Analyzing and Interpreting: Forest Silviculturalist
Reporting: Forest Silviculturalist

Type of Skilled Personnel Needed: None

H. Estimated Annual Cost

Fund Code: NFRF (Reforestation)
RTRT (Reforestation Trust)

Work Activity: ET24 (Reforestation)

Yearly Total Cost:

Collecting Data: $2,000
Overhead Costs of Processing and Reporting Findings: $500

Number of Personnel Needed: 2-person crew per District

I. References	36 CFR 219.27(c)(3) FSM 2472.4 FSH 2409.13, Chp 50 FSH 2409 17, Chp. 8.4 FSH 2409.26d-R8, Chp. 52	Implementing Regulations (GWNF Supp 61)-List of desirable species (Timber Planning Handbook) (Silvicultural Practices Handbook) (Silvicultural Examination and Prescription Handbook)
J. Specific Projects And Their Location	See attached list.	
K. How Long Before Question Answered	10 years	
L. Potential Partners	Dabney Lancaster Community College - Forestry Class	
M. Data Storage Mechanism	Existing Form GWFS - 2400 -20 (3/85) Field Inventory Form will be modified to provide for documenting the required information	
N. Report of Findings	Every two years data will be summarized for all plots taken to date. Information as stated earlier will be documented every other year in the detailed monitoring report.	

SPECIFIC PROJECTS AND THEIR LOCATIONS
FOR ADDRESSING TIMBER REGENERATION MONITORING QUESTION
(See Item J.)

Specific Projects And Their Location	Ranger District	Name	Units	Acres	Points
	Deerfield	Corbett Branch	1	28	5
			3	18	3
		Rock Hill	1	16	3
			3	17	3
			4	20	4
			5	13	2
	Dry River	Not Yet Determined Waiting until some units are sold			
	James River	Not Yet Determined			
	Lee	Not Yet Determined Waiting until some units are sold			
	Pedlar	Humphreys Skid #1	2	11	2
		Humphreys Skid #2	1	26	5
			3	19	3
			4	27	5
		Humphreys Cable #2	1	18	3
		Humphreys Cable #3	1	25	5
		Upper Pedlar	4	18	3
		Terrapin Creek	2	10	2
			3	27	2
	Warm Springs				
		Port Lock	1	37	4
			5	16	4
			6	40	4
		Piney Mountain	1	28	4
			2	30	4

Appendix A - Revised Forest Plan
TIMBER SALE SCHEDULE, TOTAL TIMBER SALE PROGRAM, AND DETERMINATION OF LANDS SUITABLE FOR TIMBER PRODUCTION

DETERMINATION OF LANDS SUITABLE FOR TIMBER PRODUCTION

The determination of lands suitable for timber production is a three stage process that is described in more detail in the process paper "Incorporation of the NFMA Requirements for Timber Resource Land Suitability Into the Revision of the Land and Resource Management Plan for the George Washington National Forest". The NFMA Regulations under §219 14 outline a three stage process for identifying lands suitable for timber production

PHYSICAL SUITABILITY (STAGE 1)

§§219.14(a) of the NFMA Regulations sets forth the requirements for Stage 1 Timber Resource Land Suitability. The purpose of Stage 1 *Timber Resource Land Suitability analysis is to identify (1) non-forest lands, (2) lands administratively or congressionally withdrawn* from timber production (wilderness and research natural areas), and (3) lands physically unsuitable for timber production Lands *identified as unsuitable for timber production in Stage 1 Timber Resource Land Suitability analysis cannot legally be managed for the* regulated flow of timber products These lands, therefore, are not part of the lands suitable for timber production for the maximum timber benchmark nor any of the alternatives

Table A-1 displays the determination of lands unsuitable for timber production based on Stage 1 Timber Resource Land Suitability analysis.

Table A-1.
Stage 1 Suitability Analysis

Classification	Thousands of Acres
Total National Forest Land	1,061
Non-Forest Land	11
Forest Land	1,050
Unsuitable Forest Land	134
Forest Land -- Withdrawn (Wilderness & RNAs)	(34)
Forest Land -- Not Capable of Producing Crops of Industrial Wood	(56)
Forest Land -- Irreversible Damage likely to occur	(40)
Forest Land -- Inadequate Response Information	(3)
Forest Land -- Can't Restock Within 5 Years	(1)
Tentatively Suitable Forest Land	916

FINANCIAL ANALYSIS (STAGE 2)

§§219 14(b) of the NFMA Regulations sets forth the requirements for Stage 2 Timber Resource Land Suitability Stage 2 Timber Resource Land Suitability is a financial analysis designed to explore the financial attractiveness of different timber intensities on the lands identified as "tentatively suitable for timber production" Rather than resulting in any lands being identified as unsuitable for timber production at this time in the analytic process, this financial analysis was used to identify the relative advantages of different timber intensities on different parts of the Forest. The ID Team and Management Team used this financial analysis to remove some lands in Stage 3 to better respond to concerns about the below-cost timber sale program

IDENTIFICATION OF SUITABLE ACRES (STAGE 3)

§§219 14(c) of the NFMA Regulations sets forth the requirements for Stage 3 Timber Resource Land Suitability Stage 3 analysis is used to identify the lands suitable for timber production for the alternative selected as the Revised Plan The ID Team accomplished Stage 3 Timber Resource Land Suitability analysis through a three step procedure

1 The ID Team and representatives from the Ranger Districts determined the location of the management areas based on public comments to Alternative 8 in the DEIS and management concerns Management area locations were mapped on quad sheets and then transferred to an Alternative 8A layer in the Geographical Information System Any lands allocated to Management Areas 4, 5, 6, 8, 9, 21 and 22 were de facto unsuitable for timber production since the objectives of these management areas were inconsistent with lands suitable for timber production (All of Management Areas 12 and 20 were removed in Stage 1 Timber Resource Land Suitability as non-forest)

2 A screening process was used by representatives from the Ranger Districts to determine what lands in Management Areas 7, 10, 11, 13, 14, 15, 16 and 17 were impractical to manage as lands suitable for timber production given the concerns about the Forest's below-cost timber sale program This screening process was based on local knowledge of these professionals to remove lands where access was impractical or where most of the lands were of low productivity or excessively steep slopes This exercise involved the use of the knowledge of the Stage 2 Timber Resource Land Suitability analysis and similar analyses that had been accomplished in response to concerns about the below-cost timber sale program Lands in Management Areas 7, 10, 11, 13, 14, 15, 16 and 17 that were impractical to manage as lands suitable for timber production were assigned to management area prescriptions that carried designations of unsuitable for timber production and were so mapped in a GIS layer

3 The remaining lands (466,000 acres) could be assigned to management area prescriptions that allowed regeneration harvesting Based on the objectives of the Revised Plan and the economic efficiency of those remaining lands, 350,000 acres were finally identified as suitable for timber production

Table A-2 displays the results of the Stage 3 Timber Resource Land Suitability analysis

Table A-2.
Stage 3 Suitability Analysis

Classification	Thousands of Acres
1. Tentatively Suitable Forest Land (from Stage 1)	916
2 *Lands Withdrawn for Other Resource Purposes*	244
Biological Areas (Management Area 4)	(16)
Shenandoah Mountain Crest (Management Area 4)	(34)
Massanutten (Management Area 5)	(7)
Appalachian National Scenic Trail Corridor (Management Area 6)	(9)
Roadless Areas Recommended for Wilderness Study (Management Area 8)	(7)
Remote Highlands (Management Area 9)	(116)
Special Management Areas (Management Area 21)	(50)
Watchable Wildlife and Small Game Emphasis (Management Area 22)	(5)
3 Lands Where Timber Management is Impractical	206
Management Area 7	(21)
Management Area 10	(6)
Management Area 11	(4)
Management Area 13	(33)
Management Area 14	(53)
Management Area 15	(65)
Management Area 16	(1)
Management Area 17	(6)
Management Area 18	(17)
4 Not Economically Efficient	116
Management Area 7	(3)
Management Area 10	(1)
Management Area 11	(1)
Management Area 13	(1)
Management Area 14	(21)
Management Area 15	(60)
Management Area 16	(10)
Management Area 17	(19)
5. Lands Suitable For Timber Production	350
Management Area 7	(12)
Management Area 11	(3)
Management Area 13	(4)
Management Area 14	(48)
Management Area 15	(192)
Management Area 16	(27)
Management Area 17	(63)
Management Area 18	(1)

Table A-3 displays the breakdown of the lands suitable and unsuitable for timber production by management area This table breaks down the lands unsuitable for timber production into the portions that became unsuitable during Stage 1 and Stage 3 analysis

Table A-3.
Breakdown of Lands Suitable For Timber Production by Management Area (in Thousands of Acres)

Management Area	Total	Stage 1	Stage 3	Suitable
4	70	20	50	0
5	10	3	7	0
6	10	1	9	0
7	39	3	24	12
8	44	37	7	0
9	141	25	116	0
10	8	1	7	0
11	11	3	5	3
12	2	2	0	0
13	42	4	34	4
14	133	11	74	48
15	331	14	125	192
16	39	1	11	27
17	91	3	25	63
18	21	3	17	1
20	4	4	0	0
21	59	9	50	0
22	6	1	5	0
TOTAL	1061	145	566	350

Table A-4 displays the breakdown of the lands suitable for timber production by site index

Table A-4.
Lands Suitable For Timber Production by Site Index

Site Index	Thousands of Acres
50	63
60	146
70+	141
TOTAL	350

LOCATION OF LANDS SUITABLE FOR TIMBER PRODUCTION

Lands suitable for timber production are located in eight management areas. These management areas contain both suitable and unsuitable lands Within the portions of these management areas identified as suitable for timber production on the Special Features map, stands that meet the following criteria are suitable for timber production

1 stands that contain white oak—red oak—hickory (on moist sites), yellow poplar, northern red oak, sugar maple—beech—yellow birch, upland hardwood—white pine or cove hardwoods—white pine—hemlock forest types regardless of site index and slope ;

2. stands that contain white pine, hemlock, white pine—hardwood, hemlock—hardwood or white pine—hemlock forest types regardless of site index and slope,

3 stands that contain white oak—red oak—hickory (on dry sites), chestnut oak, scarlet oak, white oak, chestnut oak—scarlet oak or upland hardwood—yellow pine forest types on lands that are site index 60 or better for oak regardless of slope;

4 stands that contain white oak—red oak—hickory (on dry sites), chestnut oak, scarlet oak, white oak, chestnut oak—scarlet oak or upland hardwood—yellow pine forest types on lands that are site index 50 for oak on slopes less than 55% ,

5 all plantations (regenerated stands);

6 portions of riparian areas more than 66 feet from the bank of the stream and adjacent to stands suitable for timber production in the adjoining management area.

During project level analysis, lands identified as suitable for timber production must be no more than 350,000 acres across the Forest However, within each management area lands suitable for timber production may vary by $\pm$ 10% of the acreage displayed as suitable for timber production in Table A-2. Chapter 5 discusses the procedure for monitoring the assignment of lands suitable for timber production in each management area containing such lands

ALLOWABLE SALE QUANTITY

The allowable sale quantity is described in more detail in the process paper "Incorporation of the NFMA Requirements for Silvicultural Practices Into the Revision of the Land and Resource Management Plan for the George Washington National Forest" The allowable sale quantity (ASQ) is defined as the quantity of timber *that may be sold* for a time period from the area of suitable land (FSH 2409 13 Zero Code)

Table A-5 displays a breakdown of the ASQ for the first decade of the Revised Plan The ASQ is the amount of timber that may be sold for the first decade that the Revised Plan is in effect. During this decade, no more than the ASQ may be sold There are no annual constraints on the amount of volume that may be sold on the Forest

Table A-5
Allowable Sale Quantity and Timber Sale Program Quantity (Total Volume for the First Decade)

	Sawtimber		Other Products	
Harvest Method	MMCF	MMBF	MMCF	MMBF
Clearcut[1]	4 1	28 9	11 8	82 6
Modified Shelterwood	8 6	59 7	21 2	148 1
Two-Stage Shelterwood	—[2]	—[2]	—[2]	—[2]
Group Selection	5	3 3	1.1	7 4
Intermediate Harvest	—[2]	—[2]	—[2]	—[2]
Commercial Thinning	—[2]	—[2]	—[2]	—[2]
Total	13 2	91 9	34 1	238 1
Total Allowable Sale Quantity.				330 MMBF
Total Non-Scheduled Volume				5 MMBF
Total Timber Sale Program				335 MMBF

[1]Includes seedtree and removal harvests
[2]None scheduled but some volume for other harvest methods may be substituted during implementation

The projection in Table A-6 of timber harvests and growth over the next 140 years shows a continual build-up of inventory and an increase in the volume harvested The table shows little change in harvest as a percent of inventory. Growth continues to exceed removals by harvest

Table A-6.
Projected Inventory, Harvest, Growth on Suitable Land (MMCF)

10-Year Periods	Inventory All	Inventory Suitable	Harvest-Average Annual	Harvest as % of Inventory Average Annual	Growth Average Annual	Growth as % of Previous Period Harvest
1	1430	562	5	.9		
					3	60
2	1476	543	5	.9		
					5	100
3	1545	542	5	.9		
					8	160
4	1629	573	5	9		
					7	140
5	1687	596	5	8		
					7	140
10	1898	761	8	1 0		
					8	100
14	1973	829	9	1.1		
					12	133

TIMBER SALE SCHEDULE

The timber sale schedule is described in more detail in the process paper "Incorporation of the NFMA Requirements for Silvicultural Practices Into the Revision of the Land and Resource Management Plan for the George Washington National Forest" The sales schedule is defined as the quantity of timber *planned for sale* for a time period from the area of suitable land The sales schedule provides a quantity of timber planned for sale during the first period (10 years) It does not require a listing of individual timber sales (FSH 2409 13 Zero Code). Table A-7 displays the total allocation of timber volume to be offered (based on a proration of the allowable sale quantity) for each of the six ranger districts. The sale schedule does not represent an exact amount of volume that must be sold on each Ranger District, but merely an indication of the amount of volume that will be offered from each Ranger District

TABLE A-7
Total Allocation First 10 Year Period MCF (MMBF)

Ranger District	Total	Even-Aged	Uneven-Aged
Deerfield	9170 (64)	9136 (62)	34 (2)
Dry River	5870 (41)	5841 (39)	29 (2)
James River	8600 (60)	8571 (58)	29 (2)
Lee	8590 (60)	8590 (60)	–
Pedlar	5870 (41)	5856 (40)	14 (1)
Warm Springs	9170 (64)	9156 (63)	14 (1)
TOTAL	47270 (330)	47,150 (322)	120 (8)

Sales will be located on lands that are suitable for timber management (portions of Management Areas 7, 11, 13, 14, 15, 16, 17 and 18) Documentation will be provided in site specific analysis Volume from these lands will be part of the allowable sale quantity Some sales may be located on unsuitable lands that allow such harvest to meet other resource needs Volume from those lands will not be part of the allowable sale quantity

Ranger districts will develop three year timber action plans from this list to locate sale opportunities to implement the schedule.

APPENDIX B
LIST OF PROJECTS - FACILITIES

Trail Construction/Reconstruction Projects

Trails provide access for dispersed recreation. Presented below is a list of trails to be constructed or reconstructed. The trail name refers to its general location. The exact trail location is chosen once the project is funded and scoping and project-level analysis are complete. This list is not prioritized, as priorities can and do change over time. Neither is there a time frame associated with this list, as funding for trail construction is received on a year-by-year basis. The trails to be constructed will be determined each year once funding is received and priorities are determined. Depending upon funding, this list may or may not be completed during the plan period.

Trail	District	FDT#	Reconstruct. (Miles)	New Construct. (Miles)
Archer ATV Trails	Deerfield	---	0	5.0
Augusta Springs	Deerfield			
Watchable Wildlife Loop		---	0	1.0
Long Loop		---	0	3.0
Benson Run Horse Trails	Deerfield	447	1.7	5.0
Braley Pond Loop	Deerfield	---	0	2.0
Confederate Breastworks	Deerfield	---	0	0.3
Crawford Mountain Trail and Trailhead (Relocation)	Deerfield	485	0	2.0
Shaws Ridge	Deerfield	652	2.5	0
Shenandoah Mtn. to Tom Lee Draft Connector	Deerfield	---	0	3.0
Wallace Peak to Bolshers Run Connector	Deerfield	---	0	3.0
Shenandoah Mtn. Trail and Trailhead (Relocation)	Deerfield	447	0	1.0
Brandywine Lake	Dry River	---	0	0.5
Cabin Ridge Loop	Dry River	235	0	1.0
California Ridge	Dry River	436	1.0	1.5
Clay Lick	Dry River	594	2.0	2.0

Trail	District	FDT#	Reconstruct. (Miles)	New Construct. (Miles)
High Knob	Dry River	1021	3.5	2.0
Hone Quarry	Dry River	___	0	1.0
Little River	Dry River	646	0	8.0
Lookout Loop	Dry River	___	1.0	1.5
Miller Run Loop	Dry River	1022	3.5	1.6
Mines Run	Dry River	___	___	0.8
North River	Dry River	539	0	3.6
Pioneer/Wild Oak	Dry River	437/716	0.5	2.0
Rader Mountain	Dry River	597	0	4.0
Rocky Run ATV Trails	Dry River	---	0	8.0
Shenandoah Headwaters	Dry River	---	0	0.5
Shenandoah Mountain	Dry River	1024	1.8	1.8
Slate Springs	Dry River	428	3.0	0
Wolf Ridge	Dry River	378	1.5	1.0
Alleghany	James River	---	4.0	12.0
Alleghany Scenic Railroad	James River	---	0	12.0
Australia Furnace	James River	---	0.25	0
Bratton's Run "Mining" Loops (Scenic By-way)	James River	---	0	2.0
Childrens Forest	James River	---	0.25	0
Cockscomb Trailhead (Scenic Byway)	James River	---	0.01	0
Colonel Jordan Wayside Loop (Scenic By-way)	James River	---	0	0.75
Evans Tract Wildlife	James River	---	0	2.0
Knoll Wayside Loop and Parking Areas (Scenic Byway)	James River	---	0	0.5

Trail	District	FDT#	Reconstruct. (Miles)	New Construct. (Miles)
Moomaw Access	James River	---	0	3.0
Oliver Mountain	James River	---	8.0	3.6
Rhododendron Wayside Loop and Parking Area (Scenic Byway)	James River	---	0	0.25
Rich Hole Trailhead	James River	---	0.01	0
Timber Demonstration Loop (Scenic Byway)	James River	---	0	2.0
Top Drive Overlook Trail (Scenic Byway)	James River	---	0	0.25
Big Schloss (Mill Creek Mill Mtn. Connector)	Lee	---	0	2.5
Boone's Run	Lee	---	0	1.5
Brown's Hollow	Lee	---	2.0	1.0
Brushy Hollow	Lee	1019	2.0	0
Bucktail to Halfmoon Link	Lee	---		2.0
Devil's Garden	Lee	---	0	5.0
Great North Mountain extension from Hunkerson Gap to Hawk Hollow	Lee	1009	0	6.0
Great North Mountain extension from Barb Gap to Hunkerson Gap	Lee	1009	0	6.0
Halfmoon Mountain cutoff to Divide Hollow	Lee	1003	0	2.0
Hawk Hollow/Tomahawk Pond/Kelly Run	Lee	---	0	15.0
Laurel Run to Tibbet Knob	Lee	---	0	3.0
Little Sluice (FDR 92 bypass)	Lee	401	0	1.5
Long Mountain	Lee	1007	0	2.0
Long Mountain to Halfmoon (Relocation)	Lee	1007	0	4.0
Mailpath (from Big Blue at Sulphur Springs saddle to Wilson Cove)	Lee	---	0	2.0

Trail	District	FDT#	Reconstruct. (Miles)	New Construct. (Miles)
Massanutten West	Lee	408	7.0	23.0
Paddy Mountain (links Sulphur Springs, Bonnet Hill, Paddy Gap and Vance's Cove)	Lee	---	0	6.0
Passage Creek	Lee	403	1.1	0
Racer Camp	Lee	---	0	3.0
Second Mountain Loop from Kaylor Knob to Runkles Gap	Lee	---	0	3.0
Shawl Gap/Sherman Gap East Connector	Lee	403	0	2.0
Sherman Gap West	Lee	403	0	2 5
Slate Rock	Lee	---	0	2.0
Stony Run from Massanutten Resort to saddle between Kaylor Knob and Hartman Knob	Lee	---	2.0	0
Storybook Trail Bridge Deck (Replacement)	Lee	642	0.01	0
Tibbet Knob	Lee	578	1.0	0
Wildflower	Lee	645	0.5	0
Appalachian Trail	Pedlar	1	10.0	5.0
Blue Loop	Pedlar	507A	1 0	0.5
Crabtree Falls Overlooks (1 bridge)	Pedlar	526	1.5	0.01
Cellar Mountain	Pedlar	501	1.0	0
Elephant Mtn.	Pedlar	509B	0	1.0
Lakeside (Trail and Bridge)	Pedlar	300	0 5	0.01
Little Priest	Pedlar	525	1.5	0
Lovingston Springs	Pedlar	731	1.0	0
Mau-Har	Pedlar	303	1.5	0.5
Panther Falls	Pedlar	508	1.0	0

Trail	District	FDT#	Reconstruct. (Miles)	New Construct. (Miles)
Pinnacle Flats	Pedlar	---	1.5	3.5
Saddle Gap	Pedlar	703	0.5	0.3
South Pedlar ATV Trails	Pedlar	---	0	3.0
White Oak Flats	Pedlar	---	2.5	1.5
White Rock Gap	Pedlar	480	0.75	0
Wilderness Access	Pedlar	___	___	2.0
Beard's Mountain Spur	Warm Springs	459A	0.5	1.0
Bolar Mountain Loops	Warm Springs			
Greenwood Point		720	2.50	0
Sugar Hollow		721	0.75	0
Loop Trail		722	0.75	0
Fee Booth Spur		723	0.25	0
Roadside (2 bridges)		724	0.75	0
Campground 1 Spur		727	0.25	0
Hidden Valley Loop	Warm Springs			
Cobbler Mountain		611	2.44	0
Jackson River Gorge		481D	1.40	0
Muddy Run (2 bridges)		481B	1.20	0
Jackson River Gorge-East	Warm Springs	---	0	3.6
Kelly Run Shortcut	Warm Springs	---	0	0.7
Lake Moomaw, East Side	Warm Springs	---	0	6.0
Lake Moomaw to Sherwood Lake	Warm Springs	---	1.0	1.5
Laurel Fork	Warm Springs	450	6.5	0
Middle Mtn. North	Warm Springs	458	1.0	0
Poor Farm Trail Bridge	Warm Springs	---	0.1	0
Big Blue to Alleghany connector	All except Pedlar	---	0	75

Fire, Administrative and Other Facilities (FA&O)

The following list is a prioritized schedule of FA&0 facilities to be replaced or constructed on the Forest. Some of the facilities are currently leased and some are Forest Service owned which need to be replaced. These projects will be designed and constructed as funding becomes available. They have all been identified and approved for inclusion in the Forest Facilities Master Plan available at the Supervisor's Office and District Offices. Construction of these facilities during the plan period will be dependent on the availability of funding.

1. Lee Work Center and Office
2. Dry River Work Center and Office
3. Warm Springs Work Center
4. Augusta Springs Group Camp
5. Pedlar Office
6. Sherando Lake Work Center
7. Lake Moomaw Work Center (JR)

Developed Recreation Facilities

Following is a list of major developed recreation construction, rehabilitation and enhancement projects that will contribute towards meeting the Forest's desired future condition. These projects are prioritized as high, medium or low and will be implemented as funding becomes available. Depending upon available funding this list may or may not be completed during the Plan period. Unforeseen needs may also necessitate additions to this list.

District	Area	Project	Priority
Deerfield	Braley Pond	Campground Construction	H
	Dispersed Camp	Locate/Construct	M
	Hite Hollow Range	Toilets	L
	Wallace Tract Camp	Construction	L
	Augusta Springs Envir. Education Center	Expand/Enhancement	H
Dry River	North River	Rehabilitation/Expand/Enhancement	M
	Brandywine	Rehabilitation	H
	Todd Lake	Rehabilitation	H
	Hone Quarry	Rehabilitation/Enhancement	M
	Blue Hole	Toilets/Water	M
	Camp Run	Toilets/Water	M
	Hearthstone Lake	Toilets	M
	Shenandoah Mtn.	Toilets/Water	L
	Dispersed Camp	Locate/Construct	M
	Pendleton Range	Toilets	L
	Virginia Range	Locate/Construct	M
	Reddish Knob	Rehabilitation/Enhancement	H
	Elkhorn Lake	Boat Ramp, Fish Pier	M
James River	Longdale	Rehabilitation/Enhancement	M
	Morris Hill	Convert to Campground	M
	Dispersed Camp	Locate/Construct	L
	Low Moor Range	Toilets	M
	National Children's Forest	Toilet/Interpretation	L
	Highland Scenic Tour	Top Drive Overlook	H
	Fortney Branch	Rehabilitation/Enhancement	H
	Archery Range	Locate/Construct	L
	Jackson River Access Points (2)	Toilets	L

District	Area	Project	Priority
Lee	Camp Roosevelt	Rehabilitation/Enhancement	M
	Elizabeth Furnace	Rehabilitation/Expand/Enhancement	H
	Trout Pond	Rehabilitation/Expand/Enhancement	H
	Dispersed Camps (5)	Construct	M
	Hawk	Toilets	M
	Hazard Mill	Convert to Dispersed Camp	M
	Tomahawk Pond	Rehabilitation	M
	Wolf Gap	Toilets	M
	Little Fort	Rehabilitation/Enhancement	H
	Newmarket Gap	Rehabilitation/Enhancement	M
	Trail Shelters (2)	Rehabilitation/New Toilets	L
	Trail Shelters (5)	Construct	L
	Interpretive Trails (6)	New Signs/Rehabilitation/Exhibits	M
	Interpretive Trails (2)	Construct	M
	Massanutten Story Trail	Replace Bridges	H
	Sugar Knob Cabin	Rehabilitation/New Toilet	M
	Observation Towers (2)	Rehabilitation	M
	Shooting Range	Locate/Construct	L
	Passage Creek Gorge	Parking	H
	Powell's Fort Camp	Rehabilitation/Enhancement	H
	South Fork Corridor	Toilets/Parking/Rehabilitation	H
	Iron Furnaces (3)	Rehabilitation/Protect	M
	Taskers Gap Camp	Construct	M
Pedlar	Sherando Lake	Rehabilitation/Expand	H
	Crabtree Falls	Parking/Toilets/Interpretation	M
	Archery Range	Construct	M
	AT Trail Shelters (8)	Rehabilitation	M
	Dispersed Camps (2)	Locate/Construct	M
	Crabtree Meadows	Parking/Dispersed Camping	H
	South Pedlar Campground	Locate/Construct	M
Warm Springs	Bolar Mountain	Rehabilitation/Expand/Enhancement	H
	Hidden Valley Campground	Rehabilitation/Expand/Enhancement	M
	Blowing Springs	Rehabilitation/Enhancement	M
	Greavers Ridge Camp	Construct	M
	Bubbling Springs	Toilet	H
	Locust Springs	Toilet/Rehabilitation	M
	Greenwood Point	Toilet	M
	McClintic Point	Construct Group Camp	H
	Dispersed Camp	Locate/Construct	L
	Bath Shooting Range	Toilet	L
	Poor Farm	Road/Bridge/Campsites	H
	Mill Hill	Expand Volunteer Village	H
	Hidden Valley	Swinging Bridges	M
	Walton Tract	Construct Campsites	M
	Pads Creek	Footbridge	M
	Hidden Valley	Dispersed Campsites	M
	Laurel Fork	Parking/Access from SR 642	H

Interpretive Facilities

Following is a list of major interpretive facility construction, expansion, and enhancement projects which will contribute to meeting the Forest's desired future condition. These projects are all considered high priority and will be implemented as funding becomes available Depending upon available funding this list may or may not be completed during the Plan period Unforeseen needs may also necessitate additions to this list.

