

CHAPTER 3 – STRATEGY

LAND ALLOCATION STRATEGY

The 1982 planning regulations guiding implementation of the National Forest Management Act call for lands and waters to be assigned to “management areas” (36 CFR 219.11). Management Prescription Areas are areas within a national forest having common desired conditions, suitable uses, management objectives, and design criteria (standards). Taken together, these attributes constitute the “prescription” for a management area. Where possible, Management Prescription Areas are shown on the Forest Plan map. The desired conditions and standards that apply to each Management Prescription Area are described in Chapter 4. In some cases, the same area of land could be allocated one of several Management Prescriptions, such as a Special Biological Area occurring within a Designated Wilderness. The Management Prescription that has the most stringent management requirements is the one allocated to the area, while recognizing that inventory information may show multiple resources present in one place. Therefore, the acreage of a Special Biological Area within a Designated Wilderness would be accounted for in the acreage for Designated Wilderness and not Special Biological Areas in the table below.

Table 3.1 Land Allocation of Management Prescription Areas

Code	Management Prescription Area Description	Acres	% of Forest
1A	Designated Wilderness	43,000	4%
1B	Recommended Wilderness Study Area	20,000	2%
2C2	Eligible Wild and Scenic River-Scenic	4,000	0%
2C3	Eligible Wild and Scenic River-Recreation	4,000	0%
4A	Appalachian Trail Corridor	8,000	1%
4B1	Research Natural Area	2,000	0%
4C1	Geologic Area	4,000	0%
4D	Special Biological Area	52,000	5%
4D1	Key Natural Heritage Community Area	3,000	0%
4F	Mount Pleasant National Scenic Area	8,000	1%
5B	Communication Site	<100	0%
5C	Utility Corridor	7,000	1%
7A1	Scenic Byway	5,000	0%
7B	Scenic Corridors and Viewsheds	35,000	3%
7C	ATV Use Area	10,000	1%
7D	Concentrated Recreation Area	700	0%
7E	Dispersed Recreation Area	30,000	2%
7F	Blue Ridge Parkway	4,000	0%
7G	Pastoral Landscape	4,000	0%
8E4a	Indiana Bat-Primary Conservation Area	2,000	0%
8E4b	Indiana Bat-Secondary Conservation Area	14,000	1%
8E7	Shenandoah Mtn Crest-Cow Knob Salamander	47,000	4%
12D	Remote Backcountry	252,000	24%
13	Mosaics of Habitat	507,000	48%

MANAGEMENT APPROACH AND OBJECTIVES

The Management Approach is a summary of management practices that will be used to move the Forest towards the desired conditions identified in Chapter 2. The management approach is not a required section of the plan and is not binding but it provides a framework to describe the measures expected to be used within our current and expected levels of funding, staffing and partnerships opportunities.

Objectives identify the measure projected to be implemented to move the Forest toward the desired conditions. These objectives are strongly influenced by recent trends, past experiences, current staffing levels, and anticipated near-term budgets. They express what we believe can realistically be achieved over the next 15-year planning period for this Plan.

Objectives (36 CFR 219.3): A concise, time-specific statement of measurable planned results that respond to pre-established goals. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving identified goals.

Watershed Resources (Water, Soil, Air, and Geology)

Management Approach

The achievement of desired conditions for healthy watersheds is a combination of maintaining, restoring, and monitoring the soil, water, air and geologic resources on the GWNF. Much of the impacts to water resources are due to activities upstream or downstream from the areas managed by the Forest Service. Groundwater and air quality issues also cross national forest boundaries and are affected by multiple region-wide impacts such as increased agricultural use, growing urban development, cumulative effects from regional emissions and discharge sources, and slow recovery from past actions. Therefore, our strategy is to focus on sustaining and improving watershed areas within national forest control while working cooperatively with other agencies and landowners to improve statewide watershed health.

Producing favorable flows of water was one of the purposes of the Weeks Act when it was passed in 1911 to allow the purchase of lands to become National Forests. At the 100th anniversary of this Act, the Forest continues to emphasize protection of water quality and quantity to meet the needs of Forest resources and of downstream water users. The management approach begins with protection of the aquatic systems and adjacent terrestrial lands, the floodplains and riparian areas with a management prescription area that incorporates all of the protections of the Mussel and Fish Conservation plan currently used only within the 6th level HUC's containing Threatened and Endangered aquatic species. Watershed management continues with the identification of priority watersheds, which highlight those watersheds with sensitive aquatic species, currently identified water quality concerns due to private land or natural causes (impaired streams), and watersheds providing drinking water. The list of priority watersheds may change over time as new sensitive species are identified or as water quality concerns are abated. The current list is in Appendix D.