District	Area	Project	Priority
Deerfield	Augusta Springs Camp	Enhancement	H
James River	Highlands Scenic Tour District Office	Construct/Enhancement Enhancement	H H
Lee	Massanutten Visitor Center	Expand/Enhancement	H
Pedlar	Appalachian Institute for Environmental Learning	Construct	H
Warm Springs	Lake Moomaw Visitor Center Hidden Valley/Warwick	Construct Construct/Enhancement	H H
Forestwide	Charcoal Iron Furnace Exhibits (4) Wayside Recreation Opportunity Exhibits (6)	Construct Construct	H H

NOTES:

-- Construction and expansion projects identified will increase the developed recreation capacity of the Forest.

-- Conversion projects (Bolar Mountain and Morris Hill) will change use from picnicking to camping. PAOT capacity is not expected to change.

-- Rehabilitation and enhancement projects will add amenities to existing recreation sites to increase user satisfaction and enjoyment. These projects will not increase the PAOT capacity of the Forest.

-- Numbers in ( ) refer to the number of sites where a particular activity will take place.

-- Dispersed camps will be designed to accommodate a variety of uses, including horses.

APPENDIX C
FOUNDATIONS
INTERPRETIVE PROGRAM PLAN

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The Need for an Interpretive Program

The George Washington National Forest consists of over one million acres of public land The Forest Service is responsible for caring for this land, for protecting its natural and cultural resources, and managing it in a way which will ensure that the future will find it in a condition comparable or better than it is today. Interpretation is a dynamic means of communicating to the public about the valuable resources found in their Forest, and the management activities which are occurring to protect these resources The products of a well planned, professional interpretive program include.

1 Increased public awareness and sensitivity for the fragile nature of many of our natural and cultural resources and the need to protect them;
2. Cultivation in our youth of knowledge and respect for the natural environment;
3. Education of the public about the role of the Forest Service as the agency responsible for managing the George Washington National Forest,
4. Promotion of the Forest as a place with a multitude of opportunities for visitors to enjoy;
5. Further development of good relations between the Forest Service and the public;
6 Promotion of partnerships, and
7. Reduction of litter and vandalism

Interpretation is an activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience and by illustrative media, rather than simply by communicating factual information (Tilden). It is not enough to inform the public through oral or written media. People only retain about 10% of what they hear and 30% of what they read. In order to guarantee that the visitor will retain the intended message, the best method is one in which the visitor becomes actively involved with the interpretive media or the resource itself A good interpretive program is intriguing, provocative, imaginative, gets the visitor involved, and influences the visitor's attitudes and behavior (Veverke & Associates).

History of Interpretation on the George Washington National Forest

Interpretation on the George Washington National Forest received a big push during the 1960's with the "Outdoor Patterns for People" initiative. The Storybook Trail, Lions Tale Trail and Massanutten Visitor Center were constructed or put into use at that time. Seasonal and temporary employees were assigned to the Center to lead hikes, visit with the public and plan for the many local school groups that used the facility Elizabeth Furnace Campground saw the addition of an amphitheather and construction of interpretive trails which tell the story of the charcoal iron industry in the 19th Century. The exhibits at the Massanutten Visitor Center are showing wear, and programs are no longer scheduled at Elizabeth Furnace amphitheater.

Sherando Lake has an attractive amphitheater which had state-of-the-art equipment at one time. Due to budget restraints, this aging equipment has not been upgraded or replaced Within the last year an amphitheater was constructed at the Bolar Mountain Beach area on the Warm Springs Ranger District at Lake Moomaw. This is an attractive, but small facility nestled under trees near the bathhouse. Response from the public has been favorable for this facility and for the expansion of the interpretive program at Lake Moomaw in general.

Over the past several years, most of the interpretation on the Forest has been done by volunteers. The establishment of professional interpreters on the Forest will help ensure that high quality interpretation will be planned and implemented. The George Washington National Forest will continue to call upon volunteers as a supplement to interpreters. While they have responded well to this task, they should not be called upon to carry the full load.

Reported Visitor Use on the Forest

An integral part of any planning process is a knowledge of the people who will be involved in, or benefit from, the planned programs. Gathering information about the areas of the Forest which people visit most frequently gives insight into where interpretive programs might be most needed, most desired by the public, and subsequently most successful. Of course it should not be overlooked that there may be areas which currently do not receive high use, but that might attract a lot of Forest visitors if facilities were available.

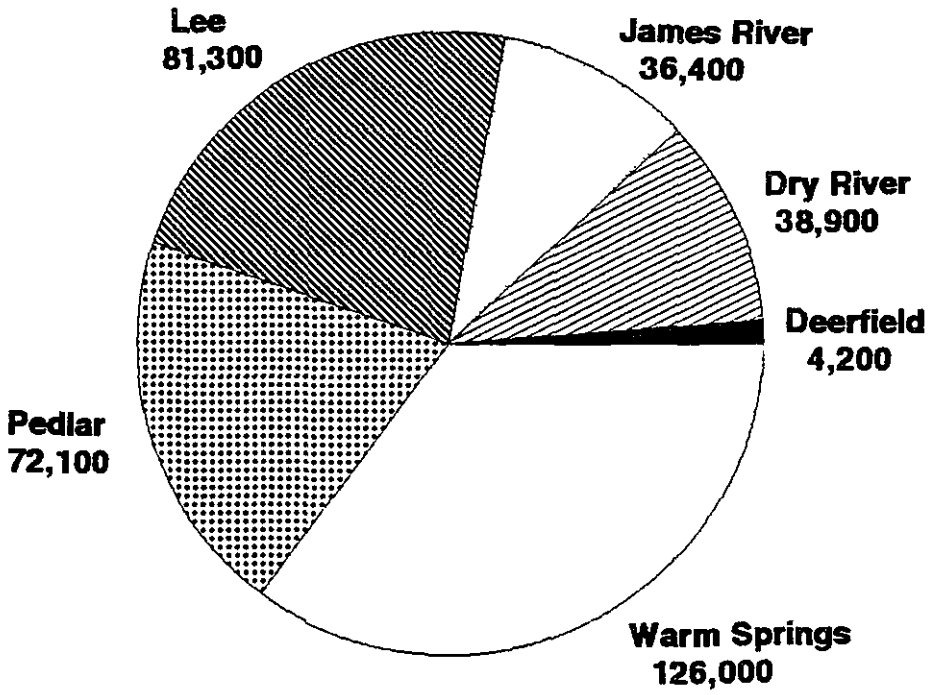
Considering the geographic location of the George Washington National Forest, just outside of the densely populated cities of Washington DC, northern Virginia and Baltimore, one would expect the Forest to nearly meet capacity. While we do not intend to create overcrowded conditions in developed and dispersed recreation areas, a review of visitor use data shows that many areas of the Forest are currently underutilized. This fact indicates that the George Washington National Forest may not be offering the range of opportunities desired and needed by the public.

Visitor use data also shows that the distribution of visitors is very unbalanced across the Forest (see Graph 1) The Warm Springs District far exceeds the other districts in visitor days with about 35% of the reported developed recreation use on the Forest The Lee and Pedlar Districts each reported between 20% and 23% of total Forest use, and the Dry River and James River each reported a little over 10%. The Deerfield Ranger District reported that less than 2% of the developed recreation in 1986 occurred in that District

Of particular interest is the fact that the Lee Ranger District reported that about one-third of their developed recreation sites were meeting practical maximum capacity in 1986 (see Graph 2) It is the Lee which is in the optimum position to serve the urban populations mentioned The implementation of interpretive programs at existing facilities on the Lee Ranger District may boost visitor use to more closely meet the practical maximum capacity. It is also interesting to note that the most highly developed recreation sites on the Forest also receive the highest use – Lake Moomaw on the Warm Springs District. This may indicate that in order to attract more visitors to other parts of the Forest, it is necessary to offer more highly developed facilities

The most popular developed recreation activity on the Forest in 1986 was family camping; swimming and family picnicking followed right behind (see Graph 3) Interpretation barely shows up on the chart. This is because the opportunities for visitors to participate in interpretive programs were so few The three amphitheaters are located in campgrounds which receive very high use There is some merit to the assumption that the amphitheaters would also receive high use if programs were being offered

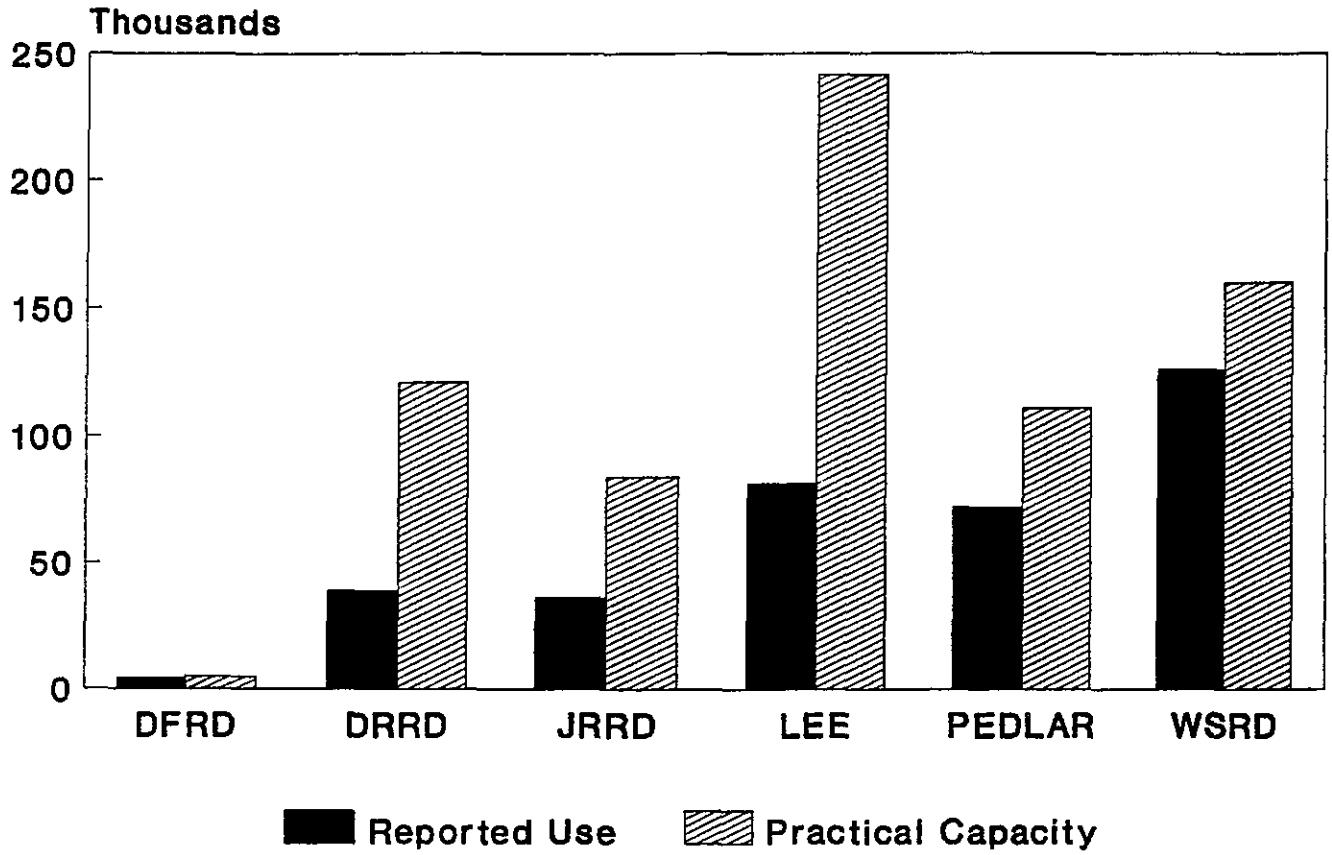
VISITOR USE BY DISTRICT
Developed Recreation



1986 - Reported Visitor Days

Graph 1

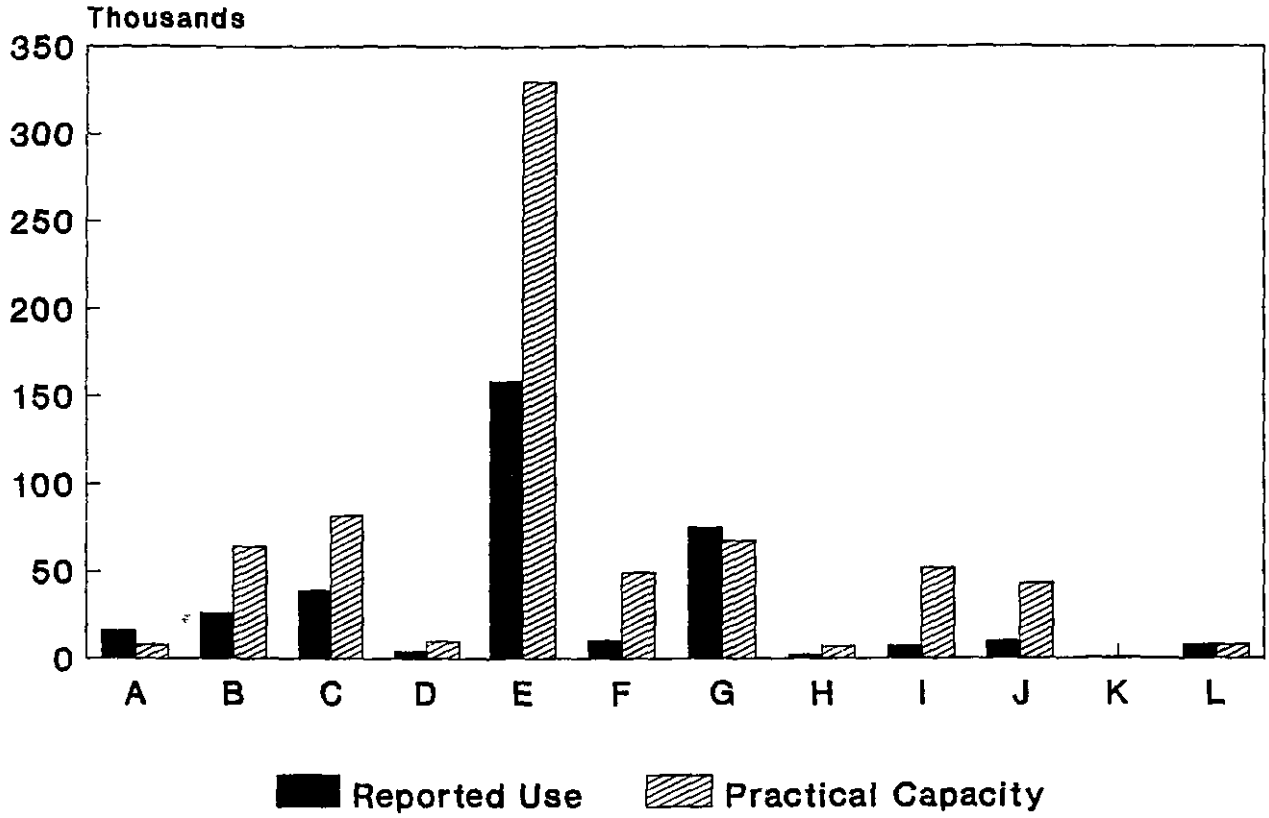
VISITOR USE BY DISTRICT
Developed Recreation



1986 - Reported Visitor Days

Graph 2

REPORTED USE BY ACTIVITY
Developed Recreation

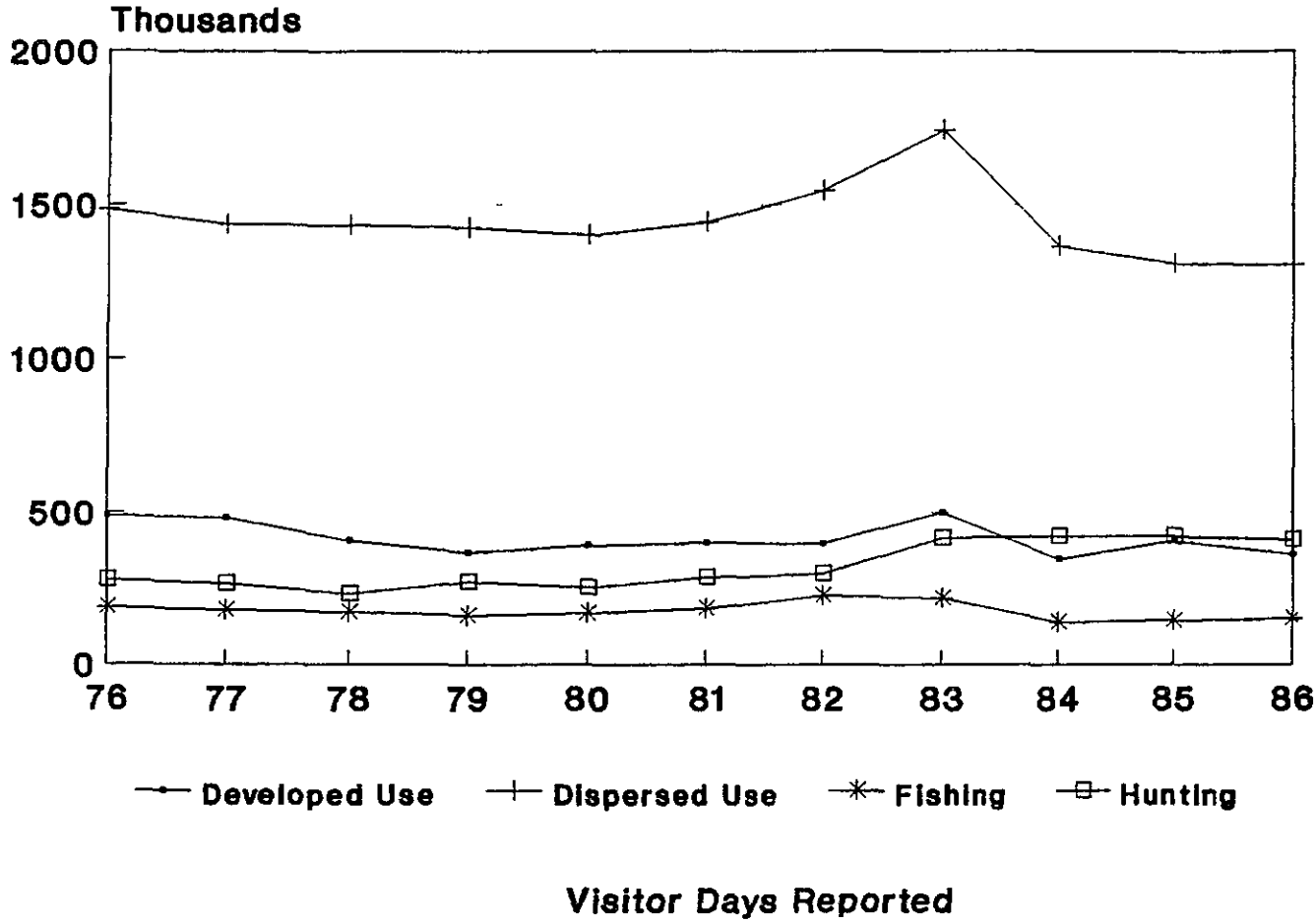


1986 - Reported Visitor Days

A	Observation	G	Family Picnic
B	Boating Sites	H	Group Picnic
C	Swimming	I	FS Organizational Site
D	Fishing	J	Pvt Organizational Site
E	Family Camping	K	Major Interpretive Site
F	Group Camping	L	Minor Interpretive Site

Graph 3
Interpretive Program
Appendix C

TOTAL REPORTED VISITOR USE
1975 - 1986



Graph 4

Every competitive, long-distance runner knows that he does not begin a race unless he knows where the starting line and finish line are and how to get from one to the other. The same is true of an interpretive plan. The mission statement identifies the starting line; the goals identify the finish line, and the objectives identify the course in between

Mission Statement

The mission of the interpretive program for the George Washington National Forest, located within the Appalachian Mountains in Virginia and West Virginia, is to offer greater opportunities for resources education and appreciation to an increasing and changing forest clientele. This will be accomplished by providing quality services and facilities which enlighten the public about natural and cultural resources and the role of the Forest Service in ecosystem management and land stewardship.

Goals and Objectives

1. ***Fully integrate interpretation into the Forest Land Management Plan.***

Obtain support of Supervisor, Staff and District Rangers of the George Washington National Forest for the importance, appropriateness and need to provide interpretation of Forest resources and management to the public

Secure funding to carry out development of interpretive programs and construction of interpretive facilities, trails, kiosks and displays.

2. ***Increase opportunities for visitors to learn about natural and cultural resources found in the Forest.***

Develop quality programs for existing interpretive sites, visitor center, and amphitheaters

Employ three Forest interpreters, one each at Bolar Mountain, Massanutten, and Sherando Lake. These interpreters will also schedule programs as needed at Elizabeth Furnace, Powells Fort, Trout Pond, Augusta Springs and the Highlands Scenic Tour.

Develop and market an interpretive environmental education outreach program to be used by schools and civic groups The emphasis will be on attracting visitors to Massanutten Visitor Center and Powells Fort Environmental Education Camp

Utilize Augusta Springs Camp for environmental education workshops

Plan, design, and construct a Regional Welcome Center along Interstate 81, preferably near Edinburg so that the Lee District office may be located in the facility

Cooperate with National Park Service in the development of Afton Mountain Visitor Center at Rockfish Gap

If it becomes available, acquire Thunderbird property as site for cultural resources education center, including a museum.

Plan, design and construct interpretive center at Bolar Mountain

Expand and refurbish Massanutten Visitor Center

Secure partnerships with local and state agencies, colleges, and civic organizations to assist in developing interpretive programs Coordinate and exchange information with nearby private providers of interpretive oppotunities such as Chimney Rocks and the Civil War battlefield visitor center at New Market. Explore cooperative ventures.

3. ***Increase visitor satisfaction and awareness.***

Provide broader range of recreational and interpretive opportunities, particularly near urban population centers.

Provide more one-to-one contact between visitors and Forest Service personnel by providing interpreters at high-use recreation areas.

Contract with professional research and marketing firm to identify current and potential users and how the Forest can best meet their interpretive and recreational needs

Develop program which is used for training volunteers and campground hosts to better enable them to answer visitors' questions

Review, evaluate and update existing brochures, interpretive trails, wayside exhibits, visitor center exhibits, interpretive signage, and video programs Ensure that existing programs allow the visitors to interact with interpretive media or the actual resources

Encourage attitude of Forest ownership in the public. This will result in appreciation for cultural and natural resources, discourage litter and vandalism, and increase public support for the Forest Service as a responsible managing agency

Explore cooperative opportunities for providing interpretation with the National Park Service's Shenandoah National Park and the Blue Ridge Parkway.