These priority watersheds will be a priority for inventorying soil and water improvement needs, restoring streams and streamside systems to fully functioning systems, restoring habitat for sensitive aquatic and riparian species, addressing opportunities to reduce impacts from roads through relocation or decommissioning, and evaluating any new proposals for special uses that could affect water quality. Protecting these watersheds is a cooperative effort, so proposed actions in these watersheds will be closely coordinated with partners such as State agencies and local communities dependent upon the water.

Management of healthy forests to make them more resilient to impacts from climate change, increased development and other disturbances is another key to watershed management. Desired conditions and objectives for the ecological systems will also enhance watershed conditions. The Forest will continue to work cooperatively with other agencies, groups and individuals to strengthen actions to protect and highlight water quality on the forest and on adjacent lands. These cooperative actions will highlight drinking water watersheds and management of the Chesapeake Bay watershed. Many of the standards developed for

management prescription areas were developed to ensure that management activities that occur outside the riparian areas are also designed and implemented to protect water quality. Road management decisions regarding maintenance levels, seasonal closings, decommissioning and construction will all be done after careful consideration of potential impacts to water quality. Water monitoring will continue to be implemented to assure that streams are maintained in a condition to support the diverse aquatic communities in the Forest streams.

Soil productivity on the Forest can be affected by activities that disturb the soil surface such as vegetation management projects, fire management, and use of trails and roads. Each national forest has distinct soil characteristics that must be managed appropriately to avoid erosion, compaction, rutting, and drainage issues. Our management strategy for protecting soil condition is to use Virginia and West Virginia Best Management Practices (BMPs) and match national forest activities with specific soil types and topography to minimize erosion. Use of riparian standards to protect wetland communities and perennial, intermittent and channeled ephemeral streams, restrictions on mechanical equipment operation, installation of water diversions, and careful designing and engineering of roads and firelines are just a few of the BMPs that are used during ground disturbing activities on the GWNF.

Soils that have been affected by acid deposition and those identified as having a high potential for impacts will be managed to ensure that any planned activities will not affect the long term productivity of the land. Whole tree harvesting should not be done on soils identified as high risk for soil acidification and nutrient depletion due to atmospheric deposition. The location of a potential project in relation to soils that have been affected by acid deposition and the need to mitigate any nutrient loss from the proposed activities will be evaluated any time whole tree harvesting is considered as an activity.

On the GWNF, prescribed burning is the management activity most likely to contribute to air emissions. The prescribed burning levels associated with returning the Forest to more historic fire conditions will require an increase in forest-wide prescribed burn acreages from recent years. This increase in prescribed burning was anticipated and the Forest worked with Virginia Department of Environmental Quality (VDEQ) and other state air agencies to incorporate these increases into the emissions inventory used by VDEQ for Regional Haze and Ozone State Implementation Plans. Air modeling analyses projected out to 2018 show that even with the increase in prescribed fire emissions on the Forest, the State should be able to attain National Ambient Air Quality Standards (NAAQS) and show reasonable progress in visibility improvement. It is the intent of the Forest to maintain a working relationship with VDEQ to ensure that emissions from Forest activities continue to be appropriately incorporated into future emissions inventories. Smoke management procedures will continue to be integrated into our fire management activities to improve regional air quality.

The Forest will continue to participate with state agencies and the EPA in evaluating new air pollution permits and procedures to address existing air pollution with the intent of continuing to show improvement in visibility and to restore resources adversely affected by acid deposition.

Major geologic resources, such as known caves, are managed as separate management prescription areas (4C1) designed to protect these sensitive resources. As geologic hazards are identified, site specific plans are prepared to address the hazard. Karst areas and caves are protected with standards and guidelines. Special Uses permits, land adjustments, and applications for permits to drill for gas and other management activities that could affect groundwater resources are evaluated for their potential to affect groundwater quality. Design of management activities are based on recognition of lithologic diversity and other geologic diversity that are the foundation of, and requirement for, biologic diversity. Lithology and other geologic components are incorporated into assessments and management responses to acid precipitation and climate change. For Forest Service projects, use of mineral material sources on the Forest will be considered to reduce costs and reduce the carbon footprint of using off-Forest sources.

Planning for all Forest projects and resource management plans and activities (including grants and agreements, special uses, and interagency agreements) should determine: 1) whether the affected lands are subject to reserved or outstanding mineral rights; and 2) if so, whether these private mineral rights may affect or be affected by the proposed action.

Objectives for Watershed Resources

OBJ WTR-1: To provide appropriate instream habitat, aquatic organism passage, water quality, riparian habitat, or healthy biological communities for desired aquatic species, 250-350 miles of streams per decade are restored, sustained or enhanced.

OBJ WTR-2: To provide appropriate lake habitat, aquatic organism passage, water quality, riparian habitat, or healthy biological communities for desired aquatic species, 250-350 acres of lakes per decade are restored, sustained or enhanced.

OBJ WTR-3: Streambanks are managed in a manner that restores and maintains amounts of Large Woody Debris (LWD) sufficient to maintain habitat diversity for aquatic and riparian-dependent species (approximately 200 pieces¹ per stream mile).

OBJ WTR-4: Watersheds are managed in a manner that results in sedimentation rates that stabilize or improve the biological condition category of the stream as monitored using aquatic macroinvertebrates.

OBJ WTR-5: Improve watershed and soil conditions across 450-550 acres per decade. Priority for treatment will be given to watersheds listed as Priority Watersheds and areas identified in the Watershed Improvement Needs inventory.

Ecological Systems Diversity

Management Approach

The main strategy for moving toward desired conditions for ecosystem diversity is to manage vegetation structure and composition to support healthy, functioning ecological systems. However, for the rare communities the main strategy involves establishment of Special Biological Areas where the primary goal is to restore and maintain the rare community. Implementation strategies will be developed for some Special Biological Areas to identify any needed management actions and monitoring. Most of the ecological systems are represented on the landscape where they would be expected. The GW Forest, for the most part, does not have major ecotypes that were converted to other forest types from previous activities. Forest vegetation structure and composition of the understory, however, are often key features in need of restoration. Part of the vision of this Plan is to create open woodland settings and forest structures to support native plant and animal species by mimicking disturbances within the natural range of variability. Management is directed at developing landscapes that represent typical disturbance regimes for each ecological system. For instance, restoration of historic fire regimes, including appropriate return intervals, seasonality, and intensity, is inherent to sustaining native ecological systems such as Pine Forests and Woodlands. While it may take many decades to completely achieve these ecosystem conditions, actions initiated during the next 15 years covered by this Plan will set the stage for continued progress.

The Spruce Forest system is limited to the Laurel Fork area. This system occupies about one-half of the area where it likely has the potential to exist. While the system is very limited on the GWNF, in adjacent West Virginia and on the Monongahela National Forest, it is more extensive. The greatest stresses and threats to this system include climate change and acid deposition. Strategies for restoring and maintaining the Spruce Forest system should emphasize restoring spruce to those sites where Norway spruce and red pine have been planted and maintaining conditions favorable to continued growth of existing stands. The Laurel Fork area should continue to be managed to restore and maintain the Spruce Forest by planting red spruce seedlings and releasing red spruce seedlings that are suppressed by hardwoods.

¹ A piece of LWD is defined as a piece of wood at least partially within the bank full channel width, with a diameter of at least 4 inches (10 cm), and length of at least 4 feet.

Forest strategies for restoring, maintaining, and enhancing the Northern Hardwood Forest ecological system should emphasize maintaining this system on the lands where it occurs. Some regeneration could take place, but it would not be a high priority. The greatest stresses and threats to this system include climate change, acid deposition and invasive species (hemlock woolly adelgid). The management strategy for the Cove Forest is to utilize timber harvest to approach the early successional habitat objective since fire is not a common disturbance in this system. The greatest stresses and threats to this system are invasive plants due to the moist, rich soil conditions of these sites.