An Inventory of Natural and Cultural Resources

The mission statement, goals and objectives provide an overall perspective of the interpretive program. The implementation of the program requires identification of the specific projects to be interpreted. The first step of such a process is an inventory of the natural and cultural resources available followed by an evaluation of their appropriateness for interpretation at this time The following resources have been identified and considered as potential subjects for interpretation·

NATURAL RESOURCES

Deerfield Ranger District

Duck Ponds at Augusta Springs
Wildlife Management on Farm Tracts
Cowpasture River
Marble Valley
Elliott Knob
Wallace House on Cowpasture River

Dry River Ranger District

1985 Flood at Brandywine
Unique Geology along Rt. 33
Cow Knob Salamander
Gypsy Moth

James River Ranger District

Rich Hole
Wetland
Beaver Activity
Cockscomb Geology
Jackson River

Lee Ranger District

Big Schloss Geologic Features
South Fork Shenandoah River
Trout Pond
Fort Valley Landform
Massanutten Fire at Jawbone
Farm Tracts & Grazing
Massanutten Mountain
Lion's Tale Trail
North Fork Shenandoah River

CULTURAL RESOURCES

Camp Johnson - Civil War Breastworks
Mountain House
Ramseys Draft CCC
Rattlesnake CCC
Augusta Springs 19th Century Resort
Elliott Knob Fire Tower

Union Springs Resort Camp
Camp Todd historic site
North River CCC
Reddish Knob with CCC Rock Work
Railroad Grades - Logging History

Highlands Scenic Tour
Callie Furnace
Glen Wilton Ammunition Plant
Longdale CCC Recreation Area
Dolly Ann CCC Area
Civil War Gun
Cowpasture River & House

Burial Mounds
Camp Roosevelt
Wolf Gap CCC Camp
Massanutten Visitor Center
Elizabeth Furnace
Catherine Furnace
Crack Whip Furnace
Van Buren Furnace
Woodstock Tower

NATURAL RESOURCES	CULTURAL RESOURCES
Lee Ranger District (Cont.)	
Seven Bends	Fort Valley during Revolution
Gypsy Moth Impacts	Signal Knob during Civil War
	New Market Gap during Civil War
Pedlar Ranger District	
Mount Pleasant	Sherando
Spy Rock	Mount Torry Furnace
Big Levels	Camp Oronoco
Crabtree Falls	Camp 8
Warm Springs Ranger District	
Hidden Valley	Hidden Valley
Lake Moomaw	Warwick Mansion
Jackson River	Duncan Knob
Locust Springs	Poor Farm of Bath County
Upland Bog Wetland	Hidden Valley Rock Shelter

INTERPRETIVE THEMES

The resource inventory provides an overview of the potential programs which may be developed. In order to evaluate and select which resources will be interpreted, a theme is identified. From this theme the individual projects are born

Theme

Glancing Back While Moving Forward

Sub-Themes

*Nature's Influence on the Land

Mountain Building	Ice
Geomorphology	Gypsy Moth
Floods	Chestnut Blight
Fire	

*Man's Influence on the Land

Charcoal Iron Industry	Civil War
Chestnut Harvest	Tanbark Industry
Burning of the Forest	Mining
Timber Management	Threatened & Endangered Species
CCC Era	

*Preservation

Civil War Remnants	Wilderness
Warwick	Endangered Species
Iron Furnaces	Natural Areas
CCC	Cultural Resource Sites

Thirteen projects have been identified as appropriate for interpretation at this time, however interpretation on the Forest will be a dynamic, ever-changing program. There may be additions or deletions as new thoughts are presented New projects will be developed as a need arises There has been no conscious effort to exclude any district, resource, or activity from this plan Project development is dependent on funding It may not be feasible to develop all of these projects in the first five-year planning period

The projects chosen for development have been selected for the following reasons

1 **Warwick Mansion** - This project is currently underway, and there is a need to install informative but restrictive signs so the public will understand and appreciate the rehabilitation of this historic structure. One room of the mansion will be devoted to interpretation

2. **Watchable Wildlife** - One resource which never fails to please and even thrill visitors is wildlife This program provides maximum opportunity for Forest visitors to observe wildlife in their daily routines

3 **Lake Moomaw Interpretive Center** - Lake Moomaw is a high-use recreation area which is available as a result of man's manipulation of nature One aspect of the interpretive center is a comparison between stream habitats and pond or lake habitats

4 **Massanutten Visitor Center** - This existing visitor center provides day use opportunities, particularly for school groups, when volunteers are available The exhibits need to be upgraded and the structure needs rehabilitation and expansion in order to meet the current demand and needs of the public

5 **Highlands Scenic Tour** - The variety of resources present along the Forest's only scenic byway are interpreted in three programs

a *Cultural Resources* - This site has a rich history of iron-ore mining and processing. Many remnants of structures and manipulated landforms are still evident
b. *Natural Resources* - The Highlands Scenic Tour takes visitors from a stream valley up to rocky ridgetops The diversity of wildlife and flora are worthy of interpretation
c *Management Activities* - Past and present management activities are easily visible from the travel route. The Highlands Scenic Tour offers the Forest Service an opportunity to tell the public about its role as a managing agency.

6 **Powells Fort Environmental Education Center** - Two factors influenced the selection of this project· its geographic location near the densely populated area of northern Virginia and Washington, DC; and the fact that this is a potentially significant historic facility constructed by the CCC to serve as an organizational camp

7 **Augusta Springs Camp** - This is an underutilized, developed campground near a historic site It is also the site for an annual Natural Resource Career Camp There is a need for day-use and multiple-day use environmental and cultural education

8 **Jackson River Tailwater Trout Fishery** - This project provides an opportunity to work with several Federal and State agencies as well as private organizations in the interpretation of a prize tailwater trout fishery This will be a significant addition to our water-based recreation opportunities while maximizing the public investment in Gathright Dam

9. **Gypsy Moth** - They are here and spreading rapidly The damage is evident and the public is curious about how they spread, where they are spreading, what the public agencies are doing about them, and how they affect forest resources

10 **Recreation Opportunities** - These wayside exhibits provide visitor orientation and information about recreation opportunities that are available in the George Washington National Forest

11 **Iron Furnaces** - Ruins and other remnants of iron furnaces are present and visible Visitors are desirous for more information about their significance in local history including their origins, function and ultimate decline

12 **No Trace Forest Use** - This inexpensive project may help alleviate litter and vandalism in the Forest by giving users a sense of ownership and responsibility

13. **Regional Visitor Center** - A visitor center located along Interstate 81 will reach a very large population from the Washington, DC, Baltimore, and Philadelphia metropolitan areas This facility is used to make the public aware of the many recreational opportunities available in the National Forests of the Southern Region and the Monongahela National Forest

In addition to these 13 planned projects, the following have been considered and found to have interpretive merit However, time restraints and lack of up-to-date information have prevented detailed formulation at this time.

The development of a partnership with the Virginia Wildlife Center at a site on the Pedlar Ranger District would result in a modest clearing with benches or a small amphitheater. Further discussions with the Virginia Wildlife Center are necessary to determine whether or not any structures are required to meet their needs.

The previously developed interpretive programs at the Confederate Breastworks need rehabilitation. New information has indicated that modified interpretation of the Breastworks construction may be necessary. A task force should be formed to study the existing trail and offer recommendations for possible relocation. An additional living history program at the Breastworks or Mountain House, in cooperation with the Augusta County Historical Society and the Monongahela National Forest, should be investigated.

Discussions between the Shenandoah National Park, Blue Ridge Parkway and George Washington National Forest have begun regarding the development of a visitor center on Afton Mountain at Rockfish Gap. The planning for this joint venture is in its infancy, therefore detailed information is not available for inclusion in the interpretive plan at this time

The Supervisor's Office and District Offices will continue to serve as outlets for the Mid-Appalachian Interpretive Association as well as answering questions about the time and place of scheduled interpretive programs and self-guided interpretive opportunities.

Project Name: WARWICK MANSION

Interpretive Theme: *Preserving the Past*

Through a partnership agreement this project interprets the preservation of a historically significant site on the Forest as a bed and breakfast and working farm--the objective is to preserve the past by keeping the house and farm alive in the present.

Site Location: Use State Route 39 from Virginia or West Virginia, turn north on State Route 617, and follow signs for Hidden Valley Recreation Area Warwick is approximately two miles.

Site Description: The 1848 brick house is an excellent example of Greek Revival architecture. Four fluted columns with ionic capitals grace the front of the house, and a widow's walk on the roof provides a panoramic view of the fields, Jackson River, and background mountains. A beautiful stone springhouse is located behind the house

Seasonal Accessibility: Warwick Mansion is open all year; however, it may be difficult to access in rare heavy snows.

Interpretive Significance: The terrace in which the mansion is located has been occupied by humans for at least 9,000 years. The mansion is included on the National Register of Historic Places as one of the best examples of Greek Revival architecture remaining in Virginia The Warwick family, as well as the mansion, was renowned in the history of Bath County.

Site Objectives:

- Rehabilitate and restore the house, springhouse, and immediate grounds via partnership agreement
- Provide interpretive signage and scheduled tours through the house during rehabilitation
- Open the house to the public as a bed and breakfast after completion of rehabilitation.
- Open one room solely for interpretation of prehistory and history of Hidden Valley and the Warwick Mansion
- Archaeologically investigate non-extant structures and prehistory of the site

Interpretive Program Objectives:

- The visitors will gain knowledge of the significance of the site, historically and prehistorically
- Instill knowledge of the Forest Service role in preservation
- Set precedence for future similar opportunities for preservation throughout the Forest Service.
- Visitors will gain a better understanding of 19th Century rural living among the upper class.

Interpretive Concepts:

- Demonstrate various land uses that occurred at this site over the last 9,000 years and the types of human settlements which were located there

Interpretive Modes:

- Signage informs the public why the house is being renovated Signage also explains that people cannot tour the house alone during construction due to safety concerns.

- Guided tours will be scheduled during construction

- Exhibits will be used to instill in visitors visual images of the site over the last 9,000 years.

- Some original pieces, such as furniture, will be on hand for exhibits

Justification:

- Signage is necessary because safety of visitors is a priority The presence of informative signs allow workers to continue their jobs uninterrupted

- An exhibit room will give visitors an insight into the history of the site without the need for an on-site interpreter at all times

- The demand by people to view the house during construction has been demonstrated by the steady flow of visitors

Project Name: **WARWICK MANSION** Site Location: **Hidden Valley, Warm Springs Ranger District**

			Estimated Time Frame					
Task	Responsible Staff	Estimated Cost	FY90	FY91	FY92	FY93	FY94	FY95
1 Forest Approval	Supervisor			X				
2 Archaeological investigation	Archaeologist	5,000	X	X	X	X	X	X
3 Design of interpretive sign	Archaeologist	500			X			
	Landscape Arch							
	Interp Prog Mgr							
4 Fabrication of sign	Contracting	1,000			X			
5 Installation of sign	District	100			X			
6 Design of interpretive displays	Contracting	15,000			X	X		
7 Construction of displays	Contracting	20,000			X	X		
8 Installation of displays	Contracting	2,000			X	X		
9 Maintenance of displays	Contracting	2,000				X	X	X
10 Newspaper coverage	Public Affairs	500		X	X	X		
11 Design of brochures	Public Affairs	1,500			X	X		
	Archaeologist							
12 Printing of brochures	Contracting	750				X		
TOTAL		48,350						

Project Name: WATCHABLE WILDLIFE

Theme: *Bringing Wildlife to the People*

Site Locations: Projects occur throughout the Forest on all Districts They include, but are not limited to

- Brandywine Recreation Area, Dry River RD
- Sherando Lake, Pedlar RD
- Lion's Tale Trail, Lee RD
- Lake Moomaw, Warm Springs RD
- Hidden Valley, Warm Springs RD

Site Descriptions: Varies from campgrounds, open meadows, forests, ridgetops, and streamsides

Seasonal Accessibility: Sites will be open to the public year round

Interpretive Significance: Provide the public a maximum opportunity to observe wildlife in their natural (man-made) environment Afford Forest personnel an opportunity to interpret (brochures, bird boxes)

Modes of Interpretation:

- coloring books
- platforms
- brochures
- trails

Site Objectives;

- To supplement the natural environment with natural-appearing habitat manipulations to attract wildlife within easy viewing range of Forest visitors
- Wherever feasible, provide barrier-free wildlife viewing opportunities

Program Objectives:

- Forest visitors will gain knowledge of one or more species of wildlife, insects, amphibians, etc , and how they contribute to the ecosystem
- Provide the enjoyment which comes with watching wildlife in their habitat birds teaching their young to fledge, butterflies

Interpretive Concept: The concept will vary with each interpretive Watchable Wildlife project

Modes: Will be variable with each project. They will include, but are not limited to

- Observation decks and platforms with signage

- *Brochures*
- Checklists
- Interpreters
- Self-guided trails
- Self-guided auto tours
- Coloring books
- Scent boxes
- Tape recordings
- Photographs

Justification: *Modes will be developed for each specific project based on habitat and intended watchable species*

Planner's Comments:

- *Each individual Watchable Wildlife project should be developed by an ID Team, possibly made up of biologists, archeologists, and landscape architects.*
- A schedule and cost estimate shall be prepared for each project as they are identified

Project Name: LAKE MOOMAW INTERPRETIVE CENTER

Theme: *Nature's Response*

Site Location: The Lake Moomaw Interpretive Center is located at Bolar Flats on the Warm Springs Ranger District It is accessed by State Route 39 at Warm Springs to State Route 600 or State Route 603 to Bolar Flat.

Site Description: The Interpretive Center is located near the Bolar Flats public beach This is part of a larger recreation complex which includes a bathhouse, picnic area, three campgrounds and a trail This area boasts of the highest level use on the George Washington National Forest The Army Corps of Engineers constructed Gathright Dam creating the 2,530 acre lake.
The Corps turned Lake Moomaw over to the Forest Service for administration.

Seasonal Accessibility: Bolar Flats beach is open from Memorial Day to Labor Day. The interpretive center has extended availability in order to meet the needs of school groups The Forest Service roads are open year round to provide fishing access to the lake

Interpretive Significance:

There is a significant opportunity to offer environmental education programs about lake and pond ecology.

There are many cultural resources throughout the area which are worthy of interpretation

This area gets numerous inland waterfowl activity There are also American Bald Eagles which feed on the lake.

This was a river valley which has been converted into a lake Man has altered the ecology in this valley

Site Objectives:

- Provide a barrier-free facility where environmental education can occur to serve a high-use recreation complex
- Use existing natural and cultural resources in outdoor interpretive programs
- Provide quality environmental education programs and displays to meet the needs of day-use visitors
- Enhance the use of an existing, under-utilized amphitheater.

Interpretive Program Objectives:

- Each visitor will gain knowledge of ecological concepts and nature's ability to adapt and respond to change
- Interpretation of the history and local culture of the area

Interpretive Concepts:

- There is a wide diversity of natural resources, particularly the lake or pond habitat, which are worthy of interpretation
- This river valley has a history of human presence and activities which have altered the environment Nature has responded and adapted to these changes

Interpretive Modes: The modes for interpreting the natural and cultural resources include

- Hands on displays regarding lake vs stream habitat,
- Interpreter lead environmental education activities;
- *Day and/or evening lectures by interpreters, local historians or other guest speakers at amphitheater or campground,*
- Evening campfire programs which display local culture such as music, dances and storytelling;
- Nature pond stocked with amphibians, fish, reptiles and aquatic plants, and
- Cabin structure which itself displays a local early settlement character This cabin will be the interpretive center housing displays and Mid-Appalachian Interpretive Association bookstore.

Justification: Lake Moomaw has the most heavily used and highly developed recreation areas on the George Washington National Forest The visitors desire high quality environmental education (EE) opportunities and programmed activities to complement their recreational activities. The site offers the availability of resources to provide this service By offering a variety of day and evening programs, the interpretive center can meet the EE needs of both day use visitors and campers

Planner's Comments:

- Volunteers will be used to assist professional interpreter(s)
- This project should be considered as a top priority in the development of the interpretive program for the Forest, because of the high level of public use at the area.

Project Name: **LAKE MOOMAW INTERPRETIVE CENTER** Site Location: **Bolar Flats, Warm Springs Ranger District**

			Estimated Time Frame					
Task	Responsible Staff	Estimated Cost	FY91	FY92	FY93	FY94	FY95	FY96
1 Forest Approval	Supervisor		X					
2 Regional Approval	Regional Forester			X				
3 Site selection	ID Team	1,000		X				
4 Site inventory and analysis	Engineering	5,000		X	X			
5 Development of site plan including architecture, landscaping and pond	Interp Prog Mgr Landscape Arch	10,000			X			
6 Contract to purchase log cabin kit or construction from architectural plans	Contracting	90,000			X	X		
7 Design of interpretive exhibits/displays	Contracting	20,000			X	X		
8 Contract for construction of exhibits/displays if they cannot be constructed in-house	Contracting	150,000				X		
9 Installation of exhibits	Contracting	15,000				X		
Continued on next page								

Task	Responsible Staff	Estimated Cost	FY91	FY92	FY93	FY94	FY95	FY96
10 Construction of pond	Interp Prog Mgr	5,000				X	X	
	District							
11 Stocking of pond	Interpreters	1,000				X	X	X
	Wildlife Biol.							
12 Maintenance of facilities	District	15,000				X	X	X
TOTAL		312,000						

Project Name: MASSANUTTEN VISITOR CENTER

Theme: *Man and the Environment Adapting to One Another*

Site Location: The Massanutten Visitor Center is located on State Route 211 in the New Market Gap on the Lee Ranger District

Site Description: The site is a small two-story hotel which has been converted into a Forest Service visitor center. At this time only the lower level is being used for interpretive displays and book sales. It also houses a small auditorium used for viewing videos and slide programs The upper level is occasionally used for volunteer accommodations. The refurbished, expanded visitor center takes advantage of exhibit space on both levels and increases the auditorium size The geographic location of the visitor center is in an area where much Civil War activity occurred It is located on Massanutten Mountain, which is a unique landform

Seasonal Accessibility: State Route 211 is a well-maintained road which is open all year Currently the facility is open only when volunteers are available to staff it which is usually during the summer months With the addition of an interpreter position, the expanded visitor center gives the Forest an opportunity to serve the public throughout the year. This is especially important since the majority of users are school groups

Interpretive Significance:

•The Visitor Center is on Massanutten Mountain overlooking the Shenandoah River Valley There are not only beautiful scenic resources, but significant natural resources which can be interpreted on-site.

•The Massanutten Mountain, particularly wind gaps, played an important role in General Stonewall Jackson's 1862 valley campaign during the Civil War. Exhibits regarding the role that the local geography played during the Civil War will be incorporated at the rehabilitated Visitor Center

•The Thunderbird archaeological site, one of the oldest documented prehistoric sites in eastern North America, is located in the northern portion of this valley The opportunity has arisen to work in cooperation with the Thunderbird Archaeologic Association to house interpretive exhibits about this significant site at the Massanutten Visitor Center

Site Objectives.

•Offer local and visiting individuals, particularly school groups, indoor and outdoor environmental education at a site which is in a geologically and historically significant location

•Provide a year round, barrier free facility which adequately holds the number of school groups that schedule visits

•Provide quality displays and programs which adequately meet the educational needs of day users

Interpretive Program Objectives:

•Provide exhibits which interpret prehistoric populations who lived in the Shenandoah Valley

•Interpret geographic significance of Massanutten Mountain during the Civil War

•Provide hands-on exhibits regarding natural history and forest management.

Interpretive Concepts:

•Interpretation of the prehistoric people, and their living conditions, who resided in the Shenandoah Valley

•The local history of Civil War activities and the significance of the Massanutten Mountain's unique form and wind gaps to Stonewall Jackson's 1862 Valley campaign

•*Interpretation of how Forest management affects the preservation or alteration of natural and cultural resources.*

Interpretive Modes:

The modes for interpretation include, but are not limited to.

•Multiple media presentations such as slide and video programs,

•*Hands-on interpretive exhibits,*

•Three dimensional models which interpret archaeology and geology, and

•Mid-Appalachian Interpretive Association book sales

Justification:

•The geographic location of the existing facility offers excellent opportunities for day use visitation. The site is significant in several respects. The Massanutten is a unique landform; therefore this is an appropriate setting for interpreting the natural processes involved in the development of mountain ranges. This is also a historically significant site George Washington surveyed the area. During the American Revolution, he made back-up plans to retreat to Fort Valley, not far from this site, if needed During the Civil War this area saw much activity The Thunderbird prehistoric site is located near the Massanutten Visitor Center.

•*Existing facilities are inadequate in available exhibit space and inappropriate in appearance The existing interpretive exhibits are* worn out There is room for expansion of this facility on the existing site.

Planner's Comments:

Historically, school groups have made field trips to the Massanutten Visitor Center for day use to view indoor exhibits and hike the Storybook and other trails However the existing facility is of inadequate size to accommodate the number of people interested in visits. The occasional lack of volunteers to manage the Center has caused cancellation of field trips A demonstrated need exists for *increased space, quality interpretive exhibits, and the creation of an interpreter position*

It is recommended that a two-story expansion be added to the front of the existing facility The first floor is to be devoted to environmental education and the Forest Service's role in ecosystem management The second floor is to house exhibits about local prehistory and history The auditorium and book sale area can be expanded to accommodate more visitors at one time

The rehabilitated, expanded visitor center will be barrier-free Perhaps the entrance could be located between the two floors with ramps to each.

Project Name: **MASSANUTTEN VISITOR CENTER** Site Location: **New Market Gap, Lee Ranger District**

			Estimated Time Frame					
Task	Responsible Staff	Estimated Cost	FY91	FY92	FY93	FY94	FY95	FY96
1 Forest Approval	Supervisor		X					
2 Regional Approval	Regional Forester			X				
3 Site inventory and analysis	Engineering, LA	9,000		X				
4 Hire interpreter for visitor center	Interp Prog Mgr	35,000		X	X			
5 Design rehabilitation and expansion	Interp Prog Mgr	20,000		X	X			
	Contracting							
6 Design interpretive exhibits	Interpreter	35,000			X			
7 Construction of rehabilitation/expansion	Contracting	150,000			X			
8 Construction of exhibits	Contracting	105,00			X	X		
9 Landscape design	Landscape Arch	1,000			X			
10 Landscape installation	District, LA	3,500			X	X		
	Contracting							
11 Coordinate with Thunderbird Archaeological Society for use of their exhibits	Archaeologist	1,000				X		
12 Installation of exhibits	Contracting	15,000				X		
13 Maintenance of exhibits	Contracting	2,500				X	X	X
TOTAL		377,000						

Project Name:
HIGHLANDS SCENIC TOUR: CULTURAL RESOURCES

Interpretive Theme: *A Glimpse Back in Time*

Site Location: The cultural resources to be interpreted are located along the "Low Road" of the Highlands Scenic Tour. It is accessible via Interstate64 to interchange #10 or #11 onto State Route 850 Signs direct travelers to Campbell Fields The historic Collierstown Road is also a significant cultural resource. It is included as part of the Tour's "High Road" and is accessible via *Interstate-64 to Route 60, and signs inform travelers to turn left onto the Highlands Scenic Tour*

Site Description: The Simpson's Creek stream valley is a showplace for remnants of the 19th Century pig-iron mining industry and the associated housing communities Within this valley is Campbell Fields – a flat, open, grassy area of several acres surrounded by *a mixed hardwood forest. The land is terraced along the banks of Simpson's Creek. Several structure foundations are present* A gravel road leads into the area from State Route 850.

Campbell Fields will be the interpretive center for the Highlands Scenic Tour. It will include parking, information kiosk, restrooms, picnic area, and a facility for interpretive programs and cultural exhibits. Self-guiding loop trails will stem north and south from Campbell Fields.

The stream valley has steep sideslopes densely covered with trees. One unique area that the trail users encounter is a "field of ferns". Another area has an unnatural, stately row of mature maples within the forest of oaks, tulip poplars and pine -- the maples obviously once lined an old, long-gone road or lane Pockets of dense rhododendron are found along the stream Throughout the whole valley there are countless historical remnants It is a beautiful setting to take a stroll back in time

Seasonal Accessibility: The "Low Road" is accessible year round. The "High Road" may be inaccessible in the event of snow and ice storms On the trails, many remnants are easier for visitors to "discover" during late winter and early spring before being overrun by vegetation.

Interpretive Significance: This area was once a thriving mining community There were many mines and furnaces located on the sideslopes and valley of Simpson's Creek and Bratton's Run Evidence remains today of the major impacts that this industry had on the landscape. For example, the narrow guage railroad bed can still be seen as an obvious man-made terrace in the mountainside Bridge abutments and road swaths are still present Stream tributaries run red from the oxidation of iron at mine openings. Charcoal hearths dot the valley as do brick foundations from houses. Odd conical hills result from the deposit of mining spoils. One impact of the industry that is not obvious are the once barren mountains which were clearcut in order to make charcoal *The forests have totally regenerated*

Interpretation of the pig-iron mining industry reveals what it was like to work in the mines, how they made charcoal, the processes that occurred at the furnaces, the living conditions of workers, and man's impact on the environment.

Site Objectives:

- Provide visitors the opportunity to see remnants of the mining communities and discover what was happening in this region 100 to 200 years ago

- Allow the visitors to see the impacts that the mining industry made on the landscape, and instill in visitors some knowledge of the extents to which the environment can absorb various types of land uses.

•Develop some limited reconstruction of structures by outlining house foundations and charcoal hearths

Interpretive Program Objectives:

•Have the Highlands Scenic Tour visitors gain knowledge that this site has a significant history of pig-iron ore mining

•Have Campbell Fields visitors gain some knowledge about the methods involved in mining, processing and transporting iron-ore, and the lifestyles of those who carried out the work

•Encourage people to use one of the self-guided trails and experience "discovering" structure foundations, narrow gauge railroad beds, abandoned bridges and roads, and oxidation of tributaries

•Have visitors gain a general idea of the impacts made on the landscape by the iron-mining industry and the extent to which the environment can reclaim impacted areas

Interpretive Concepts:

The Alleghany Highlands region was a primary source of pig-iron ore during the late 18th century and throughout the 19th Century Extracting, processing, and transporting the ore was a difficult task in this terrain and climate

When man utilizes the natural resources – the ore from within and the timber from the surface – the impacts to the environment are far-reaching While nature is resilient and can usually reclaim impacted areas fairly quickly, the evidence of the land-use often remains for decades or centuries amid the vegetation on the forest floor

Interpretive Modes and Justification:

The Highlands Scenic Tour has great potential to serve Forest visitors – both our neighbors and distant travelers This stream valley is a historical treasure chest full of 19th century mining remnants It is an authentic display area of structure foundations and unusual landforms which resulted from the mining industry Campbell Fields is the perfect location for the "interpretive hub" of the Highlands Scenic Tour It is ideally located near the center point of the "Low Road" The terrain can accommodate the interpretive center, parking, and picnic area Most importantly, Campbell Fields is appropriate because it is surrounded with dozens of historic artifacts and structure foundations

A combination of several interpretive methods are proposed. An interpretive center will house exhibits about the lifestyles of the people who lived in this area and worked at the mines, furnaces, or making charcoal It will also house sketches and photographs of what Campbell Fields looked like 100 years ago, and visitors will be able to go outside and see how very much time has changed the area They might even wonder about how much it will change in the next 100 years The visitors will find that this region provided iron for munitions for the Confederate Army during the Civil War An excellent opportunity exists for interpreter-conducted programs at the center and on the trails, particularly targeted for local school groups

Two self-guiding trails will extend from the Campbell Fields interpretive center The trails will be 3/4 to 1 1/2 miles in length and take 30 minutes to 1 hour to hike. The trails showcase remnants of 18th and 19th century structures, as well as abandoned bridges, box culverts, railroad beds, mining spoils, and oxidation in tributaries These self-guided trails will give visitors a first-hand opportunity to glimpse into the past They will know that they are not looking at replicas, but actual remnants from an era gone by The trails also show visitors how the mining industry has changed the face of the landscape It is obvious that the terraced slopes and odd, conical hills are not natural, although they have been reclaimed by nature

A brochure will accompany the self-guiding trails and explain how prisoners and slaves were used to construct a road over North Mountain in order to access and transport the pig-iron ore, and the importance of the ore to the Confederate Army during the Civil War The brochure will also include sketches and photographs of Campbell Fields 100 years ago, the charcoal making process, and the forging process People will be challenged to think about what caused the odd landforms along the trails, and visitors will undoubtedly begin to make value judgments The water quality is still being adversely affected by oxidation from abandoned mine openings, but other impacts are becoming less discernible with each passing year Although nature has reclaimed the area, the environment has not totally recovered from the impacts of the mining industry

Planner's Comments:

The entrance from Route 850 into Campbell Fields should be relocated to the north to provide safer site-lines for drivers

The Campbell Fields area is currently used for partying, camping, and dumping. The development of the interpretive center and associated activities will displace these partying campers The dumping will need to be stopped, and the area cleaned up

There are some drainage problems which need to be rectified.

A comprehensive survey of cultural resources is currently underway by Washington and Lee University. This survey should be completed before the trails and brochure are developed.

Project Name:
HIGHLANDS SCENIC TOUR: NATURAL RESOURCES

Interpretive Theme: *Seasons of Change*

Site Location: The natural resources of the Highlands Scenic Tour will be interpreted in the Simpson's Creek stream valley along State Route 850, and on North Mountain at several pullouts and trails off FS Road 447 and State Route 770 (Collierstown Road) The Highlands Scenic Tour is located off Interstate 64 at interchanges #10 and #11

Site Description: The Simpson's Creek stream valley is a narrow gorge running approximately northeast to southwest It is thickly forested with mixed hardwoods and softwoods consisting primarily of oak, maple, dogwood, tulip poplar, pine and hemlock The understory includes several dense thickets of rhododendron, and in one area a field of ferns. Various lichens and mosses thrive in the cool, moist microclimates. The hillsides vary in slope Some have steep, consistent slopes, while others are terraced

North Mountain offers an entirely different atmosphere and experience. The forests are predominantly hardwood with very little pine or hemlock Oak, walnut and tulip poplar are abundant On the ridgetop there are numerous rhododendrons and mountain laurels Interesting rock features are found on North Mountain, particularly "Cockscomb". The scenic qualities are spectacular To the east are views of the Shenandoah Valley and to the west are views of the Alleghany Highlands

Wildlife is abundant along the Highlands Scenic Tour Because mast is so abundant, game species such as turkey, deer, grouse, and occasionally bear forage in the area. It is an excellent place to spot a wide variety of bird species, particularly when they are migrating in spring and fall. Visitors will also have the opportunity to see reptiles, insects, and small mammals

Seasonal Accessibility: The "Low Road" is accessible year round The "High Road" may be inaccessible in the event of snow or ice storms Many of the visitors are most interested in the spring flowers and fall foliage Hunting is also a primary use in the late fall and winter.

Interpretive Significance: The possibilities for interpreting nature are endless The task of compiling an inventory of the natural resources would be almost impossible because of their abundance. However there are several resource areas which stand out as worthy of interpretation·

The **geology** is an obvious candidate for interpretation – from the prehistoric formation of the mountains to the more recently exposed rock outcrops Unique examples of geology, such as Cockscomb, offer opportunities for visitors to interact with interpretive features

Microclimates created from a combination of slope and aspect is a worthy topic This offers visitors an explanation for why **micro-habitats** are situated in unusual places, such as a field of ferns in the middle of a hardwood forest In addition to this, the Tour offers nature studies including wildflowers, wildlife viewing, seasonal changes in the forest, and stream processes

The opportunity for **birding** cannot be overlooked Frequently visitors at the North Mountain Overlook find themselves at the same level as (and often higher than) songbirds and birds of prey. It provides the opportunity to observe their graceful movements in flight. Birds are also abundant in the demonstration area of the forest and in the stream valleys of Brattons Run and Simpson's Creek

Site Objectives:

- Protect and enhance natural habitats for fish and wildlife
- Protect visual resources and unique natural features
- Enhance existing opportunities for visitors to view scenery and wildlife and to participate in nature studies
- Complement the recreational opportunities of the Highlands Scenic Tour

Interpretive Program Objectives:

•Have all Highlands Scenic Tour visitors enjoy the scenic qualities of the Alleghany Highlands.

•Encourage visitors to use one of the self-guided trails and discover the natural diversity which exists in a stream valley

•Encourage North Mountain Overlook visitors to hike through the demonstration area where natural succession of vegetation is occurring, and there are greater opportunities for viewing wildlife

Interpretive Concepts: Long before mankind walked this earth these mountains were being formed The forest covered the slopes and water coursed through the terrain The passing of countless seasons have brought a lot of changes. Much of the beauty of the Alleghany Highlands is attributed to the way it has aged gracefully. Another beautiful aspect is the way it continues to provide habitat for and sustain new life

Interpretive Modes and Justification:

The Highlands Scenic Tour is located in one of the most beautiful areas of Virginia The mountains, vegetation, seasonal changes, water features and wildlife are all worthy of interpretation The methods for presenting these features will take a variety of forms

A self-guiding loop nature trail will be developed along Simpson's Creek The trail will be 3/4 to 1 1/2 miles in length and take 30 minutes to 1 hour to hike It will take people from the open, hardwood forest through a field of ferns and into a thick rhododendron thicket It will cross Simpson's Creek twice. Active wildlife management such as nesting boxes and direct habitat improvement will increase the visitors' opportunity to view wildlife

Several more short self-guiding loop trails will also be developed along Top Drive (FDR 447 and State Route 770)·

> Knoll Wayside is located at a juncture of several distinct plant communities resulting from aspect, microclimate, ice storm damage, and past management practices This provides a nature study which compares and contrasts different habitat conditions
>
> Colonel Jordon Wayside is a small glade which provides an opportunity to experience a moist and cool woodland microclimate on a northern aspect
>
> Rhododendron Wayside, as its name implies, goes through rhododendron groves on upper slopes above a steep, rocky perennial stream gorge

Two other short trails offer scenic vistas· North Mountain Overlook and Cockscomb. North Mountain Overlook gives a spectacular panoramic view of the Shenandoah Valley and Blue Ridge Mountains to the east. Cockscomb gives a breathtaking view of the Alleghany Highlands to the south and west

Planner's Comments: The nature trail along Simpson's Creek stems from Campbell Fields, the interpretive center for the Highlands Scenic Tour The nature trail is shared also by one of the history trails (see Cultural Resources of the Highlands Scenic Tour)

Project Name:
HIGHLANDS SCENIC TOUR: FOREST MANAGEMENT

Interpretive Theme: ***Past, Present and Future Management Practices of a National Forest***

Site Location The forest management aspect of the Highlands Scenic Tour interpretive program will be developed on Top Drive. It is accessed from Interstate 64 at interchange #11 to FDR 447. A demonstration area is proposed for the upper elevations of the west slope of North Mountain An observation tower and trails will give visitors an opportunity to view the entire demonstration area

Site Description: The demonstration area and observation tower will provide a means for Forest visitors to gain knowledge of the issues involved in managing a forest for the benefit of wildlife, habitat, recreation, and cultural resources A trail from the North Mountain Overlook will bring visitors to an observation tower in a predominantly hardwood forest This area has a recent history of group selection, shelterwood and clearcut timber harvesting. These different methods of harvesting resulted in various size canopy openings and various aged timber stands A loop trail will allow visitors to see these areas.

Seasonal Accessibility: FS Road 447 and State Route 770 are narrow, gravel roads. Accessibility may be limited in winter when the road is covered with snow or ice North Mountain offers year-round attractions Thousands of azaleas and rhododendron, along with other flowering shrubs and trees, grow along the sideslopes and ridgetop Tulip poplar, maple, dogwood, oaks, and other hardwood species offer spectacular fall color.

Interpretive Significance: Man's impact on the landscape is evident in the demonstration area Clearcuts and shelterwood cuts of various shapes and sizes can be seen first-hand by Forest visitors The regeneration of these areas is important both to Forest managers and visitors Its detriment or benefits to the environment are important issues The interpretive topics to be considered here include looking at the impacts of increased sunlight, heat, and water on soil, water quality, wildlife forage and the ecosystem in general

Site Objectives: The proposed demonstration area gives visitors a first-hand look at how the Forest has been, and is being, managed

Interpretive Program Objectives:

- Visitors should learn that managing a public forest for the benefit of wildlife, habitat, water quality, soil conservation, recreation and economics involves the combination of many various management practices.

- Visitors shall gain an appreciation and sensitivity for the multiple uses and users which the Forest serves

Interpretive Concepts: The task of managing a forest to benefit both man and nature is very difficult The Forest Service is moving away from the concept that the National Forests need to be managed based primarily on maximizing certain natural resource products This concept is being replaced with the realization that National Forests must be managed scientifically to best achieve the goals, objectives and future conditions desired by the American people

Interpretive Modes and Justification:

The designated route of the Highlands Scenic Tour runs alongside areas that have been harvested for timber within the last 15 years Visitors will undoubtedly have questions about how and why the forest has stands of trees of such various ages They will want to know both the positive and negative effects of various timber harvest methods

A designated demonstration area with a loop trail and observation tower will help to answer the public's questions about past and present management practices. The tower will give visitors a perspective view of the overall area, while the trails will provide visitors the opportunity to experience being in and moving through various spaces. A panel display in the tower will explain the types of management practices used and the benefits derived from each A brochure will explain what steps the Forest Service has taken to protect soil and water quality, improve wildlife habitat and preserve cultural resources.

Planner's Comments: Shelterwood cuts and group selection cuts and single tree selection harvests will be planned on a small scale every 3-5 years in the demonstration area Research by local universities should be encouraged in this area to see how the small-scale harvest units impact the ecosystem

Project Name: **HIGHLANDS SCENIC TOUR** Site Location. **James River Ranger District**

			Estimated Time Frame						
Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96	FY97
1 Forest Approval	Supervisor								
2 Vegetation management	District	2,000		X					
3 Site inventory and analysis	Interp Prog Mgr	31,000		X	X				
	Archaeologist								
	LA, Engineering								
4 Archaeological investigation	Archaeologist	50,000		X	X	X			
5 Site design for Campbell Fields, North Mountain Overlook, Observation Area	Interp Prog Mgr	30,000		X	X				
	LA, Engineering								
6 Interpretive kiosks designs	Landscape Arch	1,500			X				
7 Trail layout and design	Interp Prog Mgr	3,000			X				
	District								
	Archaeologist								
	Landscape Arch								
8 Brochure text, design and layout	Landscape Arch	3,000		X	X				
	Archaeologist								
	Public Affairs								
Continued on next page									

Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96	FY97
9 Site Modification for improved drainage at Campbell Fields	District	5,000			X				
	Contracting								
10 Construction of interpretive facilities	Contracting	145,000			X	X			
11 Construction of kiosks	Interp Prog Mgr	20,000			X	X			
	Contracting								
12 Construction of trails	District	5,000			X	X			
13 Installation of kiosks	District	500			X				
14 Installation of road and trail interpretive signs	District	2,000			X				
15 Printing of brochures	Contracting	4,000		X	X				
16 Design of interpretive displays	Interp Prog Mgr	3,000			X	X			
	Archaeologist								
	Contracting								
17 Construction of interpretive displays	Interp Prog Mgr	50,000			X				
	Contracting								
18 Installation of interpretive displays	Interp Prog Mgr	2,000			X				
	Contracting								
19 Maintenance of interpretive displays, facilities, kiosks	Contracting	15,000			X	X	X	X	X
TOTAL		372,000							

Project Name: POWELLS FORT ENVIRONMENTAL CAMP

Theme. *The Living Classroom*

Site Location· Powells Fort is an existing campground in Little Fort Valley on the Lee Ranger District It is accessible from Interstate 66 by taking 55 west or from Interstate 81 by taking Route 55 east to Route 619 south to Route 678 south to Route 758 west to FDR 273 and FDR 66.

Site Description: There is a complex of 10-12 buildings situated around one end of an open grassy field On the opposite end is a swimming pool The buildings consist of cabins, a dining hall and kitchen, a canteen, and shower houses This is a 4-5 acre opening within a predominantly hardwood forest. A stream flows beside the camp

Seasonal Accessibility: The environmental education camp will be available to serve schools and civic organizations from mid-March through November

Interpretive Significance The George Washington National Forest, being the closest Forest to the northern Virginia and Washington DC metropolitan areas, has an opportunity to provide environmental education to urban school groups It is not unlikely that a portion of these children have never experienced a visit to a forest environment The existing facilities at Powells Fort camp, with rehabilitation and winterization, provide such an opportunity This is in line with the original intent of the facility and Forest Service direction of rehabilitating historic structures for current uses

Site Objectives:

- Increase utilization of existing facility,
- Provide environmental education opportunities in an appropriate setting, particularly for urban school groups and other civic organizations,
- Rehabilitate and use a historic, potentially significant camp, and
- Modify facilities so that they are barrier free and available for winter use

Interpretive Program Objectives:

- Maximize the study of local natural history in the form of environmental education, including but not limited to natural forest succession, free flowing streams, geology, wildlife biology, archaeology, ecological zones, and astronomy
- Each individual camp participant will gain some knowledge of each of these subjects and their interrelation
- The camp participants gain knowledge of Forest Service management activities and their effect on the environment

Interpretive Concepts·

- The site location offers a wide variety of natural history subject matter.
- The various aspects of the forest environment are interrelated
- Forest Service management practices can and do alter the environment within a given ecosystem
- Concepts develop as the program evolves

Interpretive Modes: The interpretive modes include.

- Classroom and field instruction at the camp facilities for at least overnight stays, preferably long weekends or week visits,
- Individual creativity and exploration of the environment and its resources are encouraged,
- Demostrations and multi-media presentations given by interpreter and guest speakers; and
- Availability of books for sale by the Mid-Appalachian Interpretive Association.

Justification: The George Washington National Forest is responding to a present need for environmental education, particularly for nearby urban school groups, while at the same time rehabilitating and maintaining a potentially significant facility for ongoing use.

Planner's Comments:

- The George Washington National Forest will work with the Washington Office Environmental Education Coordinator to inform school boards of the availability of this facility
- Appropriate fees will be set
- A camp director/environmental educator position should be created for the camp

Project Name: **POWELLS FORT ENVIRONMENTAL CAMP** Site Location: **Little Fort Valley, Lee RD**

			Estimated Time Frame					
Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96
1 Forest Approval	Supervisor							
2 Regional Approval	Regional Forester			X				
3 Site inventory and analysis	Engineering, LA	28,000		X				
4 Inspection of facilities	Engineering	1,000		X				
5 Site plan - rehabilitation & winterization	Engineering	12,000			X	X		
6 SHPO coordination	Archaeologist	100		X	X			
7 ACHP coordination	Archaeologist	100		X	X			
8 Rehabilitation of camp facilities	Interp Prog Mgr	250,000				X		
	District							
	Engineering							
	Contracting							
9 Maintenance of interpretive facilities	District	10,000				X	X	X
10 Hire interpreter/environmental educator as Camp Director	Interp Prog Mgr	35,000				X		
	District							
Continued on next page								

Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96
11 Coordinate with Environmental Education Office in WO	Interp Prog Mgr Camp Director	250				X	X	
12 Contact school boards locally in the Northern Virginia/Washington DC area	Camp Director	2,000				X	X	
TOTAL		338,450						

Project Name:
AUGUSTA SPRINGS ENVIRONMENTAL EDUCATION CENTER

Theme: *Springs Coursing Through Time*

(1) Role of resort springs in 19th Century Virginia
(2) Ecology of a wetlands meadow and pond
(3) Nature observation

Site Location: Augusta Springs campground, located on Route 42, is on the Deerfield Ranger District. It is used for a two-week Natural Resources Career Camp

Site Description: There is an existing campground consisting of tent pads and trailers It is a semi-open site in a mixed hardwood forest The campground is on a level terrace above the Cowpasture River.

Seasonal Accessibility: The campground is located on Route 42, a well-maintained state highway If winterized, this campground could be used throughout the year.

Interpretive Significance:

- This is the site of a former 19th Century resort complex. Locating resorts on sites of natural springs was common throughout western and southwestern Virginia
- Foundations remain from a lithium bottling operation.
- There exists a wide diversity of flora and fauna species within a wetlands meadow and pond.
- A rock boxed-in spring from the resort still exists.

Site Objectives:

- Increase the use of this site
- Clear vegetation from resort ruins
- Develop trail along wetland meadow and through mixed hardwood forests for viewing of wildlife and vegetation.
- Construct facility for in-service as well as visitor use, including a dark room and and multi-media presentation room

Interpretive Program Objectives:

- Each visitor will be given the opportunity to learn about the role of resort springs in 19th Century Virginia
- Each visitor will be given the opportunity to use nature trails for wildlife viewing.
- Each visitor will be given a first-hand look at a wetland meadow environment and the species which inhabit it.
- Opportunity exists for archeological investigation

Interpretive Concepts:

The interpretive concepts are

- Exploration of wetland meadow habitat.
- Exhibition of 19th Century resort.

Interpretive Modes:

The modes of interpretation include, but are not limited to.

- Interpretive kiosk located at 19th Century resort ruins
- Showcasing of resort ruins through vegetation management program.
- Nature trail along wetland meadow and pond through mixed hardwood forest, with boardwalk over pond Signage at trailhead.
- Environmental education facility, including multiple-media presentation room and dark room.

Justification: This existing facility is currently used for an annual two-week Natural Resources Career Camp and occasionally used for Forest Service training sessions This underutilized campground offers natural and cultural resource study opportunities The increased emphasis on interpretation necessitates having a facility where environmental education programs can be developed, including the need for in-house photography.

Project Name. **AUGUSTA SPRINGS ENVIRONMENTAL EDUCATION CENTER** Site Location: **Augusta Springs, Deerfield Ranger District**

			Estimated Time Frame					
Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96
1 Forest Approval	Supervisor							
2 Trail layout	Interp Prog Mgr	2,000		X				
	District							
	Archaeologist							
3 Vegetation Management	District	500		X	X	X	X	X
4 Archeological inventory	Archeologist	500+		X	X			
5 Archeological investigation	Archeologist	10,000+		X	X	X		
6 Trail construction	Interp Prog Mgr	5,000		X	X	X		
	District							
7 Trailhead sign design	Dispersed Rec	300		X				
	Landscape Arch.							
8 Brochure design	PAO	1,500			X			
	Asst. Rec Staff							
9 Brochure printing	Contracting	500			X			
Continued on next page								

Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96
10 Boardwalk design (try to use an existing design)	Landscape Arch	750		X				
11 Boardwalk construction	Contracting	8,500			X	X		
12 Resort - kiosk design	Landscape Arch.	1,000			X			
13 Kiosk construction	Contracting	10,000			X	X		
14 Kiosk installation	District	250				X		
15 Trailhead installation	District	100		X				
16 Site plan for environmental education	Interp Prog Mgr	500		X	X			
	Landscape Arch							
	Landscape Arch							
17 Environmental education facility design	Interp Prog Mgr	1,000		X	X			
	Landscape Arch							
	Engineering							
18 Construction of environmental education facility	Interp Prog Mgr	60,000			X	X		
	District							
	Contracting							
19 Landscaping	LA, District	5,500			X	X		
20 Maintenance	District	2,000			X	X	X	X
TOTAL		109,900+						

Project Name:
JACKSON RIVER TAILWATER TROUT FISHERY

Theme: *Development of a Tailwater Trout Fishery*

Site Location: This project occurs on a segment of the Jackson River between Gathright Dam and Petticoat Junction in Alleghany County, Virginia, on the James River Ranger District It is accessible from Interstate 81 to Interstate 64 to Route 220 north at Covington to Route 678 north.

Site Description: The Jackson River flows through rural open spaces, forests, and a small rocky gorge in the Alleghany Highlands of western Virginia It is eligible for inclusion in the National Wild and Scenic Rivers Program as a Recreational River

Seasonal Accessibility: The Jackson River access sites are open year round, however the interpretive materials will be available at the SO and District Office Monday through Friday, 8 00 a m to 4·30 p m

Interpretive Significance: A coldwater release program is in effect at Gathright Dam to develop a tailwater trout fishery in the Jackson River. The Army Corps of Engineers is working in conjunction with the Virginia Department of Game and Inland Fisheries to create what many leading national anglers' publications predict will be one of the best tailwater trout fisheries on the east coast The interpretive program will enlighten the public about the characteristics of suitable trout habitat.

Site Objectives: To maintain public river access in at least three locations

Interpretive Program Objectives: Visitors shall gain a general idea about the habitat characteristics necessary to develop a tailwater trout fishery.

Interpretive Concepts: In order to develop a tailwater fishery for trout, a coldwater release program was implemented in conjunction with stocking of fingerling brown and rainbow trout.

Interpretive Modes: The modes for interpreting this resource are

- Newspaper and magazine articles and advertisements which attract anglers and other outdoor enthusiasts to the area
- Brochures distributed through State visitor centers, Forest visitor centers, Supervisor's Office and District offices.

Justification: The cold-water release program has afforded a unique opportunity to develop partnerships among the George Washington National Forest, the Army Corps of Engineers, the Virginia Department of Game and Inland Fisheries, Alleghany County, and Trout Unlimited The development of this fishery was an integral component of the original development plan for Lake Moomaw and the Jackson River Fingerling brown and rainbow trout have been stocked Three access points are currently being developed

Project Name: **JACKSON RIVER TAILWATER TROUT FISHERY** Site Location: **Jackson River, James River Ranger District**

			Estimated Time Frame					
Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96
1 Forest Approval	Supervisor							
2 Magazine and newspaper campaign development and advertising	Interp Prog Mgr	5,000		X	X	X	X	X
	Public Affairs							
	District							
3 Brochure design	Interp Prog Mgr	2,000		X				
	Fisheries Biol							
	Public Affairs							
	Biologist							
4 Brochure printing	Interp Prog Mgr	3,000			X			
	Public Affairs							
	Procurement							
5 Brochure reprinting	Interp Prog Mgr	1,000						X
TOTAL		11,000						

Project Name: GYPSY MOTH IMPACTS

Theme: *The Gypsy Moth vs the Mighty Oak*

Site Location: Lee, Dry River, Pedlar Ranger Districts and spreading.

Site Description: The partial destruction of forests by the gypsy moth is occurring in the Blue Ridge and Ridge and Valley Provinces in Virginia, primarily on ridge tops and upper side slopes containing mixed hardwood forests Areas heavily infested are defoliated to the point where they are visible for miles

Seasonal Accessibility: The interpretive trails and exhibits will be accessible year round The interpretive focus will change with each season

Winter	egg masses
Spring/early Summer	caterpillars and beginning of defoliation, spraying operations may close some areas
Summer	defoliation very evident
Late Summer	adult moths

Interpretive Significance. The repeated defoliation by gypsy moths of oaks, combined with the stress of other environmental impacts, are leading to a high mortality rate of oaks throughout the middle Atlantic states As many as 80 percent in the infested areas are dying! Dead trees will not produce stump sprouts, and there may not be a way to replenish that oak population In 1990 about 125,000 acres and in 1991 about 128,000 acres were defoliated on the George Washington National Forest. The interpretive program will look at the effects that this has on wildlife and the ecosystem in general

Site Objectives:

- Provide access to areas infested with gypsy moth
- Provide exhibits at Massanutten Visitor Center regarding gypsy moth life cycles, wildlife impacts, and oak mortality

Interpretive Program Objectives:

- Encourage Forest users to walk through the impacted areas and experience the caterpillars consuming the leaves and the subsequent defoliation of the Forest stands
- Give visitors a knowledge of the prolificacy and life cycle of the gypsy moth
- Provide knowledge to visitors about the impacts that the gypsy moth makes throughout the middle Atlantic states including oak mortality and subsequent effects on wildlife

Interpretive Concepts:

- The gypsy moth has induced many changes to the ecocystem
- The prolificacy and spread of the gypsy moth has enabled it to take on the mighty oak

Interpretive Modes.

- The modes proposed for interpretation of the gypsy moth include

- Outreach program slide presentation;
- Gypsy moth life cycle informational paper,
- Brochure describing impacts to the ecosystem,
- Mobile exhibit to be used in areas where gypsy moth are migrating.

Justification:

Encouraging a short hike through infested areas will give visitors the opportunity to experience seeing the defoliation of the leaves, feeling the increased temperature as the sun breaks through the open canopy, hearing the droppings hit leaves and forest floor, and picking caterpillars off of their clothes

The hike will bring home the severity of the impacts through touching the visitors' emotions People will go away with first-hand knowledge of the impacts.

The exhibits will emphasize the prolificacy of the gypsy moth and will explain how something so small can be so powerful and unstoppable. Part of this exhibit will include the life cycle of the moth Further, the exhibit will show visitors that the gypsy moth defoliation and killing of the oaks has far reaching impacts on wildlife The loss of oak mast will have detrimental effects on squirrels, turkey, deer, and bear as well as non-game species The opening of the forest canopy increases temperature, light and water run-off. The interpretive exhibits can explain the effects of this on understory vegetation, soils, and water quality

The outreach slide program will promote the Forest Service role as an agency taking a responsible stand in educating the public about the severity of the spread of the gypsy moth This program may be passed from district to district and Forest to Forest as the gypsy moth continues its migration south

Planner's Comments: Gypsy moth feces and decaying caterpillars on hard surfaces cause slick driving and walking conditions.

Project Name: **GYPSY MOTH** Site Location: **Dry River, Lee and Pedlar Ranger Districts**

Task	Responsible Staff	Estimated Cost	Estimated Time Frame					
				FY92	FY93	FY94	FY95	FY96
1 Forest Approval	Supervisor							
2 Determine affected areas on Districts	Gypsy Moth	5,000		X				
3 Determine egg mass areas	Gypsy Moth	500		X				
4 Gather gypsy moth data from other agencies	Gypsy Moth	1,000		X				
5 Collect graphics and photographs	Gypsy Moth	1,000		X				
	Wildlife							
	Volunteers							
6 Obtain space at Massanutten Visitor Center	Recreation	750		X				
	Lee RD							
7 Explore cost-share possibilities	Recreation	750		X	X			
8 Design visitor center exhibits	Interpreter	3,000			X			
	Gypsy Moth							
	Recreation							
Continued on next page								

Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96
9 Design portable exhibits for district offices	Interp Prog Mgr	1,500			X			
	Gypsy Moth							
10 Construction of all exhibits	Interp Prog Mgr	15,000			X	X		
	Contracting							
11 Installation of exhibits	Contracting	2,000			X	X		
	District							
12 Maintenance of exhibits	Contracting	1,500			X	X	X	X
	District							
13 Write and design brochure	Public Affairs	2,000		X	X			
	Gypsy Moth							
	Interpretor							
14 Layout and design interpretive trail	District	2,500			X	X		
	Landscape Arch							
	Gypsy Moth							
15 Trail construction	District	5,000				X		
	Volunteers							
16 Purchase signs for trail	Contracting	3,500				X		
Continued on next page								

Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96
17 Printing of brochures	Public Affairs	1,000				X		
18 Contact schools for outreach program	Interpretor	1,000				X	X	X
19 Maintenance of exhibit, trail and brochure	Districts	2,000				X	X	X
TOTAL		49,000						

Project Name: GWNF RECREATIONAL OPPORTUNITIES

Theme. *Gateways to the George Washington National Forest*

Site Location: Forest-wide at entries into the Forest on major travel routes.

Site Description: Wayside exhibit shelters off of main travel routes with parking for two to four cars

Seasonal Accessibility: Year round

Interpretive Significance: These wayside exhibits will allow the public to learn the recreational opportunities available for them in the George Washington National Forest.

Site Objectives: Give the visiting public a general knowledge of the developed and dispersed recreational opportunities on their Forest.

Interpretive Program Objectives:

- Encourage Forest visitors to use the recreational opportunities available in their Forest.
- Show visitors that the range and type of recreational opportunities vary with the seasons
- More evenly distribute use of recreational areas

Interpretive Concepts. The George Washington National Forest has a multitude of recreational opportunities to offer the public.

Interpretive Modes: Wayside kiosks will be developed near Forest boundaries on high-use travel routes

Justification: A multitude of recreational opportunities currently exist year round on the Forest Wayside exhibits are a means *for imparting knowledge of these opportunities to the general public who are traveling through the Forest*

Project Name: **GWNF OPPORTUNITIES** Site Location: **Forest-wide**

Task	Responsible Staff	Estimated Cost	Estimated Time Frame					
				FY92	FY93	FY94	FY95	FY96
FOREST-WIDE								
1 Forest Approval	Supervisor			X				
2 Site Planning and design	Landscape Arch	500		X	X			
3 Design of Kiosk exhibits	Interp Prog Mgr	750			X			
	Landscape Arch							
	Public Affairs							
4 Contracting for construction/fabrication of kiosks with interpretive displays	Interp Prog Mgr	60,000			X			
	Contracting							
TOTAL		$11,250						
PER PROJECT SITE								
1 Site selections	Interp Prog Mgr	1,000		X				
	Rec Staff							
	District							
2 Site analysis	Engineering	1,500		X	X			
Continued on next page								

Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96
3 Contracting for construction wayside road and parking	Interp Prog Mgr	5,000			X			
	District							
	Contracting							
4 Installation of kiosks	District	500			X			
5 Maintenance	Contracting	350			X	X	X	X
TOTAL X 6 SITES		50,100						
TOTAL		111,350						

Project Name: CHARCOAL IRON FURNACE

Theme: *19th Century Iron Mining*

Site Location: Displays will be developed at selected furnaces throughout the Forest.

Site Description May develop a display at one or more of the following furnaces or ruins Callie, Australia, Mt Torry, Canada, Elizabeth, Crack Whip, Catherine, and Van Buren

Seasonal Accessibility· Most of these furnaces are accessible by foot trails year round

Interpretive Significance: Either standing components or structural remains are evident at all of the listed furnace sites The Forest can interpret the inter-related processes involved in the operation and maintenance of pig-iron production, the natural and geographic resources necessary for furnace location, and the geologic processes involved in the development of iron ore

Site Objectives:

- Stabilize furnace stacks, retaining walls, and other structural remains of the furnaces,
- Reduce vandalism of these historic sites, and
- Provide on-site interpretation of furnace structures and processes of the charcoal iron industry

Interpretive Program Objectives:

- Visitors shall learn about site selection criteria for furnace placement,
- Visitors shall learn about charcoal iron industry processes,
- Visitors shall learn of the impacts that the iron industry had on the surrounding environment, and
- Visitors shall learn about the geology and development of iron ore

Interpretive Concepts: The 19th Century charcoal mining industry had a tremendous impact on the local environment Some of these impacts are still evident today Many Forest visitors have expressed interest in this subject. The furnaces are conspicuous and are currently subject to vandalism.

Interpretive Modes: The modes for interpretation include.

- Self-guided trails
- Interpretive kiosk displays
- Brochures

Justification:

- The furnace remnants are conspicuous and currently subject to vandalism
- Many Forest visitors have expressed an interest in this subject matter after having seen remnants.
- The impacts that the charcoal iron industry had on the local environment are still evident. Many areas of the George Washington National Forest were affected by this 19th Century land use.

Planner's Comments: The specific furnaces where interpretation will occur have not yet been selected

Project Name: **CHARCOAL IRON FURNACES** Site Location: **Selected furnaces throughout the Forest**

			Estimated Time Frame					
Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96
FOREST-WIDE								
1 Forest Approval	Supervisor							
2 Archeological inventory	Archeologist	500			X			
3 Archeological investigation	Archeologist	5,000+			X	X	X	X
4 Kiosk design w/ displays	Interp Prog Mgr	1,000		X	X			
	Archeologist							
	Interpretor							
5 Brochure design	Interp Prog Mgr	1,500+			X	X		
	Archeologist							
	Public Affairs							
6 Brochure printing	Interp Prog Mgr	750+				X		
	Procurement							
7 Monitoring	Archeologist	100			X			
TOTAL		8,850						
Continued on next page								

Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96
PER PROJECT SITE								
1 Site selections	Interp Prog Mgr	200		X				
	Archeologist							
	District							
2 Trail design & layout	Interp Prog Mgr	2,000+		X	X			
	Archeologist							
	District							
3 Vegetation management	District	500		X	X	X	X	X
4 Trail construction	Interp Prog Mgr	5,000+			X			
	District							
5 Kiosk construction	Interp Prog Mgr	10,000			X			
6 Kiosk installation	District	250			X			
7 Stabilization of ruins	Archeologist	5,000+			X			
	Contracting							
15 Maintenance/sign replacement	District	750			X	X	X	X
TOTAL X 4 PROJECT SITES		94,800						
TOTAL		103,650						

Project Name: NO TRACE FOREST USE

Theme: *Leave No Trace*

Site Location District offices, environmental education centers, visitor centers, and wherever there are identified serious litter problems on the Forest.

Site Description. Varies

Seasonal Accessibility· Year round

Interpretive Significance: There are identified problems with litter, vandalism, and visible campsites in primitive areas of the Forest This program attempts to curb this problem by placing responsibility on Forest users

Site Objectives:

- Keep the evidence of human activities to a minimum
- Keep developed and dispersed areas looking clean and natural

Interpretive Program Objectives:

- Instill an attitude of ownership and responsibility in Forest visitors
- Relieve duties of Law Enforcement Officers

Interpretive Concepts:

- Problems persist with people who do not clean up campsites, picnic sites, and rifle ranges

Interpretive Modes:

Signs will be placed at known problem areas and at developed recreation areas which depict two pictures One picture will show a litter or vandalism problem and one with no trace. A caption will read "This or . .This Your choice "
Posters located in District offices, visitor centers, and environmental education centers--same as above

Examples of photographs
- rifle range covered with shell casings,
- fire rings in the Forest, and
- litter at picnic sites or campgrounds

Justification· Litter and traces of campsites exist throughout the Forest This program attempts to heighten awareness of the problem in those individuals who are responsible It may also alleviate the duties of Law Enforcement Officers

Planner's Comments: Consider using volunteers such as Boy or Girl Scouts and other civic organizations to clean up identified problem areas.

Project Name: **NO TRACE FOREST USE** Site Location: **District offices and problem areas**

			Estimated Time Frame					
Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96
FORESTWIDE								
1 Forest Approval	Supervisor							
2 Design of signs/posters	Interp Prog Mgr	350		X				
3 Printing	Interp Prog Mgr	2,000		X				
	Procurement							
4 Reprinting if necessary	Interp Prog Mgr	750				X		
	Procurement							
TOTAL		3,100						
PER PROJECT SITE								
1 Site selections	District, LEO	100		X	X	X	X	X
2 Installation	District	100		X				
3 Maintenance/sign replacement	District	150		X	X	X	X	X
TOTAL X 24 PROJECT SITES		8,400						
TOTAL		11,500						

Project Name: GATEWAY TO THE SOUTHERN REGION

Theme: *Outdoor Opportunities in the Southern Region*

Site Location The Regional Visitor Center is located along Interstate 81 which is a major north-south travel route close to Northern Virginia, Washington DC, Baltimore and Philadelphia

Site Description: This will be an attractive barrier-free visitor center, constructed of native materials and projecting a Forest Service image in accord with public expectations It provides indoor and outdoor viewing areas of the valley and ridges The landscape should be designed with indigenous species of plant materials

Seasonal Accessibility: This facility will be open throughout the year.

Interpretive Significance:

The Gateway will allow the public to learn the recreational opportunities available for them within the National Forests of the Southern Region and may also include the Monongahela National Forest This enables each Forest to present the broad range of opportunities available within their boundaries.

Site Objectives:

- Provide an attractive setting and facility in which to introduce the general public to the recreational opportunities available to them in the National Forests of the Southern Region
- Provide each Forest of the Southern Region a means for showcasing the natural, scenic and cultural resources within its boundaries

Interpretive Program Objectives:

- Encourage the public to visit the National Forests of the Southern Region
- Majority of visitors learn that the Southern Region encompasses a variety of physiographic provinces from Virginia to Puerto Rico and as far west as Oklahoma This range allows a wide variety of opportunities to meet everyone's recreational needs.
- Majority of visitors shall learn that the recreational opportunities for persons with disabilities and the elderly are increasing in the National Forests of the Southern Region.
- Majority of visitors shall learn that all the Forests of the Southern Region have interpretive programs for the benefit and enjoyment of the public and the protection of Forest resources
- Majority of visitors shall learn that recreational opportunities change with seasons and climates from one end of the region to the other.
- Some visitors shall learn about the various management activities which occur on National Forests

Interpretive Concepts: The National Forests of the Southern Region offer something for everyone The Forest Service is the largest provider of recreation in the world and we plan to showcase what we have to offer

Interpretive Modes:

An interpretive visitor facility will house displays from all the National Forests of the Southern Region. This allows visitors to learn of the recreational opportunities available for them and gain some knowledge of the role of the Forest Service as a managing agency

Slide programs, audio-visual tapes, interpretive displays, indoor botanical area, water habitat "feel tank", and viewing platforms may be provided

Brochures, pamphlets, maps, books and other materials will be available for people to take with them. This is coordinated with the Mid-Appalachian Interpretive Association.

Justification:

The described site for the facility is on or near two major travel routes. This is within an hour and a half of the densely populated areas of Northern Virginia, Washington DC and Baltimore It is also within a half day's drive of Philadelphia and New York.

The George Washington National Forest is the closest National Forest to Washington, DC This visitor center is ideally located for visits by U.S government officials, decision makers, and foreign dignitaries who would like to see an overview of the Southern Region This is an excellent opportunity to showcase all the National Forests of the South at one highly visible location.

The facility may also house the Lee Ranger District office

Planner's Comments:

The Gateway will benefit not only the George Washington National Forest, but all of the Forests in the Southern Region (the Monongahela National Forest, the Eastern Region, may become a partner in this project). More importantly, it is a tremendous benefit and service to the public to whom we have the responsibility to share this information

Project Name: **GATEWAY TO THE SOUTHERN REGION** Site Location: **George Washington National Forest, I66-I81**

			Estimated Time Frame					
Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96
1 Forest Approval	Supervisor							
2 Regional Approval	Regional Forester			X				
3 Site selection and acquisition	Lands Staff	500,000		X	X			
	Rec Staff							
	District							
4 Site inventory and analysis	Contracting	50,000			X			
5 Contract for architecture and landscape designs	Contracting	125,000			X	X		
6 Design interpretive exhibits including recreational opportunities, botanical garden and feel tank	Interp Prog Mgr	75,000				X	X	
	Contracting							
7 Construction of facility	Contracting	3,500,000				X	X	
8 Installation of landscape materials	Contracting	250,000					X	
9 Construction of exhibits	Contracting	250,000					X	X

Continued on next page

Task	Responsible Staff	Estimated Cost		FY92	FY93	FY94	FY95	FY96
10 Installation of exhibits	Contracting	25,000						X
11 Staffing	Interp Prog Mgr	80,000					X	
	District							
12 Maintenance and rotation of exhibits	Contracting	25,000						X
TOTAL		4,880,000						

APPENDIX D
EVALUATION OF CAVES

INTRODUCTION

All Forest caves will be evaluated using the following rating system. The system allows significance values to be assigned to various cave resources. The assigned values will be used to determine cave classification and will be used in determining cave significance under the implementation regulations of the Federal Cave Resources Protection Act of 1989.

CLASSIFICATION

Caves have to be placed into one of the following classes based on management objectives consistent with identified cave resource values.

As new caves are discovered, they will be temporarily managed as Class 1 until an analysis of resource values is completed.

Class	Explanation of Classification
Class 1	SENSITIVE CAVES. Caves considered unsuitable for exploration by the general public either because of their pristine condition, unique resources, or extreme safety hazards. They may contain resources that would be impacted by low levels of visitation. These caves are not shown on maps or discussed in publications intended for general public use such as guides, brochures, and magazines.
Class 2	DIRECTED ACCESS CAVES. Caves with directed public access and developed for public use. These caves are shown on maps or have signs directing visitor access; frequently have guided tours and artificial lighting Regardless of the level of development, public visitation is encouraged. The caves may have sensitive resources that are protected.
Class 3	UNDEVELOPED CAVES. Caves that are undeveloped or contain unmaintained or minimal developments that are suitable for exploration by persons who are properly prepared. In general, these caves contain resources that resist degradation by recreational use. However, public use will not be directed toward them

SIGNIFICANCE

Biological Value

Value	Explanation of Value
0	Biological components lacking.
1	Biological components exist but of low apparent significance.
2	Biological components present and numerous, sensitivity low.
3	Biological components present, numerous and of moderate sensitivity.
4	Biological components numerous and sensitive to disturbance.
5	Biological components very numerous and highly sensitive to disturbance. Habitat is critical to species survival. The cave contains unique species, or ones found on State or Federal sensitive, threatened, or endangered species lists.

Hydrologic Value

Value	Explanation of Value
0	Hydrologic components lacking
1	Hydrologic components present but of low importance.
2	Hydrologic components present but of low sensitivity.
3	Hydrologic components present and of moderate sensitivity.
4	Hydrologic components important and very sensitive
5	Hydrologic components complex and highly sensitive.

Cultural/Historic Resources

Value	Explanation of Value
0	Cultural resources lacking.
1	Potential for cultural resources low.
2	Potential for cultural resources moderate.
3	Cultural resources present or implicated by historic records. Site may be eligible for the National Register of Historic Places.
4	Cultural resources present and sensitive to disturbance. Site eligible for the National Register of Historic Places.
5	Cultural resources present and highly sensitive to disturbance. Site eligible for the National Register of Historic Places.

Recreational Value

Value	Explanation of Value
0	Cave lacks recreational value.
1	Recreational value low. Little or no scenic appeal.
2	Recreational value low but receiving some use. Scenic values low.
3	Recreational values, scenic values, and use moderate.
4	Recreational values, scenic values, and use high.
5	Recreational values, scenic values, and use very high. A major cave of regional or national significance.

Geologic/Mineralogic/Paleontologic Value

Value	Explanation of Value
0	Features of significance lacking.
1	Some interesting features present.
2	Features present and resistant to disturbance.
3	Features present and of moderate sensitivity to disturbance
4	Features numerous and of high value. Features sensitive to disturbance.
5	Features rare, valuable, numerous, and/or of great sensitivity to disturbance.

Educational or Scientific Value

Value	Explanation of Value
0	Caves lacking educational or scientific value.
1	Caves with low educational or scientific value.
2	Caves with features which can be used for educational or scientific study but are otherwise considered common to the area
3	Caves which provide opportunity for educational or scientific study.
4	Caves providing unusual opportunity for educational scientific use.
5	Caves with unique opportunity for interpretation and public education or scientific study.

APPENDIX E
LANDS MANAGEMENT

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LANDOWNERSHIP ADJUSTMENTS

Management Situation
In 1911, the Weeks Law provided the authorization for purchase of lands in States where enabling legislation was passed. Less than a month after the passage of the Weeks Law, purchases on the headwaters of the Potomac, along Massanutten Mountain, and in the Natural Bridge area were approved. Most of the largest purchases were from land companies. Subsequent additions brought the George Washington (originally called the Shenandoah) National Forest to its present size. Its formal proclamation date is 1918.

National Forest ownership totals approximately 956,264 acres in Virginia and 104,861 acres in West Virginia Of the gross 1,796,142 acres within the proclamation boundaries, approximately 59% is National Forest land.

Government ownership is interspersed with many private inholdings. These inholdings vary from several thousand acres to small lots less than an acre in size. The intermingled private ownership pattern has a significant effect on National Forest programs, activities and public use. The larger blocks of private ownership have less impact than the scattered smaller inholdings. Many small National Forest tracts surrounded by private lands are generally inaccessible to the public and are difficult to manage for National Forest purposes. Rights-of-way for public access become increasingly difficult to acquire as adjoining private land goes from agricultural use to recreation/home-site development.

Planning Assumptions
The Forest has identified approximately 90,300 acres of private land for acquisition through purchase or exchange. The Landownership Adjustment Plan identifies approximately 35,900 acres of the Forest available for exchange. Acquired lands will be on a willing seller basis.

The majority of Forest lands identified for exchange are lands that are currently manageable. These lands are identified primarily because they may be attractive to private individuals, thus allowing for acquisition of more desirable parcels. These lands, for the most part, are not lands surplus to the Forest needs.

Lands identified for acquisition are primarily inholdings or adjoining parcels which are partially surrounded by Forest lands which will aid in consolidating National Forest ownership.

Land and Water Conservation Funds will be available and used to acquire those tracts which are needed to satisfy current and projected unmet outdoor recreation needs when these properties are available on a willing seller basis.

There may be some opportunity for Week's Law Acquisition, although the availability of these funds have greatly diminished.

These programs will diminish in scope as land becomes less available.

Objectives
Consolidate National Forest ownership by exchange or acquisition, with particular emphasis placed on acquiring desirable interior tracts.

The purpose of acquiring private lands through either purchase or exchange will be to improve the efficiency of management, increase recreation opportunities through consolidation of ownership or protection of special interests such as rare, threatened or endangered species habitat.

An exchange program of 100 acres per year is planned for the first plan period.

An acquisition program of 200 acres per year is planned for the first plan period.

Management Direction
Land to consolidate ownership will be acquired only on a willing seller basis.

The Landownership Adjustment Map (which may be viewed at District and the Forest Supervisor's office) identifies lands available for disposal through exchange and areas where acquisition would be of benefit for consolidation or other purposes such as protection of threatened and endangered species.

Opportunities for acquiring lands which will provide water based recreation have decreased significantly. Priority will be given to acquisition of these tracts as they become available

Areas that could be utilized for community development are shown as exchange tracts.

Give priority to exchanges that will consolidate large blocks of National Forest land through acquisition of desirable inholdings and disposal of isolated tracts.

Exchange will be pursued as the primary way of consolidating National Forest boundaries. Low private sector interest in exchanges will make significant landownership adjustment a long-term project.

Limited acquisition through purchase will be continued as a means of consolidating ownership where exchange is not possible.

Exchanges will be emphasized wherever possible, as a means of achieving goals established in the Forest Land Management Plan, so as to have a minimum impact on affected counties.

Acquisition priorities for lands needed primarily for recreational purposes (Land and Water Conservation Fund purchase) are identified in plans for the Blue Ridge, Massanutten, Rich Hole, Saint Mary's, Hidden Valley and Little Piney composites. Composite information will serve only as a guide. Each acquisition opportunity will be evaluated on its own merit.

Acquisition of lands needed to consolidate ownership for more effective management and use of general Forest resources is on an opportunity basis. Priorities are based on the greatest degree of consolidation while still considering per acre cost.

Keep Land Adjustment Map updated to reflect changing landownership conditions.

SPECIAL LAND USES

Management Situation

As of September 30, 1990, approximately 7,578 acres were under special use authorization More than half the acreage is for roads and utility lines About 1,074 acres are water impoundments for public water systems and for flood prevention purposes. About 493 acres are in agricultural uses which are prescribed for the benefit of recreation and wildlife resources. Special uses serving individuals rather than public needs amount to about 50 acres.

The number and acreage of special use authorizations for individual use do not increase rapidly; terminated uses tend to offset new uses The number and acreage of special uses serving public needs such as roads, utilities, water supplies, power and flood control maintain a steady increase. As adjoining private land use changes from agriculture to homesites, demands for individual special uses of adjacent Forest land increases. Most requests for individual uses are denied, but permits for access and utility corridors are usually granted, when these uses cannot be reasonably accommodated on private lands There are no recreation residence special use permits on the Forest. There are no areas where this type of activity will be allowed.

Planning Assumptions

There will continue to be a demand on the Forest for special uses, both public and private

Any right-of-way request for public use must be considered.

The number of uses will gradually increase as new uses are added; others will be terminated, but not at a rate equal to the permit increase. The rate of increase is projected at 3% per year.

Objectives

Minimize dedication of public land to single use.

Establish utility corridors within the Forest where there is an anticipated need.

Management Direction

Authorizations will not be granted until an environmental analysis is conducted.

Additional uses for private purposes will not be granted unless unavoidable, or there are no reasonable alternatives.

Authorizations for public benefit will be granted when the use cannot be reasonably accommodated on lands other than National Forest lands.

APPALACHIAN NATIONAL SCENIC TRAIL

Management Situation
The National Trails System Act (PL 90-546, as Amended) authorizes acquisition of lands or interest in lands along the Trail to ensure that the Trail has legal access and is sufficiently protected from developments which would detract from the Trail experience. All of the Trail across the Forest, located only on the Pedlar Ranger District, has at least the minimum needed protection. Additional private parcels are inventoried which would enhance the Trail experience.

Planning Assumptions
Completion of the Appalachian Trail acquisition program by the end of fiscal year will be achieved. After FY 93, remaining parcels, if any, may be acquired under the normal Forest land adjustment program.

Objective
Contact owners of each identified parcel and either acquire, acquire protective interest or delete from inventory so as to ensure completion of the Appalachian Trail project within national time frames.

Management Direction
Complete Appalachian Trail protection prior to FY 1994.

RIGHT-OF-WAY GRANTS FOR ROADS (EASEMENTS)

Management Situation
There are currently 50 special use authorizations for State roads. These authorizations will eventually be converted to easements. No construction of new State roads across the Forest is anticipated or planned. Activities requiring additional easements will be for road improvement.

Planning Assumptions
There will continue to be a demand from State agencies for road easements to cover highway improvement projects.

Objective
Provide an efficient and timely granting of easements for State projects that provide public benefits.

Management Direction
Process applications promptly.

Work with State agencies to assure adequate mitigation of environmental disturbance.

FEDERAL ENERGY REGULATION COMMISSION (FERC) LICENSES AND PERMITS

Management Situation
The Virginia Power Bath County Pumped Storage Project has been constructed on the Forest under FERC license.

Planning Assumptions
This project will remain operational.

Other projects may be proposed

Objective
Ensure early Forest Service involvement in licensing procedures and license administration to adequately mitigate environmental disturbance.

Management Direction
Administration of licensed projects will be on a continuing basis.

LAND STATUS MAINTENANCE

Management Situation
The Forest ownership pattern results in a high demand for status information from adjoining landowners.

Planning Assumptions
Need for status information on Forest land will increase as adjoining land values increase.

Management Direction
Maintain land status systems.

Utilize new technology such as LOMS, automated mapping, and GIS, to improve flow of information.

LANDLINE LOCATION

Management Situation
On October 1, 1992, there were 2,923 miles of boundary lines on the Forest and 15,050 property corners. 1598 miles of these landlines and 7660 property corners are considered to be established to Forest Service standards. Approximately 55% of the property lines and corners are in a desirable condition. The condition of the balance ranges from barely discernible to fairly obvious. As use of the Forest and adjoining private land increases, the demand for well established landlines escalates.

Planning Assumptions
Elimination of the backlog of landlines in this 10 year planning period will continue to be the Forest goal.

The current landline location program (83 miles/year average) will not meet the year 2000 goal

Objective
Establish 121 miles of landline per year. This is considered the minimum acceptable level to complete the remaining 1,325 miles. Share the cost of establishment with adjoining owners where possible.

Management Direction
Establish all landlines to Forest Service standard within the first plan period.

BOUNDARY MAINTENANCE

Planning Assumptions
Maintenance is required to protect the investment in landline location.

Objective
Maintenance will be required on the existing 1598 miles of boundary line once every 10 years (160 miles annually).

Maintenance of the 2,923 miles of boundary line, once established, will be at the same rate and schedule, every 10 years.

Management Direction
Maintain established boundary lines on a 10-year frequency.

OTHER LAND TITLE CLAIMS AND ENCROACHMENT

Management Situation
When landlines and corner locations are upgraded, areas of encroachment onto the National Forest are located. Some result in claims, but most are settled on the ground after the landline is complete. Past experience has shown that an average of one dispute per mile of line run and one encroachment per 12 miles of line run, can be expected.

Planning Assumptions
We will continue to have claims as landlines are established or maintained.

Resolution of existing claims will continue to be required by law.

Objective
Resolve all claims as discovered.

Management Direction
Investigate and act upon all discovered claims cases and landline disputes in accordance with on-the-ground findings and legal opinion of the Regional Attorney, Office of General Counsel.

Give priority to bringing landlines up to standard in areas involving known or possible claims and or encroachments.

Maintain an up-to-date inventory of claims and/or encroachments.

Terminate unauthorized use and occupancy of National Forest land as quickly as feasible.

LAND SALES, GRANTS AND SELECTIONS (SMALL TRACTS ACT)

Management Situation
The landline location program is surfacing cases where private improvements were constructed on National Forest lands as a result of erroneous surveys.

Planning Assumptions
Cases of unintentional encroachment upon National Forest lands as a result of erroneous surveys will continue to surface as landlines are brought up to Forest Service standards.

Objective
Settle each case as quickly as possible.

Management Direction
Utilize the authority of the Small Tracts Act.

Where the error was the result of both private and Forest Service survey, share the costs of processing with affected landowner(s).

RIGHTS-OF-WAY ACQUISITION

Management Situation
The Forest has a number of right-of-way agreements that are limited and do not allow public access. These are Forest development roads and trails constructed across private land without adequate rights-of-way Large blocks of National Forest land are isolated and rendered unusable to the general public due to the lack of legal access.

Planning Assumptions

Acquisition of unlimited rights-of-way is gaining interest from the general public.

Public pressure for access to National Forest land will increase over time.

Additional access points are needed to increase the usability of Forest lands, especially for dispersed recreation.

Additional access needs will diminish as rights-of-way are acquired.

The timber sale program is expected to generate two right-of-way cases per ten year period.

At some point in time, beyond Period 1, rights-of-way for timber sales will no longer be required.

Objective
Provide adequate access to meet all management needs.

Process five cases per year of combined new easements and updating old easements not related to timber sales

Management Direction

Assign priority to securing legal access for existing facilities.

Emphasize right-of-way acquisition for Forest development trails or access points where public access to National Forest land is currently unavailable and vehicle access is not needed.

APPENDIX F
PROGRAM BUDGET DEVELOPMENT

INTRODUCTION

The Forest will budget to implement the Plan. The following table displays the estimates of resource outputs and finances needed yearly to achieve the Plan goals and objectives during the first decade of Plan implementation.

Unless major changes are made in the Plan, this information should not change during the life of the Plan However, Plan outputs and cost estimates are just that - estimates. Flexibility to adjust these estimates in the budget requests is necessary as we move through Plan implementation For example, new initiatives and other requirements unknown at the time of Plan development may change the estimates presented.

Inflation also needs to be taken into account The budget presented will be adjusted for inflation using GNP Implicit Price Deflators All costs have been converted to 1993 dollars

CAPITAL INVESTMENTS

Capital investments represent large expenditures in funds within a given year. Examples include campground expansions or new facility construction. These investments are displayed in the Recreation Facility Construction information that follows. Information on the Capital Investment program is also located in Plan Appendix B.

COLUMN HEADINGS

Definitions for the column headings used in the table are provided below:

Activity Name - Action taken to manage natural resources
Activity Code - An alpha-numeric label for an activity or grouping of activities.
Fund Name - Major Resource Program Areas used by Congress in funding the Budget
Fund Code - An alpha-numeric label for the major resource programs
Unit of Measure - A quantity descriptor of a yearly activity, used when applicable
Cost - Average annual estimated costs in 1993 dollars.

Fund Code	Fund Name	Activity Code	Activity Name	Unit of Measure	Number of Units	Cost (Dollars)
CNFC	Fire, Administration, and Other Construction	LF	Facility Improvements	---	---	350,000
		AN22	Rec Resource Improvement Construction	PAOTS	1,590	1,500,000
			CNFC Subtotal			1,850,000
CNGP	General Purpose Construction	JL25	Rights of Way	Cases	1	18,800
		ML	Land Management Planning Activities	---	---	30,800
		LT222	Road Construction	Miles	0	0
		LT223	Road Reconstruction	Miles	7	310,800
		LT224	Bridge Construction	Bridges	0	0
		LT225	Bridge Reconstruction	Bridges	1	60,000
		LT-CONT	Road Contracts - Subtotal	---	---	370,800
		LT122	Road and Bridge Administration	---	---	16,500
		LT123	Road and Bridge Administration Support	---	---	49,000
		LT2141	Road Construct Preconst Engineering	Miles	0	0
		LT2142	Road Reconstruct Preconstruct Eng	Miles	0	50,000
		LT2211	Road and Bridge Construction Eng	Miles	0	0
		LT2212	Road and Bridge Reconstruction Eng	Miles	0	27,000
		LT-SUPP	Road Support - Subtotal	---	---	142,500
			CNGP Subtotal			562,900
CNRN	Recreation Road Construction	JL25	Rights of Way	Cases	1	7,100
		ML	Land Management Planning Activities	---	---	4,700
		LT222	Road Construction	Miles	0 7	342,900
		LT223	Road Reconstruction	Miles	5 0	300,000
		LT224	Bridge Construction	Bridges	0	0
		LT225	Bridge Reconstruction	Bridges	0	0
		LT-CONT	Road Contracts - Subtotal	---	---	642,900
		LT122	Road and Bridge Administration	---	---	16,500
		LT123	Road and Bridge Administration Support	---	---	33,000
		LT2141	Road Construct Preconstruct Eng	Miles	0 7	53,000
		LT2142	Road Reconstruct Preconstruct Eng	Miles	5 0	30,000
		LT2211	Road and Bridge Construction Eng	Miles	0 7	35,000
		LT2212	Road and Bridge Reconstruction Eng	Miles	5 0	20,000
		LT-SUPP	Road Support - Subtotal	---	---	187,500
			CNRN Subtotal			842,200

Fund Code	Fund Name	Activity Code	Activity Name	Unit of Measure	Number of Units	Cost (Dollars)
CNTM	Timber Road Construction	JL25	Rights of Way	Cases	1	5,000
		LT222	Road Construction	Miles	2	35,000
		LT223	Road Reconstruction	Miles	1	5,000
		LT224	Bridge Construction	Bridges	0	0
		LT225	Bridge Reconstruction	Bridges	0	0
		LT-CONT	Road Contracts - Subtotal	—	—	40,000
		LT122	Road and Bridge Administration	—	—	16,400
		LT123	Road and Bridge Administration Support	—	—	23,600
		LT2141	Road Construct Preconstruct Eng	—	—	58,300
		LT2142	Road Reconstruct Preconstruct Eng	—	—	58,300
		LT2211	Road and Bridge Construction Eng	—	—	24,000
		LT2212	Road and Bridge Reconstruction Eng	—	—	24,000
		LT-SUPP	Road Support - Subtotal	—	—	204,600
			CNTM Subtotal			249,600
CNTR	Trail Construction/Reconstruction	AT22	Trail Construction/Reconstruction	Miles	10	198,200
		ML	Land Management Planning Activities	—	—	1,800
			CNTR Subtotal			200,000
CWFS	Cooperative Work - Other	AN	Recreation Management	MPAOT Days	0	0
		CI1	Inland Fish Operations	—	—	5,000
		CI221	Inland Fish Habitat Struct Impr	Structures	5	2,700
		CI222	Inland Fish Habitat Non-struct Impr	Acres	0	0
		CT1	T&E Operations	—	—	0
		CT221	T&E Structural Habitat Improvement	Structures	0	0
		CT222	T&E Non-struct Habitat Improvement	Acres	0	0
		CW1	Wildlife Operations	—	—	10,000
		CW221	Wildlife Habitat Structural Impr	Structures	0	0
		CW222	Wildlife Habitat Non-struct Impr	Acres	0	0
		ET12	Timber Harvest Administration	MCF	24	12,000
		LT23	Road Maintenance	Miles	100	44,300
		PF2	Fuels Improvements	Acres	0	0
		PL132	Law Enforcement Activities	—	—	0
		TG3	Line Management	—	—	0
		TG4	Program Support	—	—	13,000
		TG5	Common Services	—	—	0
			CWFS Subtotal			87,000

Fund Code	Fund Name	Activity Code	Activity Name	Unit of Measure	Number of Units	Cost (Dollars)
CWKV	Cooperative Work - KV	AT23	Forest Trail Maintenance	Miles	0	0
		CI221	Inland Fish Habitat Struct Improve	Structures	15	6,500
		CI222	Inland Fish Habitat Non-struct Impr.	Acres	0	0
		CT221	T&E Structural Habitat Improvement	Structures	0	0
		CT222	T&E Non-struct Habitat Improvement	Acres	0	0
		CW221	Wildlife Habitat Struct Improvement	Structures	15	13,500
		CW222	Wildlife Habitat Non-struct Improve	Acres	120	30,000
		DN221	Range Resource Struct Improvement	Structures	0	0
		DN221-1	Structural Range Improvement	Structures	0	0
		DN222	Range Res Non-struct Improvement	Acres	0	0
		DN222-1	Non-structural Range Improvement	Acres	0	0
		ET24	Reforestation	Acres	1,178	210,000
		ET25	Timber Stand Improvement	Acres	0	0
		ET26	Nursery Activities	----	----	0
		FW22	Watershed Res Impr Construction	Acres	8	10,000
		PF2	Fuels Improvements	Acres	0	0
		TG3	Line Management	----	----	0
		TG4	Program Support	----	----	90,000
		TG5	Common Services	----	----	0
			CWKV Subtotal			360,000
EXEX	Acquisition of Lands for Exchange	JL263	Land Exchange	Acres	0	0
FFFP	Forest Fire Protection	ET113	Timber Res. Coordination	----	----	0
		ML	Land Management Planning Activities	----	----	10,000
		PF11	Fire Management Preparation	% Efficy	100	665,000
		PF2	Fuels Improvements	Acres	0	0
		PL132	Law Enforcement Activities	----	----	35,000
			FFFP Subtotal			710,000
LALW	Land Acquisition - L&WCF	JL123	Land Ownership Administration	Cases	0	10,000
		JL261	Land Purchase	Acres	200	150,000
			LALW Subtotal			160,000
NFCL	Cooperative Law Enforcement	PL121	Law Enforcement Act -Coop Law Regular	----	----	100,000

Fund Code	Fund Name	Activity Code	Activity Name	Unit of Measure	Number of Units	Cost (Dollars)
NFCR	Cultural Resource Management	AC	Cultural Resource Activities	Acres	2,750	461,800
		AC121	Cultural Resource Monitoring	—	—	4,000
		ET113	Timber Res Coordination	Acres	2,355	73,300
		ML	Land Management Planning Activities	—	—	4,100
		PL132	Law Enforcement Activities	—	—	6,800
			NFCR Subtotal			550,000
NFDE	NFS Drug Control	PL122	Law Enforcement Act -Coop Law Cannabis	—	—	25,000
		PL131	Law Enforcement Act Coop Law Anti-Drug	—	—	35,000
			NFDE Subtotal			60,000
NFFA	Maintenance of Facilities	LF1	Facility Operations	—	—	69,000
		LF121	Facility Monitoring	—	—	1,000
		LF2	Facility Improvements	—	—	40,000
		LF23	Facility Maintenance	—	—	40,000
			NFFA Subtotal			150,000
NFGA	General Administration	PL132	Law Enforcement Activities	—	—	33,000
		TG3	Line Management	—	—	496,000
		TG4	Program Support	—	—	847,000
		TG5	Common Services	—	—	374,000
			NFGA Subtotal			1,750,000
NFGT	Nursery & Genetic Tree Improvement	ET26	Nursery Activities	—	—	0
		ET27	Genetic Tree Activities	—	—	15,000
			NFGT Subtotal			15,000
NFHA	Harvest Administration	ET12	Timber Harvest Administration	MCF	4,728	199,300
		ML	Land Management Planning Activities	—	—	6,500
		PL132	Law Enforcement Activities	—	—	55,500
			NFHA Subtotal			261,300
NFIF	Inland Fish Operations & Improvement	CI1	Inland Fish Operations	—	—	80,000
		CI111	Inland Fish Stream and Lake Inventory	Miles	20	25,000
		CI121	Fish Habitat Monitoring	—	—	45,000
		CI221	Inland Fish Habitat Struct Impr	Structures	150	155,000
		CI222	Inland Fish Habitat Non-struct Impr	Acres	200	95,000
		ET113	Timber Res Coordination	—	—	30,000
		ML	Land Management Planning Activities	—	—	10,000
		PL132	Law Enforcement Activities	—	—	10,000
			NFIF Subtotal			450,000

Fund Code	Fund Name	Activity Code	Activity Name	Unit of Measure	Number of Units	Cost (Dollars)
NFIP	Range Improvements	DN221	Range Resource Structural Improve	Structures	0	0
		DN222	Range Res Non-struct Improvement	Acres	0	0
		DN23	Range Res Maintenance	----	----	2,000
			NFIP Subtotal			2,000
NFLA	Lands	JL11	Lands Status	----	----	60,000
		JL122	Special Use Admin (Non-Rec)	Cases	400	140,000
		JL123	Land Ownership Administration	Cases	5	50,000
		JL25	Rights of Way	Cases	5	50,000
		JL26	Land Ownership Adjustment	Acres	0	21,100
		JL263	Land Exchange	Acres	100	100,000
		LG	Geometronics	----	----	5,000
		PL132	Law Enforcement Activities	----	----	23,900
			NFLA Subtotal			450,000
NFLL	Land Line Location	JL23	Land Line Maintenance	Miles	147	90,000
		JL24	Landline Location	Miles	145	528,000
		PL132	Law Enforcement Activities	----	----	7,000
			NFLL Subtotal			625,000
NFMG	Minerals & Geology Management	ET113	Timber Res Coordination	----	----	0
		GC1	Mineral Materials Resource Operations	Cases	30	30,000
		GE1	Leasable Mineral Resource Operations	Cases	30	40,000
		GE121	Oil and Gas Monitoring	----	----	15,000
		GG1	Geology Operations	Cases	0	30,000
		GL1	Locatable Minerals Resource Operations	Cases	0	0
		GR1	Reserved and Outstanding Operations	Cases	3	15,000
		ML	Land Management Planning Activities	----	----	20,000
		PL132	Law Enforcement Activities	----	----	0
			NFMG Subtotal			150,000
NFNW	Noxious Weed Control	DN24	Noxious Farm Weeds	Acres	0	0
NFRD	Road Maintenance	LT121	Transportation Monitoring	----	----	2,000
		LT12	Transportation Administration	----	----	95,000
		LT23	Road Maintenance	Miles	1,800	1,267,000
		PL132	Law Enforcement Activities	----	----	36,000
			NFRD Subtotal			1,400,000

Fund Code	Fund Name	Activity Code	Activity Name	Unit of Measure	Number of Units	Cost (Dollars)
NFRF	Reforestation	ET24	Reforestation (Site Prep)	Acres	1,177	208,500
		ML	Land Management Planning Activities	----	----	6,500
		PL132	Law Enforcement Activities	----	----	0
			NFRF Subtotal			215,000
NFRM	Recreation Management	AN11	Recreation Operations	----	----	963,300
		AN112	Wild and Scenic River Planning	----	----	140,000
		AN12	Dispersed Recreation Management	MPAOT Days	2,500	826,500
		AN12	Developed Recreation Management	MPAOT Days	1,500	264,500
		AN121	Recreation Monitoring	----	----	2,500
		AN23	Developed Recreation Maintenance	----	----	107,900
		AV1	Visual Resource Operations	----	----	21,000
		AV121	Visual Resource Monitoring	----	----	2,600
		ET113	Timber Res Coordination (Visuals)	----	----	17,000
		ML	Land Management Planning Activities	----	----	50,200
		PL132	Law Enforcement Activities	----	----	104,500
			NFRM Subtotal			2,500,000
NFSE	Silvicultural Examination	ET111-2	Silvicultural Exam & Prescriptions	Acres	50,000	262,500
NFSI	Soil & Water Resource Improvement	FW22	Watershed Res Impr Construction	Acres	65	75,000
NFSO	Soil, Water, & Air Operations	ET113	Timber Res Coordination	----	----	40,000
		FA	Air Resource Activities	----	----	40,000
		FA111	Air Resource Inventory	----	----	40,000
		FA121	Air Quality Monitoring	----	----	40,000
		FW111-2	Water Inventory	Acres	30,000	90,000
		FW1	Watershed Resource Operations	----	----	175,100
		FW121	Watershed Resource Monitoring	----	----	70,000
		FW23	Watershed Res Impr Maintenance	Acres	60	24,000
		ML	Land Management Planning Activities	----	----	10,200
		PL132	Law Enforcement Activities	----	----	4,100
			NFSO Subtotal			533,400
NFSP	Sales Preparation	ET114	Timber Sale Preparation	MCF	4,728	655,300
		ET171	*Appeals and Litigation - Program*	----	----	15,000
		ET173	Appeals and Litigation - Sales	----	----	0
			NFSP Subtotal			670,300
NFSV	Soil Inventories	FW111-1	Soil Inventory	Acres	100,000	230,000

Fund Code	Fund Name	Activity Code	Activity Name	Unit of Measure	Number of Units	Cost (Dollars)
NFTE	T&E & Sensitive Species Ops & Imp	CT1	T&E Operations	----	----	90,000
		CT11	T&E Habitat Inventory	Acres	70,000	140,000
		CT112	T&E Habitat Planning	----	----	20,000
		CT121	T&E Habitat Monitoring	Acres	2,750	55,000
		CT221	T&E Structural Habitat Improvement	Structures	25	25,000
		CT222	T&E Non-struct Habitat Improvement	Acres	1,000	35,000
		ET113	Timber Res. Coordination	----	----	25,000
		ML	Land Management Planning Activities	----	----	7,000
		PL132	Law Enforcement Activities	----	----	3,000
			NFTE Subtotal			400,000
NFTI	Timber Stand Improvement	ET25	Timber Stand Improvement	Acres	455	82,000
NFTP	Timber Resource Inventory Planning	ET111-1	Extensive Timber Inventory	Acres	0	0
		ET112	Timber Resource Planning	Plans	1	37,400
		ML	Land Mangement Planning Activities	----	----	51,500
			NFTP Subtotal			88,900
NFTR	Trails	AT121	Trail Monitoring	----	----	20,000
		AT23	Forest Trail Maintenance	Miles	686	362,800
		PL132	Law Enforcement Activities	----	----	15,000
		ML	Land Management Planning Activities	----	----	2,200
			NFTR Subtotal			400,000
NFVM	Range Vegetation Management	DN1	Range Resource Operations	----	----	8,000
		DN12	Range Resource Administration	AUMs	1,300	4,000
		DN121	Range Resource Monitoring	----	----	0
		ET113	Timber Res Coordination	----	----	0
		ML	Land Management Planning Activities	----	----	0
		PL132	Law Enforcement Activities	----	----	1,000
			NFVM Subtotal			13,000
NFWL	Wildlife Habitat Operations	CW1	Wildlife Operations	----	----	94,000
		CW112	Wildlife Habitat Planning	----	----	5,000
		CW121	Wildlife Habitat Monitoring	----	----	75,000
		CW221	Wildlife Hab. Struct Improvement	Structures	200	100,000
		CW222	Wildlife Hab Non-struct Improvement	Acres	3,400	434,500
		ET113	Timber Res Coordination	----	----	25,000
		ML	Land Management Planning Activities	----	----	31,500
		PL132	Law Enforcement Activities	----	----	35,000
			NFWL Subtotal			800,000

Fund Code	Fund Name	Activity Code	Activity Name	Unit of Measure	Number of Units	Cost (Dollars)
NFWM	Wilderness Management	AW	Wilderness Resource Activities	----	----	226,800
		ML	Land Management Planning Activities	----	----	2,200
		PL132	Law Enforcement Activities	----	----	10,500
		AW121	Wilderness Monitoring	----	----	10,500
			NFWM Subtotal			250,000
PEPE	Timber Roads - Purchaser Election	TG3	Line Management	----	----	0
		TG4	Program Support	----	----	0
		TG5	Common Services	----	----	0
		LT222	Road Construction	Miles	0	0
		LT223	Road Reconstruction	Miles	0	0
		LT224	Bridge Construction	Bridges	0	0
		LT225	Bridge Reconstruction	Bridges	0	0
		LT-CONT	Road Contracts - Subtotal	----	----	0
			PEPE Subtotal			0
PUCR	Forest Roads Purchaser Construction	LT222	Road Construction	Miles	8	96,000
		LT223	Road Reconstruction	Miles	8	60,000
		LT224	Bridge Construction	Bridges	0	0
		LT225	Bridge Reconstruction	Bridges	0	0
		LT-CONT	Road Contracts - Subtotal	----	----	156,000
			PUCR Subtotal			156,000
	Total Budget		Total Budget	----	----	$ 17,661,100

APPENDIX G
ROAD STANDARDS

The Forest Service classifies roads according to the following Traffic Service Levels (TSL):

Level A roads (usually considered arterial) are generally open year-round and can expect high volumes of traffic for all types of vehicles.

Level B roads (usually considered collector) are open year-round or closed seasonally and can expect moderate amounts of traffic during high use seasons.

Level C roads (usually considered local) will accommodate all traffic types, although the predominant use is usually administrative and commercial traffic. Roads are designed for low volumes of traffic. Some mixed use may have to be controlled to minimize conflicts, especially between public and commercial traffic.

Level D roads (usually considered local) are low standard roads built for a single purpose, usually commercial timber sales. Once the primary purpose is served, these roads will be: 1.) closed to all traffic and seeded or 2.) maintained for administrative use only.

Table G-1 contains descriptions of the four different levels of traffic service for Forest roads The table shows the traffic characteristics which are significant in the selection of design criteria and shows the operating conditions for the road The TSL assigned to a road reflects a number of design factors such as:

- number of lanes
- turnout spacing
- lane width
- type of driving surface
- design speed
- clearance
- horizontal and vertical alignment
- curve widening
- turnarounds
- surfacing

Management of roads under Forest Service jurisdiction varies from closed-to-all-traffic to open-year-round. Roads closed to all traffic are generally blocked by an earth mound (tank trap) at the beginning of the road. Constant service roads may be: open year-round or seasonally to all users, or closed to all traffic except administrative or permitted use. Roads opened periodically or for administrative use only have gates with locks installed.

Table G-1.
Characteristics of Traffic Service Levels

	Level A	Level B	Level C	Level D
FLOW	Free flowing with adequate passing facilities	Congested during heavy traffic such as during peak logging or recreation activities	Interrupted by limited passing facilities or slowed by the road condition	Flow is slow or may be blocked by an activity Two way traffic is difficult and may require backing to pass
VOLUMES	Uncontrolled; will accommodate the expected traffic volumes.	Occasionally controlled during heavy use periods	Erratic, frequently controlled as the capacity is reached	Intermittent and usually controlled. Volume is limited to that associated with the single purpose
VEHICLE TYPES	Mixed, includes the critical vehicle and all vehicles normally found on public roads	Mixed, includes the critical vehicle and all vehicles normally found on public roads	Controlled mix, accommodates all vehicle types including the critical vehicle. Some use may be controlled to minimize conflicts between vehicle types	Single Use, not designed for mixed traffic Some vehicles may not be able to negotiate Concurrent use between commercial and other traffic is restricted
CRITICAL VEHICLE	Clearances are adequate to allow free travel Overload permits are required	Traffic controls needed where clearances are marginal Overload permits are required	Special provisions may be needed. Some vehicles will have difficulty negotiating some segments	Some vehicles may not be able to negotiate Loads may have to be off-loaded and walked in.
SAFETY	Safety features are a part of the design	High priority in design Some protection is accomplished by traffic management	Most protection is provided by traffic management	The need for protection is minimized by low speeds and strict traffic controls
TRAFFIC MANAGEMENT	Normally limited to regulatory, warning, and guide signs and permits	Employed to reduce traffic volume and conflicts	Traffic controls are frequently needed during periods of high use by the dominant resource activity	Used to discourage or prohibit traffic other than that associated with the single purpose.

	Level A	Level B	Level C	Level D
USER COSTS	Minimize, transportation efficiency is important.	Generally higher than 'A' because of slower speeds and increased delays.	Not important, efficiency of travel may be traded for lower construction costs.	Not considered.
ALIGNMENT	Design speed is the predominant factor within feasible topographic limitations	Influenced more strongly by topography than by speed and efficiency	Generally dictated by topographic features and environmental factors Design speeds are generally low.	Dictated by topography, environmental factors, and the design and critical vehicle limitations
ROAD	Stable and smooth with little or no dust, considering the normal season of use	Stable for the predominant traffic for the normal use season. Periodic dust control for heavy use or environmental reasons. Smoothness is commensurate with the design speed	May not be stable under all traffic or weather conditions during the normal use season Surface rutting, roughness, and dust may be present, but controlled for environmental or investment protection.	Rough and irregular Travel with low clearance vehicles is difficult. Stable during dry conditions Rutting and dusting controlled only for soil and water protection.

APPENDIX H
VEGETATION MANIPULATION

This appendix evaluates the usefulness of various silvicultural systems used to manipulate vegetation in management areas suitable for timber production This appendix recommends practices that meet NFMA regulations for manipulating vegetation to regenerate stands to desirable native species, usually of the pre-harvest forest type. See the process paper "Incorporation of the NFMA Requirements for Vegetation Manipulation into the Revision of the Land and Resource Management Plan for the George Washington National Forest" for explanation of the regulations.

There are two principal management systems used to provide regulated, sustained-yield of timber production from a forest

The UNEVEN-AGED FOREST MANAGEMENT SYSTEM consists of timber harvest methods that regulate the number and sizes of trees to be left standing in an area being cut Goals of the system are to maintain continuous high-forest cover, to regenerate desirable species, and to provide a sustained yield of forest products by the orderly growth and development of trees with a variety of diameter and age classes

The EVEN-AGED FOREST MANAGEMENT SYSTEM consists of timber harvest methods that produce stands of trees with essentially the same age. Managed even-aged forests have a distribution of stands of varying ages and tree sizes throughout the forest area The difference in ages among trees forming the main canopy level usually does not exceed 20% of the age when the stand is ready for cutting When trees have reached the desired age or size for regeneration, the stand is harvested. Regeneration takes place in a short period of time after harvesting.

The Basis for Allocation of Even-aged and Uneven-aged Management Systems

The selection of which forest management system to use should be based on the *existing condition of the forest* and the *desired future condition of the management area*

The majority of the stands on the Forest originated from abandoned farmlands or after heavy cutting or fires during the period 1880-1930 The resultant growth of predominately oak-hickory forest consists of essentially even-aged stands of trees

While it is undeniably true that individual uneven-aged stands can be created and maintained, the management of many individual uneven-aged stands interspersed with even-aged stands is not practical over an entire even-aged forest like the George Washington National Forest Even-aged and uneven-aged management practices create different vegetation conditions, and have different practices and objectives Since the Revised Plan operates under the principle of management areas, where portions of the Forest have similar practices and objectives, uneven-aged and even-aged management practices will not be applied individually to interspersed stands, but rather to portions of management areas.

Management areas with land suitable for timber production were analyzed to determine if they contain characteristics that met the criteria established for uneven-aged management discussed below. Portions of Management Areas 7, 11, 13, and 17 had land that met the criteria. Uneven-aged management practices would help achieve the desired future conditions in these management areas. Other management areas were considered, but not selected because uneven-aged management would not achieve the vegetation manipulation needed to help meet the desired future condition, or they did not contain land that met the criteria.

The initial screening criteria for uneven-aged management included areas of land tentatively suitable for timber production (1) at least 100 acres, (2) with slopes from 0% to 20%, and (3) near existing roads. Uneven-aged management requires frequent entries, usually 5-15 years, into the same area Rubber-tired skidders are the predominant equipment used on the Forest and are capable of skidding the longer distances necessary with the lower volume and value removed per acre as compared to even-aged management. Skid trails would become more numerous, exposing mineral soil during initial construction and exposing mineral soil again in 5 to 15 years as the skid trails are reused. A more dispersed, overland skidding pattern can be used on gentler slopes, avoiding much of the exposure of mineral soil than would occur on steeper terrain over 20% slope. The visual impact of the bladed skid trails on the ground would be less on the gentler slopes.

Uneven-aged management involves only partial removal of trees from a stand. On slopes over 20%, where maneuverability of equipment is restricted, there can be physical damage to the remaining uncut trees. On gentle slopes, equipment mobility is less restricted and less damage occurs to residual trees. Agents causing rot can be introduced through bole damage, resulting in reduced future yields and value from the stand.

Uneven-aged management requires road access over a larger area than even-aged management to harvest an equal volume during each entry. These roads have to be constructed (where existing access is lacking) at the first entry and then reopened during each subsequent entry at a 5 to 15 year cycle. Selecting areas where most of the roads are already in place reduces the need for new roads. In most cases where access exists, only dispersed overland skid trails and some landings are needed Trying to apply uneven-aged management too far from existing roads would require new road construction with more disturbance and more expense than in areas with suitable, existing access.

The final criteria was to provide an efficient means of regulating a sustained yield of timber production from areas where uneven-aged management would be applied This meant determining where land meeting the other criteria could be consolidated into large, contiguous ares. Even with the initial 100 acre minimum size constraint, there was still a large number of interspersed potential areas throughout the Forest. When the smaller scattered parcels were eliminated, the remaining lands could be allocated to several large, contiguous areas of the Forest, thereby providing for efficient management.

On all other suitable land, where uneven-aged management criteria were not applicable, even-aged management became the viable management system.

Silvicultural Systems

Silvicultural systems are the processes by which a forest stand is grown for a specific purpose. Depending on the system selected, a reproduction cutting will result in an uneven-aged stand (used to achieve uneven-aged forest conditions) or an even-aged stand (used to achieve even-aged forest conditions) Silvicultural systems are a means of manipulating vegetation to help achieve the desired future condition for an area of land.

Silvicultural Systems used to establish and maintain UNEVEN-AGED stands

Regeneration Cuttings:
1. *group or modified selection*
2 single tree selection

Intermediate Cuttings:
1 improvement cutting
2. salvage cutting
3. sanitation cutting
4. release
5. thinning

Silvicultural Systems used to establish and maintain EVEN-AGED stands

Regeneration Cuttings:
1. clearcutting
2 modified shelterwood
3. shelterwood
4. seed tree
5. patch cutting

Intermediate Cuttings:
1 improvement cutting
2. release
3. salvage cutting
4. sanitation cutting
5. thinning

The information contained in the following two references provides the scientific explanation for applying silvicultural systems for vegetation manipulation of the forest types on the George Washington National Forest

1. *The Scientific Basis for Silvicultural and Management Decisions in the National Forest System.* Russell M. Burns, General Technical Report WO-55, September 1989.
   a) Silviculture of Eastern Hardwoods, pg 9-17
   b) Silviculture of Northeastern Hardwoods, The Pine Group, pg 21-22, the White Pine forest cover type and the Eastern Hemlock forest cover type
   c) Silviculture of Southern Pines, Oak-Pine types, pg 34-35

2. *Silvicultural Systems for the Major Forest Types of the United States.* Russell M. Burns, Agriculture Handbook #445 1983.

   a) Oak-Hickory, pg 116-120 and pg 141-144 (Appalachian Mixed Hardwood)
   b) Northern Hardwoods, pg 121-127
   c) Eastern White Pine including Eastern Hemlock, pg 131-134
   d) Pitch Pine, pg 135-136

e) Virginia Pine, pg 167-169
f) Oak-Pine, pg '72-174
g) Yellow Poplar, pg 180-182

The specific portions of the above listed publications are included by reference and should be read in conjunction with this appendix to provide comprehensive analysis of vegetation practices applicable to appropriate management areas that allow vegetative manipulation.

The following table shows the relationship between the vegetation classification used in Chapter 3 of the FEIS and that used in *Silvicultural Systems for the Major Forest Types of the United States*

Dry Site Conditions	Moist Site Conditions
Forest Type Group[1].	Forest Type Group[1]:
Chestnut Oak-Scarlet Oak White Oak-Black Oak	Red Oak-Red Maple Yellow-Poplar-Mixed hardwoods
Forest Type Group[2]:	Forest Type Group[2]·
Oak-Hickory Pitch Pine Virginia Pine Oak-Pine	Northern hardwoods Eastern White Pine Eastern Hemlock Yellow Poplar Appalachian Mixed Hardwoods (a variant of Oak-Hickory)

[1]As used in Chapter 3 FEIS.
[2]As used in *Silvicultural Systems for the Major Forest Types of the United States*

The following Table summarizes the range of feasible applications of silvicultural systems that can be used to manipulate vegetation on land suitable for timber production in the forest types on the George Washington National Forest Any of the following practices can be applied to manipulate vegetation based on site specific analysis and disclosure in an environmental analysis

Table H-1.
Range of Silvicultural Practices

	Even-aged Management				*Uneven-aged Management*	
Forest Type	CC	MSW	SW	ST	GS	STS
Oak-Hickory	R	R	RC	NR	P	P
Pitch Pine	R	RC	NR	RC	P	NR
Virginia Pine	R	NR	NR	NR	NR	NR
Oak-Pine	RC	RC	RC	RC	P	NR
Northern Hardwoods	RC	RC	RC	NR	RC	RC
Eastern White Pine	RC	RC	R	NR	P	NR
Eastern Hemlock	NR	NR	RC	NR	P	R
Yellow Poplar	R	R	RC	NR	P	NR
Appalachian Mixed Hwd	R	R	RC	NR	P	P

Codes Used in Table

Silvicultural System

CC = clearcut; MSW = modified shelterwood, SW = shelterwood,
ST = seedtree; GS = group selection; STS = single tree selection

Range of Practices

R = recommended
RC = recommended with conditions
P = possible
NR = not recommended

RECOMMENDED (R) means that the silvicultural practice has been reliable in creating conditions favorable for establishing regeneration in the stand and to maintain growth of the desirable species using natural regeneration site preparation treatments.

RECOMMENDED WITH CONDITIONS (RC) means that for the silvicultural practice to be reliable, some specific condition must either exist prior to cutting, some limits will apply to the regenerated species, or some special treatment is needed after cutting to obtain and maintain desirable species

POSSIBLE (P) means the silvicultural practice is not reliable in creating conditions favorable for regenerating the stand, *unless significant alteration of the species composition, growth or sustainability is acceptable* For example, using single tree selection in the Oak-Hickory type will not perpetuate oaks or other intolerant species in the same proportion as currently exists in the even-aged forest stands of the Forest.

If the loss of oaks and the shift to a forest of more shade tolerant species is compatible with the Desired Future Condition of any management area, then single tree selection is a possible silvicultural practice.

NOT RECOMMNENDED (NR) means the silvicultural system is not reliable in creating conditions favorable for establishing regeneration in the stand and to maintain growth of the desirable species using standard or special treatments

JUSTIFICATION FOR CODES SELECTED IN SILVICULTURAL PRACTICES TABLE

The following summarizes the information presented in the two cited references.

1 For NR- not recommended, the reason for not recommending the method of cut.

2. For RC- recommended with conditions, the specific condition necessary that allows the method of cut to be recommended.

3. For P- possible, the likely alteration in species composition, growth or sustainability if the method of cut is applied.

Even-aged Management

1. NOT RECOMMENDED (NR)

Forest Type	MOC	Reasons for Not Recommending is Because
Oak-Hickory	ST	Heavy seed is poorly distributed and slow growing seedlings are not able to compete with other vegetation; light seeded species have abundant seed on the site or available nearby
Pitch Pine	SW	Does not provide sufficient sunlight to reach forest floor for seed germination and seedling development.
Viginia Pine	MSW/ SW/ST	Intolerance to shade prevents seedling development. Susceptibility to wind, ice and snow damage could cause rapid loss of retained trees, negating their usefulness for visual/wildlife habitat purposes.
Northern Hardwood	ST	Natural seeding ability produces sufficient seedlings for adequate advance reproduction; density of seed trees is not sufficient to affect proportioin of tolerant/intolerant species
E. White Pine	ST	Good seed crops only occur infrequently on a 3-10 year cycle; remaining trees subject to windfall

E. Hemlock	CC/ MSW/ST	Too much sunlight and dry conditions for seedling development; remaining Hemlock trees subject to windfall.
Yellow Poplar	ST	Plentiful seed is present on the site or will be blown in from adjacent stands.

2. RECOMMENDED WITH CONDITIONS (RC)

Forest Type	MOC	Specific Condition is When:
Oak-Hickory	SW	Insufficient amounts of well distributed oak advance reproduction and stump sprout potential are present.
Appalachian Mixed Hardwood		
Pitch Pine	ST/MSW	Nonserotinous cones are present
Oak-Pine	CC/MSW/ SW/ST	Have to use intensive control of hardwood competion after harvest to maintain pine component
Northern Hardwood	CC/MSW	Size of cut will control proportion of tolerant and intolerant species that regenerate; pre-commercial treatments are needed to achieve desired species composition.
E. White Pine	CC/MSW	Sufficient white pine advance reproduction exists well distributed in the understory.
E. Hemlock	SW	Have old stands and/or drier sites, lacking sufficient hemlock advance reproduction, two or three cuts may be required to obtain adequate reproduction.
Yellow Poplar	SW	Will remove overstory within five years to prevent severe reduction in height and diameter growth.

Uneven-aged Management

1. NOT RECOMMENDED (NR)

Forest Type	MOC	Reason for Not Recommending is Because:
Pitch Pine	STS	Regeneration openings of at least one acre are required. Pitch Pine is intolerant of shade. Burning or scarification site preparation to obtain reproduction would damage remaining trees.

Virginia Pine	GS/STS	Even-aged structure of stands would deteriorate to a transition to hardwoods. Virginia Pine is intolerant of shade
Oak-Pine	STS	Openings in crown canopy are too small to ensure adequate reproduction of yellow pines, yellow poplar and most oaks.
E. White Pine	STS	Method has not proven satisfactory and opening size is too small to maintain seedling development in all aged stands.
Yellow Poplar	STS	Reproduction will not develop satisfactorily under fully stocked stands

2. RECOMMENDED WITH CONDITIONS (RC)

Forest Type	MOC	Specific Conditions is When.
Northern Hardwood	GS	Desirable reproduction is less tolerant species and larger openings are required.
	STS	Desirable reproduction is tolerant species

3. POSSIBLE (P)

Forest Type	MOC	Alterations Expected are
Oak-Hickory	STS	Gradual reduction of oak and intolerant species component and increase of more tolerant species such as blackgum, red maple, sugar maple and dogwood
	GS	Regulation of size classes and sustained yield may not be attained Reproduction may be damaged by high deer populations. Growth will be less than that from even-aged management
Appalachian Mixed Hardwood		
Pitch Pine	GS	Transition to hardwoods, unless intensive hardwood controls are used
Oak-Pine	GS	Openings of at least 0 5 acre in combination with improvement, sanitaion, salvage or thinning cuts between groups. Transition to hardwoods, unless intensive hardwood controls are used

E. White Pine	GS	Transition to hardwoods, unless intensive hardwood controls are used. May need scarification site preparation to obtain reproduction.
E. Hemlock	GS	Very small group opening size to restrict white pine or hardwood reproduction from competing with hemlock
Yellow Poplar	GS	Diameter and height growth will be significantly less in openings less than 0.5 acre.

APPENDIX I
ADOPTION OF RECREATION OPPORTUNITY SPECTRUM CLASSES AND VISUAL QUALITY OBJECTIVES

One of the objectives of the Revised Plan is to use "adopted" recreation opportunity spectrum (ROS) classes and visual quality objectives (VQO) so that the appropriate and compatible ROS classes and VQOs are assigned to different portions of the Forest allocated to different management areas This appendix details how the adopted ROS classes and VQOs displayed in each management area differs from the existing inventories. Appendix G of the FEIS contains more details on the development of subclasses for the semi-primitive motorized and roaded ROS classes.

In assigning these different VQO and ROS classes, two specific rules were followed. First, assignment of an ROS class or VQO had to be consistent with the naturalness criteria described in detail in the 1986 ROS Handbook. Table G-1 displays which VQOs are consistent with which ROS classes.

Table G-1.
Compatibility of ROS Classes and VQOs

	Visual Quality Objective				
ROS Class	P[1]	R[2]	PR[3]	M[4]	MM[5]
Semi-Primitive Non-Motorized	X	X			
Semi Primitive Motorized	X	X	X		
Roaded Natural	X	X	X		
Roaded Modified				X	
Rural	X	X	X	X	

[1]Preservation
[2]Retention
[3]Partail Retention
[4]Modification
[5]Maximum Modification

Second, any area assigned an ROS class of semi-primitive non-motorized (SPNM) or a subclass of semi-primitive motorized (SPM) had to meet the criteria for remoteness, size, and evidence of humans described in detail in the 1986 ROS Handbook and those described in Appendix G of the FEIS

Table G-2 on the next page displays a breakdown of the adopted acreage by ROS classes and VQOs in the Revised Plan.

The monitoring of adopted ROS classes and VQOs is discussed in Chapter 5 In most cases, any change in the assigned ROS class or VQO would be a non-significant amendment of the Revised Plan

Table G-2.
Adopted VQOs and ROS Classes in Thousands of Acres

	Adopted Visual Quality Objective					
Adopted ROS Class	Preservation	Retention	Partial Retention	Modification	Maximum Modification	ROS TOTALS
Primitive	0	0	0	0	0	0
Semi-Primitive Non-Motorized	31	119	0	0	0	150
Semi-Primitive Motorized (Subclass 1)	0	28	76	0	0	104
Semi-Primitive Motorized (Subclass 2)	0	31	73	0	0	104
Roaded Natural	15	199	399	0	0	613
Roaded Modified	0	0	0	88	0	88
Rural	0	2	0	0	0	2
Urban	0	0	0	0	0	0
VQO TOTALS	46	379	548	88	0	1,061

APPENDIX J
ADDITIONAL FOUR-WHEEL DRIVE ROADS

The following list includes roads suitable for four-wheel drive vehicles (licensed OHVs) in addition to those featured in Management Area 11. These roads also provide a degree of challenge but are not included in Management Area 11 because, generally, they are open only during hunting seasons.

District	Road Number	Name	Miles
Deerfield	387	Walker Mountain	5.8
	395	Liberty	8 3
	396	Shenault Shanty	3.6
Dry River	152	Mitchell Knob	6.5
	227A	Skidmore Fork	.5
	427	Little Bald Knob	3.0
	85-2	Hall Spring	9.5
	597	Rader Mountain	3.0
James River	334A	Blackwater	.4
	338A	Westgate Spur	1.1
Lee	1719	Little Schloss	6.7
Warm Springs	121	Back Creek Mountain	16
TOTAL			**63.4**

APPENDIX K
DEFINITION OF RIPARIAN MANAGEMENT AREA (MA 18)

Riparian management areas consist of aquatic areas, wetlands, and riparian ecosystems associated with ponds, lakes, and perennial streams. The extent of the riparian ecosystem, and thus of the riparian management area, is determined by characteristics of landform, soils, and vegetation. No one feature is used alone for this delineation.

Landform -- the 100-year floodplain and first terrace. The 100-year floodplain is the land inundated by the flood that occurs, on the average, once every 100 years. The following equation from Miller (Miller, 1977) is used to estimate the 100-year flood height:

$$D_{100} = 3.2A^{0.2}$$

where D_{100} is the 100-year flood height (feet) above bankfull stage and A is the drainage area, in square miles.

To use this equation, bankfull stage must be determined. The discharge at bankfull stage is the discharge that forms and maintains the channel and that over a long period carries the maximum amount of sediment. Bankfull stage will often correspond to the stage above which extensive overflow occurs on one or both banks of the stream. Many mountain streams, however, have deeply incised channels for which the bankfull stage does not correspond to "top of bank." Other indicators must be used. The top of point bars is one of the best indicators of bankfull stage. It can also be indicated by a break in slope, especially if it coincides with a change in vegetation. Examples of breaks in slope are where a sloping bank becomes vertical or where a vertical bank grades upward to a sloping surface. Color changes on rocks may also be used to identify the bankfull stage.

Vegetation changes that may indicate bankfull stage include a shift from annuals to perennials, the presence or absence of lichens or moss, or the extent of exposed fine roots on banks that have neither slumped nor collapsed. Vegetative indicators should be used with caution. Mosses, for instance, may often be found both below and above the bankfull stage.

Changes in size or size-distribution of bank material may also be an indicator; for example, a change from cobble to a mix of sand, cobbles and fine gravel; or a change from gravel to sandy silt.

The first terrace is a low, relatively level area in close proximity to the 100-year floodplain and may lie one or two feet above it. A given stream or stream reach may not always have a first terrace.

Soils -- the presence of dark-colored Entisols, Inceptisols, or Mollisols.

Entisols are the youngest soils and show little evidence of soil formation factors such as time, parent material, climate, relief, and vegetation. They have weak structure and layer development, are mostly brown in color and occur primarily on 0 to 7% slopes. They are somewhat poorly to poorly drained.

Inceptisols are also recent soils with weak structure and layer development, are mostly brown to yellow brown in color, and occur on 0 to 4% slopes. These soils are somewhat poorly to moderately well drained Entisols and Inceptisols typically have rock fragment contents in the range of 25 to 60%.

Mollisols have a thick dark colored (black to dark gray) surface approximately 10 inches thick. Mollisols have strong structure and layer development, occur on 0 to 7% slopes and are typically somewhat poorly to moderately drained. These soils are typically dark in color throughout which indicates high organic matter and very moist conditions.

Soils in riparian ecosystems may be recognized by:

1. The absence of distinct horizon layers.

2. Well rounded rock fragments.

3. Generally high rock fragment content on the surface and throughout the soil.

4. Dark soil color throughout (dark brown, dark red, black, dark gray, etc.)

Vegetation -- the presence of wetland plants classified as obligates or facultative wetland Obligate plants are always found in wetlands under natural conditions (frequency greater than 99%). Facultative wetland plants are usually found in wetlands (67-99% frequency), but are occasionally found in nonwetlands. National List of Plant Species that Occur in Wetlands: Northeast (Region 1) (Reed, P.B., Jr., 1988) is used to classify plants.

Appendix L - The Revised Plan
THREATENED, ENDANGERED, AND SENSITIVE SPECIES

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VASCULAR PLANTS

SCIENTIFIC NAME - COMMON NAME	RANK. GLOBAL	RANK VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT. AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Aconitum reclinatum - white monkshood	G3	S3/S2S3				X						MT MW	4
Agropyron trachycaulum - slender wheatgrass	G5	S1/S4				X	X					RO DW	4
Allium oxyphilum - nodding onion	G3Q	S1?/S1	3C			X	X	X	X		X	SB	4
Alnus rugosa - speckled alder	G5	S2/S4			X							WL RI	
Anemone canadensis - Canada anemone	G5	S1/S1			X							MW	
Arabis hirsuta - hairy rockcress	G5	S1/S2								X		SB DW	4
Arabis serotina - smooth rockcress	G2	S2/S1	E	E		X	X	X	X		X	SB	4
Aralia hispida - bristly sasparilla	G5	S2/S4							X			MT RO	7, 20
Arethusa bulbosa - bog rose	G4	S1/NA								X		WL	4
Aster radula - rough-leaved aster	G5	S1/S4			X							WL RI	
Aster schistosus - shale barren aster	G4Q	SU/NA		C2							X	SB	4
Astragalus distortus - bent milkvetch	G5	S1/S2							X			SB	4
Baptisia australis - blue false indigo	G5?	S2/S4							X			RO RI	10
Betula papyrifera - paper birch	G5	S2/S2					X					MT MW	4
Blephilia hirsuta - hairy woodmint	G4?	S2/S?									X	RI MW	21
Boltonia asteroides - aster-like boltonia	G5	S2/NA								X		SP	4
Bouteloua curtipendula - side-oats grama	G5	S4/S3					X					GL	4
Bromus ciliatus - fringed brome	G5	S1/S5			X							WL	
Bromus kalmii - wild chess	G5	S1/NA				X						SB DW	4

*Likely To Occur

VASCULAR PLANTS

SCIENTIFIC NAME - COMMON NAME	RANK: GLOBAL	RANK: VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT. AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Camassia scilloides - wild hyacinth	G4G5	S2S3/S3S4			X							RI	
Campanula rotundifolia - American harebell	G5	S1/S2					X					RO	4
Carex arctata - black sedge	G5?	S1/NA			X							MW	
Carex barrattii - Barratt's sedge	G3	S1S2/NA		3C						X		SP	4
Carex buxbaumii - brown bog sedge	G5	S2/S2			X							WL SP	
Carex conoidea - field sedge	G4	S1S2/S1			X							WL	
Carex eburnea - ebony sedge	G5	S4/S3S4			X							RO	
Carex hirtifolia - pubescent sedge	G5	S2/S1?						X				MW	4
Carex hitchcockiana - Hitchcock's sedge	G5	S2/S?			X							DW MW	
Carex interior - inland sedge	G5	S1/S4							X			WL	9
Carex leptonervia - finely-nerved sedge	G4	S2/S1									X	MW	21
Carex ormostachya - stiff broad-leaved sedge	G5	S1/NA			X							MT MW	
Carex pedunculata - longstalk sedge	G5	S2/S1			X							DW	
Carex polymorpha - variable sedge	G2	S2/S1	E	C2			X	X		X		MT DW	4
Carex tetanica - ridgid sedge	G4G5	S2/S1?			X							WL	
Carex trisperma - three seeded sedge	G5	S2/S4					X				X	WL	4,21
Carex vesicaria - inflated sedge	G5	S1S2/S1									X	WL	4
Cheilanthes castanea - chestnut lipfern	G3G4	S2/S1					X		X			SB	4
Cinna latifolia - slender wood reed-grass	G5	S2/S4							X		X	MT MW	4
Clematis albicoma - whitehaired leatherflower	G4	S2/S3S4		3C		X		X			X	SB	4

*Likely To Occur

VASCULAR PLANTS

SCIENTIFIC NAME - COMMON NAME	RANK· GLOBAL	RANK. VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT. AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Clematis coactilis - Va whitehaired leatherflower	G3	S2S3/NA						X				SB RO	4
Clematis verticillaris - purple virgin's bower	G4G5	S3/S1			X							MT MW	
Clematis viticaulis - grape-stem leatherflower	G2	S2/NA		C2		X	X	X	X		X	SB	4
Coreopsis verticillata - whorled tickseed	G5	S4/S2			X							DW	
Cornus canadensis - bunchberry	G5	S1/S3					X					MT MW	4
Cornus obliqua - silky dogwood	G5?	S1/S4					X					WL RI	9
Cornus rugosa - roundleaf dogwood	G5	S2/S1							X			MW	9
Crategus pruinosa - prunose hawthorn	G5	S1/SU			X							DW RO	
Cyperus dentatus - toothed sedge	G4	S1/NA								X		SP WL	4
Cypripedium reginae - showy lady's slipper	G4	S1/S1							X			WL	4
Desmodium sessilifolium - sessile tick-trefoil	G5	S2/NA			X							DW	
Diarrhena americana - American beakgrain	G5	S2S3/SU									X	RO DW	8
Eleocharis elliptica - slender spikerush	G5	S1S2/NA			X							WL	
Eleocharis melanocarpa - black-fruited spikerush	G4	S2/NA								X		SP	4
Eleocharis robbinsii - Robbins spikerush	G4G5	S1/NA								X		SP	4
Eleocharis smallii - creeping spikerush	G5?	S1S2/S4			X							WL	

*Likely To Occur

VASCULAR PLANTS

SCIENTIFIC NAME - COMMON NAME	RANK: GLOBAL	RANK VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT. AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Epilobium leptophyllum - linear-leaf willow-herb	G5	S2/S4			X							WL	
Equisetum sylvaticum - woodland horsetail	G5	S1/S1							X			WL	4
Eriocaulon septangulare - white buttons	G5	S1/NA								X		SP	4
Erysimum capitatum - western wallflower	G5	S1/NA									X	SB DW	8
Euphorbia purpurea - glade spurge	G2	S2/S2		C2	X							MW	
Galium boreale - northern bedstraw	G5	S2S3/S4									X	DW RO	4
Gaylussacia brachycera - box huckleberry	G2	S1S2/S2		3C					X		X	DW	4
Geranium robertianum - herb-robert	G5	S1/S4?			X							MW	
Geum aleppicum - yellow avens	G5	SH/S1			X							WL	
Glycera acutiflora - sharp scaled manna-grass	G5	S3/S1			X							WL	
Gnaphalium uliginosum - low cudweed	G5	S1/NA					X					DW	
Gylcera grandis - reed meadow-grass	G5	S1/S1									X	WL	21
Habenaria fimbriata - large purple-fringe orchid	G5	S1/S4			X							MW WL	
Habenaria viridis var *bracteata* - long-bracted green orchid	G5T5	S4/S2			X							WL RI	
Helenium virginicum - Virginia sneezeweed	G2	S2/NA	E	C1						X		SP	4
Helianthemum bicknellii - plains frostweed	G5	S1/S1			X							DW RO	

*Likely To Occur

VASCULAR PLANTS

SCIENTIFIC NAME - COMMON NAME	RANK: GLOBAL	RANK: VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT. AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Helianthemum propinquum - low frostweed	G5	S1/NA			X							DW RO	
Helianthus laevigatus - smooth sunflower	G3G4	S3/S2			X							SB DW	
Helonias bullata - swamp pink	G2	S2/NA	E	T						X		WL	4,8,18
Heuchera alba - white-flowered heuchera	G2Q	S2?/S2				X	X	X	X	X	X	MT MW	4
Hexalectris spicata - crested coral-root	G3G4	S3/S1			X							DW RO	
Hieracium traillii - Maryland hawk-weed	G4?	S2S3/S4				X	X	X	X		X	SB DW	4
Iliamna remota - Kankakee globe-mallow	G5	S1/NA			X							RI	
Iris versicolor - blueflag	G5	S2/NA			X							WL	
Isoetes lacustris - lake quillwort	G5	S1?/NA							X			RI	18
Isoetes virginica - Virginia quillwort	G1G2Q	S1?/NA		C2	X							SP	
Juglans cinerea - butternut	G5	S3?/NA		C2		X	X	X	X	X	X	DW MW	Stds
Juniperus communis - ground juniper	G5	S1/S?					X					DW RO	4
Lachnanthes caroliana - Carolina redroot	G4	SH/NA			X							SP WL	
Linum lewisii - prairie flax	G4G5	NA/S2					X					GL	4
Linum sulcatum - grooved yellowflax	G5	S2/S1			X							DW GL	
Liparis loeselii - fen orchid	G5	S2/S2					X		X			WL	4
Lonicera canadensis - American fly-honeysuckle	G5	S2/S3S4									X	MT MW	21

*Likely To Occur

VASCULAR PLANTS

SCIENTIFIC NAME - COMMON NAME	RANK. GLOBAL	RANK. VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Lycopodium inundatum - northern bog clubmoss	G5	S1/S3S4								X		WL	4
Lycopodium selago - fir clubmoss	G5	S2/NA			X							MT RO	
Lysimachia radicans - trailing loosestrife	G4G5	S1/NA								X		WL MW	4
Lythrum alatum - winged-loosestrife	G5	S2/S1			X							WL	
Melica nitens - tall melic grass	G5	S1/S1							X			SB DW	4
Milium effusum - tall millet-grass	G5	S1/S4				X	X	X	X		X	MT MW	4,21
Muhlenbergia glomerata - marsh muhly	G5	S2/NA			X							WL	
Oenothera argillicola - shale barren evening primrose	G3	S3/S3				X	X	X	X		X	SB	4
Oryzopsis asperifolia - rough-leaved ricegrass	G5	S1/S1					X					DW	4
Oryzopsis racemosa - mountain ricegrass	G5	S4/S1			X							DW	
Panax quinquefolius - American ginseng	G4	S4/S4	T	3C		X	X	X	X	X	X	MW	Stds
Panicum hemitomon - maidencane	G5?	S1/NA								X		SP	4
Panicum xanthophysum - a panic grass	G5	NA/SH			X							GL DW	
Paronychia argyrocoma - silvery nailwort	G4	S3/S3				X	X	X	X	X	X	SB RO	4
Paronychia virginica var *virginica* - yellow nailwort	G4T1Q	S2/S1		C2	X							SB RO	
Paxistima canbyi - Canby's mountain-lover	G2	S2/S2		C2					X			RO	10
Phlox buckleyi - swordleaf phlox	G2G3	S2/S1		3C		X	X	X	X		X	SB DW	4
Picea rubens - red spruce	G5	S3S4/S4S5					X				X	MW	4,21

VASCULAR PLANTS

SCIENTIFIC NAME - COMMON NAME	RANK: GLOBAL	RANK. VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT. AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Pieris floribunda - mountain fetterbush	G4	S4/S2				X	X	X		X	X	MT DW	4
Poa languida - drooping bluegrass	G3G4	S2/NA				X	X					MT DW	4
Poa paludigena - bog bluegrass	G3	S2/NA		C2	X							WL	
Poa palaustris - fowl bluegrass	G5	S1S2/S4			X							WL	
Poa saltuensis - a bluegrass	G5?	S1/S2S3				X						DW	4
Poa wolfii - wolf bluegrass	G3G4	S1/NA			X							MW	
Potamogeton oakesianus - Oakes' pondweed	G4	S1/NA								X		SP	4
Potamogeton tennesseensis - Tennessee pondweed	G3	S1/S3?					X					MP	4
Potentilla tridentata - three-toothed cinquefoil	G5	S2/S2			X							MT RO	
Prunus alleghenensis - Allegheny sloe	G3	S2S3/S2S3		3C				X		X	X	SB DW	4
Prunus nigra - Canada plum	G4G5	S1/NA			X							MW RI	
Pyrola chlorantha - green flowered wintergreen	G5	SH/NA			X							DW	
Pyrola elliptica - elliptical shineleaf	G5	S2/S3S4			X							DW	
Quercus macrocarpa - bur oak	G5	S1/S3S4			X							RI WL	
Querus prinoides - dwarf chinquapin oak	G5	S2/S?			X							DW	
Ranunculus trichophyllus - whitewater crowfoot	G5?	S1/SH							X			RI	18

*Likely To Occur

VASCULAR PLANTS

SCIENTIFIC NAME - COMMON NAME	RANK GLOBAL	RANK. VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT. AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Ribes lacustre - bristly black currant	G5	S1/S1					X					RI MW	18
Rosa setigera - prairie rose	G5	S1/S4			X							RI RO	
Rubus idaeus - common red raspberry	G5	S2/NA			X							MT	
Saagittaria rigida - sessile-fruited arrowhead	G5	S1/S2			X							SP WL	
Saxifraga pensylvanica - swamp saxifrage	G5	S3/S2			X							WL	
Schizachne purpurascens - purple oat-grass	G5	S1/S1									X	MW	21
Scirpus ancistrochaetus - northeastern bulrush	G1	S1/S1	E	E			X	X				MP	4
Scirpus subterminalis - water bullrush	G4G5	S1/NA								X		MP	4
Scirpus torreyi - Torrey bullrush	G5?	S1/S?								X		SP	4
Scutellaria ovata - var *pseudoarguta* - heart leaved skullcap	G5T1Q	S?/S1Q			X							DW SB	
Scutellaria parvula var *parvula* - small skullcap	G4T?	S2/NA			X							SB	
Sida hermaphrodita - Virginia mallow	G3	S1/S3		3C	X							RI	
Smilacina stellata - false starflower	G5	S2/S1							X			RI	10
Solidago randii - Randy's goldenrod	G2G4	S2/SH			X							MT RO	
Solidago harrisii - shale barren goldenrod	G3Q	S3S4/S3S4				X	X	X	X		X	SB	4
Solidago rupestris - rock goldenrod	G2?Q	S1/NA							X			RI RO	10
Solidago uliginosa - bog goldenrod	G4G5	S2/S4									X	WL	21
Sparganium chlorocarpum - narrow-leaft burreed	G5	S1/S3S4			X							WL SP	
Spartina pectinata - fresh water cordgrass	G5	S2/S4			X							WL RI	

VASCULAR PLANTS

SCIENTIFIC NAME - COMMON NAME	RANK. GLOBAL	RANK· VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT. AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Spiranthes ochroleuca - yellow nodding ladies tresses	G4	S2/NA					X					MW	4
Sporobolus neglectus - small dropseed	G5	S2/NA			X							DW RO	
Trichostema setaceum - narrow-leaved blue curls	G5	S2/S1			X							DW SB	
Trifolium virginicum - Kate's mountain clover	G2G3	S3/S2S3		3C		X	X	X	X		X	SB	4
Trillium pusillum var. *monticulum* - mountain leas trillium	G3T1?	S2/S1		C2		X	X					MT DW	4
Triphora trianthophora - nodding pogonia	G4	S1/S3S4			X							MW	
Vaccinum macrocarpon - large cranberry	G4	S2/S3								X		WL	4
Vaccinium myrtilloides - velvetleaf blueberry	G5	S2/S4			X							MT RO	
Veronica scutellata - marsh-speedwell	G5	S2/S1			X							WL RI	
Viburnum lentago - nannyberry	G5	S1/NA								X		WL	4
Viola walteri - prostrate blue violet	G4G5	S2/NA			X							DW RO	
Woodwardia virginica - Virginia chain-fern	G5	S5/NA								X		SP	4
Xerophyllum asphodeloides - turkey beard	G3	S3/S1				X	X	X	X	X	X	DW	4
Zanthoxylum americanum - northern prickley ash	G5	S2S3/S4				X						SB DW	4
Zigadenus elegans ssp *glaucus* - white camass	G5T4?	S2/S?			X							RO DW	

*Likely To Occur

ANIMALS

INSECTS, MILLIPEDES AND CRUSTACEANS

SCIENTIFIC NAME - COMMON NAME	RANK. GLOBAL	RANK· VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Aeshna mutata - sapphire darter	G3G4	S1/SU			X							WL RI	
Bolona selene myrina - silver bordered fritillary	G5T5	SU/SU									X	WL	4
Calephelis borealis - northern metalmark butterfly	G3G4	S3/S3				X	X	X	X		X	SB DW	4
Catocala pretiosa pretiosa - precious underwing moth	G4	SH/NA		C2	X							DW	
Colias interior - pink-edged sulphur	G5	S1/S3			X							DW	
Erynnis persius - Persius dusky wing skipper	G4	SU/SU			X							MW WL	
Erythroecia hebardi - Hebard's noctuid moth	GU	SH/NA		C2	X							MW GL	
Euchlaena milner - looper moth	GU	SH/NA		C2	X							MW	
Euchloe olympia - grizzled skipper	G3	S3/S4				X	X	X	X		X	SB DW	4
Euphyes bimaculata - two-spotted skipper	G4	S2/SU			X							WL	
Gomphus viridifrons - blue faced clubtail	G2G3	S1/SU			X							WL RI	
Hydraena maureenae - Maureen's minute moss beetle	G1G3	S1S3/SU		C2	X							RI WL	
Incisalia polios - hoary elfin butterfly	G5	S1/S1				X	X	X	X		X	SB DW	4
Lanthus parvulus - speckled trout clubtail	G3G4	S1/SU			X							WL RI	
Lestes eunnus - amber-wing spreadwing damselfly	G1	S2/SU						X				MP	4

*Likely To Occur

ANIMALS

INSECTS, MILLIPEDES AND CRUSTACEANS

SCIENTIFIC NAME - COMMON NAME	RANK. *GLOBAL*	RANK *VANHP/* WVNHP	STATUS *STATE/* FEDERAL		*KNOWN OCCURRENCES BY* DISTRICT LOCATION(S)							HABITAT	MGMT AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Nannaria shenandoeasis - Shenandoah Mountain millipede	G1	S1/SU					X					MT MW	4
Phyciodes batesii - tawny cresent butterfly	G3G4	SH/S1		C2	X							DW	
Phyciodes pascoensis - northern pearly crescent	G5	S1/S3									X	SB RI	4
Pseudanophthalmus avernus - Avernus cave beetle	G1	S1/NA		C2	X							CV	
Pyrgus wyandot - grizzly skipper	G3Q	S3/S1			X							SB DW	
Spyeria diana - Diana	G3	S3/S2			X							MW RI	
Spyeria idalia - regal fritillary	G3	SH/S1		C2	X							OF	
Stygobromus morrisoni - Morrison's cave amphipod	G3	S1S2/S1	SC	C2	X							CV	
Stygobromus mundus - Bath County cave amphipod	G2	S1S2/S?	SC	C2	X							CV	
Synanthedon castaneae - chestnut clearwing moth	GH	SX/SX		C2	X							MW DW	
Pseudanophthalmus intersectus - x-roads cave beetle	G1	S1/NA		C2	X							CV	
Pseudanophthalmus limicola - mud cave beetle	G1	S1/NA		C2	X							CV	
Pseudanophthalmus nelsoni - Nelson's cave beetle	G1	S1/NA		C2	X							CV	
Pseudanophthalmus petrunkevitchi - Petrunkevitchi's cave beetle	G1	S1/NA		C2	X							CV	

*Likely To Occur

MOLLUSKS (MUSSELS AND SNAILS)

SCIENTIFIC NAME - COMMON NAME	RANK GLOBAL	RANK VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT. AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Alasmidonta varicosa - brook floater	G3	S1/S2S3	E	C2				X				AQ	18
Elliptio lanceolata - yellow lance	G4	S2S3/NA	SC	C2				X				AQ	18
Fusconaia masoni - Atlantic pigtoe	G2	S2/NA	T	C2				X				AQ	18
Heliodiscus diadema - shaggy coil snail	G1	S1/NA	E	C2	X							RO	
Lampsilis carosa - yellow lampmussel	G4	S2/S?	SC	C2				X	X			AQ	18
Lasmigona subviridis - green floater	G4	S2/S1	SC	C2				X	X			AQ	18
Pleurobema collina - James spinymussel	G1	S1/NA	E	E				X				AQ	18

FISH

SCIENTIFIC NAME - COMMON NAME	RANK GLOBAL	RANK VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Cottus girardi - Potomac sculpin	G4	S3/S2	SC				X		X			AQ	18
Notropis semperasper - roughhead shiner	G3	S3/NA	SC			X		X			X	AQ	18
Noturus gilberti - orangefin madtom	G2	S1/NA	T	C2				X				AQ	18

*Likely To Occur

AMPHIBIANS

SCIENTIFIC NAME - COMMON NAME	RANK· GLOBAL	RANK VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Ambystoma tigrinum tigrinum - eastern tiger salamander	G5T?	S1/NA	E							X		SP	4
Plethodon punctatus - Cow Knob salamander	G3	S2/S1	SC	C2			X					MW	4

REPTILES

SCIENTIFIC NAME - COMMON NAME	RANK GLOBAL	RANK· VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Clemmys guttata - spotted turtle	G5	S4/S1								X		SP WL	4
Clemmys insculpta - wood turtle	G5	S2/S3	T				X		X			WL RI	4,18
Eumeces anthracinus - coal skink	G5	S2/S2					X					SB DW	15
Opheodrys vernalis vernalis - smooth green snake	G5T?	S3/S4					X				X	MT GL	4
Pituophis melanoleucus melanoleucus - northern pine snake	G5T?	SU/SU	SC	C2					X	X		DW	4
Virginia valeriae pulchra - mountain earth snake	G5T?	SU/S3	SC		X							MW WL	

*Likely To Occur

BIRDS[1]

SCIENTIFIC NAME - COMMON NAME	RANK: GLOBAL	RANK: VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Accipiter cooperii - Cooper's hawk	G4	S1S2/S4				X	X	X	X	X	X	MW DW	4,8,9,21
Accipiter striatus - sharp-shinned hawk	G5	S3/S4				X	X	X	X	X	X	MW DW	4,8,9,21
Aegolius acadius - northern saw-whet owl	G5	S1/S1?	SC								X	MW	21
Aquila chrysaetos - golden eagle	G4	SH/SU							X			RO	9
Ammodramus henslowii - Henslow's sparrow	G4	S1/SH	T	C2	X							WL GL	
Carpodacus purpurpeus - purple finch	G5	S1/S4	SC								X	MW	21
Catharus guttatus - hermit thrush	G5	S1/S3S4	SC								X	MW	21
Contopus borealis - olive-sided flycatcher	G5	SH/S1									X	MW	21
Dendroica cerulea - cerulean warbler	G4	S?/SH	SC	C2							X	MW	4
Dendroica fusca - blackburnian warbler	G5	S2/S4					X				X	MW	4,21
Dendroica magnolia - magnolia warbler	G5	S2/S4	SC				X				X	MW	4,21
Empidonax alnorum - alder flycatcher	G5	S2/S3	SC								X	MW	4,21
Falco peregrinus - peregrine falcon	G3	S1/S1	E	E		X	X		X	X		RO	4,6,21
Haliaeetus leucocephalus - bald eagle	G3	S2S3/S1	E	E							X	RI	18
Lanius ludovicianus migrans - loggerhead shrike	G4T2	S2/S1	E	C2	X							GL OF	
Loxia curvirostra - red crossbill	G5	S1/S1	SC			X	X				X	MW	4,21

*Likely To Occur

BIRDS[1]

SCIENTIFIC NAME - COMMON NAME	RANK: GLOBAL	RANK. VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Melospiza georgiana - swamp sparrow	G5	S1/S4									X	WL	21
Oporornis philadelphia - mourning warbler	G5	S1/S3	SC								X	WL MW	4,21
Resulus satrapa - golden-crowned kinglet	G5	S2/S4	SC				X				X	MW	4,21
Seiurus noveboracensis - northern waterthrush	G5	S1/S4									X	WL RI	21
Sitta canadensis - red-breasted nuthatch	G5	S2/S4	SC				X				X	MW	4,21
Sphyrapicus varius - yellow-bellied sapsucker	G5	S1/S1S2									X	MW	4,21
Thryomanes bewickii altus - Appalachian Bewick's wren	G5T?	S1/S1	E	C2	X							OF	
Vermivora ruficapilla - Nashville warbler	G5	S1/S1									X	MW WL	4

[1] Species with known or likely nesting sites on Forest

*Likely To Occur

MAMMALS

SCIENTIFIC NAME - COMMON NAME	RANK: GLOBAL	RANK VANHP/ WVNHP	STATUS STATE/ FEDERAL		KNOWN OCCURRENCES BY DISTRICT LOCATION(S)							HABITAT	MGMT. AREAS
			VA	FED	LTO*	DF	DR	JR	LE	PD	WS		
Condylura cristata cristata - star nosed mole	G5T5	S3/S4	SC	3C	X							GL WL	
Felis concolor couguar - eastern cougar	G4TH	SX/SX	E	E	X							All habitats except aquatic	
Glaucomys sabrinus fuscus - Va. n flying squirrel	G5T2	S1/S2	E	E							X	MW	21
Lepus americanus - snowshoe hare	G5	S1/S4	E								X	MW	21
Lutra canadensis lataxina - river otter	G5T4	S4/SH	SC					X				RI	18
Martes pennanti - fisher	G5	S1/S3									X	MW	21
Microsorex hoyi winnemana - southern pigmy shrew	G5T5	SU/S2S3	SC	3C			X					MW DW	4
Microtus chrotorrhinus carolinensis - southern rock vole	G5T3	S1/S3	E	C2							X	MW	4
Myotis keenii - Keen's long-eared bat	G4	S3/S2					X		X	X	X	CV	Stds
Myotis subulatus leibii - eastern small-footed bat	G3T3	S1/S2S3	SC	C2			X					CV	4,Stds
Myotis sodalis - Indiana bat	G2	S1/S1	E	E							X	CV	4,Stds
Neotoma floridana magister - eastern woodrat	G5T3	S3/S4	SC	C2		X	X	X	X	X	X	RO CV	4,Stds
Plecotus townsendii virginianus - Va big-eared bat	G5T2	S1/S2	E	E	X							CV	
Sorex dispar - long-tailed shrew	G4	S3/S2S3	SC	C2			X					RO RW	4
Sorex palustris punctulatus - southern water shrew	G5T3	S1/S2	E	C2							X	MT WL	18 (4,21)
Sylvilagus transitionalis - New England cottontail	G4	S4/S3	SC	C2		X	X	X		X	X	MT GL	4,9

DEFINITIONS OF ABBREVIATIONS USED

RANGER DISTRICTS
DF = DEERFIELD
DR = DRY RIVER
JR = JAMES RIVER
LE = LEE
PD = PEDLAR
WS = WARM SPRINGS

VANHP/WVNHP = VIRGINIA/WEST VIRGINIA NATURAL HERITAGE PROGRAM RANKINGS G = GLOBAL RANKING, AND S = STATE RANKING.
G1 = EXTREMELY RARE THROUGHOUT ENTIRE RANGE OF SPECIES (OCCURRENCES 1-5)
S1 = EXTREMELY RARE THROUGHOUT THE STATE (OCCURRENCES 1-5)
G2 = VERY RARE THROUGHOUT ENTIRE RANGE OF SPECIES (OCCURRENCES 6-20)
S2 = VERY RARE THROUGHOUT THE STATE (OCCURRENCES 6-20)
G3 = RARE OR UNCOMMON THROUGHOUT THE ENTIRE RANGE OF SPECIES (OCCURRENCES 21-100)
S3 = RARE OR UNCOMMON IN THE STATE (OCCURRENCES 21-100)
G4 = COMMON AND APPARENTLY SECURE THROUGHOUT RANGE
S4 = COMMON AND APPARENTLY SECURE THROUGHOUT STATE
G5 = VERY COMMON AND DEMONSTRABLY SECURE THROUGHOUT RANGE
S5 = VERY COMMON AND DEMONSTRABLY SECURE THROUGHOUT STATE
GX = BELIEVED EXTINCT WITH NO LIKELIHOOD OF REDISCOVERY
SX = BELIEVED EXTRIPATED FROM STATE
GH = HISTORICALLY KNOWN GLOBALLY, NOT RECENTLY VERIFIED (WITHIN PAST 15 YEARS)
SH = HISTORICALLY KNOWN FROM STATE, NOT RECENTLY VERIFIED (WITHIN PAST 15 YEARS)
GU = POSSIBLY RARE, STATUS UNCERTAIN, MORE DATA NEEDED
SU = POSSIBLY RARE, STATUS UNCERTAIN, MORE DATA NEEDED
Q = TAXANOMIC QUESTION
T = SIGNIFIES THE RANK OF A SUBSPECIES OR VARIETY
? = RANK UNCERTAIN
NA = NOT KNOWN TO OCCUR IN STATE

STATE STATUS (LEGAL)
E = LISTED ENDANGERED IN VIRGINIA
T = LISTED THREATENED IN VIRGINIA
SC = SPECIAL CONCERN IN VIRGINIA

FEDERAL STATUS (LEGAL)
C1 = CATEGORY 1 = CANDIDATE FOR LISTING AS THREATENED OR ENDANGERED BY THE USFWS-(ENOUGH INFORMATION AVAILABLE TO LIST AS T OR E)
C2 = CATEGORY 2 = CANDIDATE FOR LISTING AS THREATENED OR ENDANGERED BY THE USFWS-(SEEKING MORE INFORMATION ON THE SPECIES)
3C = FORMER CANDIDATE, BUT MORE COMMON THAN ORIGINALLY THOUGHT
E = LISTED ENDANGERED
T = LISTED THREATENED
PE = PROPOSED ENDANGERED
PT = PROPOSED THREATENED

HABITAT ABBREVIATIONS

AQ = AQUATIC
CV = CAVE

DW = DRY WOODLANDS

GL = GRASSLANDS (INCLUDES PRAIRIE-LIKE OPENINGS AND GLADES)
MP = MOUNTAIN PONDS

MT = MOUNTAIN TOP, HIGH ELEVATION AREAS
MW = MESIC WOODLANDS

OF = OLD FIELD, SHRUBBY VEGETATION

RI = RIPARIAN AREAS

RO = ROCK OUTCROPS (ACIDIC & CALCAREOUS)

SB = SHALE BARRENS
SP = SEASONALLY DRY SINKHOLE PONDS
WL = WETLANDS (INCLUDES: BOGS, SEEPS, WET MEADOWS)

LEGALITIES OF RANKINGS

Global and state rankings (G/S) of the Natural Heritage Programs have no direct ties to a specific law governing the management of national forests.
However, it is an extremely effective method of tracking rare species, and these rankings are often the basis for listing a species as SENSITIVE.

SENSITIVE is a listing assigned by the Regional Forester that affords protection to a species on the national forest where listed.
The Forest goal is to protect and/or improve habitat for the species to ensure that it does not become Threatened or Endangered.

THREATENED/ENDANGERED (listing by state) affords legal state protection to a species.

THREATENED/ENDANGERED (listing by USFWS) affords legal federal protection to a species.

LAWS, POLICIES, AND PROPER PROCEDURES ARE DETAILED IN FSM 2670