Forest strategies for maintaining and enhancing the Oak Forest and Woodland systems will integrate the use of timber harvest and fire. These management tools can occur independently or together on the same acres. The greatest stresses and threats to the oak forest and woodlands system are the lack of open conditions needed to establish and maintain oak reproduction and the competition of faster growing species due to the exclusion of fire or infestations of non-native invasive species. We will rely heavily on utilizing fire to restore and maintain more open canopy conditions and grassland/shrublands. Grassland/shrublands will also be maintained through direct creation and maintenance activities, such as periodic mowing. Timber harvest will be another frequent technique of creating regenerating forests and creating desired more open canopy conditions. Given its importance as a food source for many wildlife species, maintaining a high percentage of oak in ages that produce mast is also important. Planting American chestnut that is resistant to the asian chestnut blight is an important restoration activity that would occur mostly in these systems. Fire will be the prime strategy for maintaining and enhancing the Pine Forest and Woodland systems. Timber harvest will also be used to a lesser extent for regeneration. Restoration of short-leaf pine by planting is a restoration strategy that would be focused on where it historically occurred on the landscape. The greatest stresses and threats to this system are lack of disturbance to create regeneration and open woodland structure and invasive species including the native pine bark beetle and climate change that could reduce rainfall and make insect outbreaks more common.

Forest strategies for maintaining, and enhancing the Mafic and Alkaline Glade systems include prescribed fire and managing wildfire, control of non-native invasive plants, and monitoring and managing recreation use in the areas. These systems are uncommon on the Forest so their limited distribution is a stress. Other important stresses and threats to these systems include the lack of fire, non-native invasive plants, and trampling from excessive recreation use.

Forest strategies for maintaining, and enhancing the Cliff, Talus and Shale Barren systems include prescribed fire and managing wildfire, control of non-native invasive plants, managing deer browsing, and monitoring and managing recreation use in the areas. The major stresses and threats to these systems include the lack of fire, non-native invasive plants, problematic native species (deer browsing), trampling from excessive recreation use, and altering the normal disturbance regimes that maintain the character of the cliff, talus and barren features (rock slides, stream erosion)

Objectives for Ecological Systems Diversity

Regeneration

OBJ ESD-1: Approximately 18,000 acres to 30,000 acres of forest will be in the 0-10 year age class from regeneration harvest by the end of the first decade. Of this regeneration:

- Only a small portion of this is expected to be created in the Northern Hardwood system, and it would be less than 1,000 acres.
- A portion of this is expected to be created in the Cove Forest system, and it would be less than 2,400 acres.
- A large portion of this is expected to be created in the Oak Forest and Woodland system.
- A portion of this is expected to be created in the Pine Forest and Woodland system, but it would be less than 16,000 acres.

Mid-Late Successional Habitat

OBJ ESD-2: The following acreage of each ecological system will be in mid-late successional stages by the end of the first decade:

- Approximately 9,700 to 10,500 acres of the Northern Hardwood system

- Approximately 57,000 to 59,000 acres of the Cove Hardwood system
- Approximately 720,000 to 730,000 acres of the Oak Forest and Woodland system
- Approximately 143,000 to 153,000 acres of the Pine Forest and Woodland system

Spruce Forest Ecological System

OBJ ESD-3: The current acreage of approximately 600 acres of the Spruce Forest ecological system is maintained and additional spruce sites are reestablished to a total of about 1,300 acres. Areas in Laurel Fork where Norway spruce and red pine were planted should be restored to red spruce.

Northern Hardwood Forest Ecological System

OBJ ESD-4: The area of the Forest represented by the Northern Hardwood Forest ecological system remains essentially the same, although a small portion (about 800 acres) could be restored to Spruce Forest.

Cove Forest Ecological System

OBJ ESD-5: The area of the Forest represented by the Cove Forest ecological system remains essentially the same.

Oak Forest and Woodland Ecological System

OBJ ESD-6: The area of the Forest represented by the Oak Forest and Woodland ecological system remains essentially the same; however, there will be a slight shift in acres from oak-pine systems to pine-oak and pine systems as the use of fire increases. By the end of the first decade:

- Approximately 60,000 acres of previously closed canopy stands are in an open canopy condition to maintain forest health and sustain foraging and nesting opportunities for species.
- Approximately 74,000 acres of forest are in open canopy conditions.
- An estimated 74,000 acres of this fire-dependent ecosystem have received a fire return interval of 5-15 years.
- Approximately 8–10% of the open canopy creation and regeneration has occurred at elevations greater than 3,000 feet.
- Approximately 1,000 acres of forest are planted to American chestnut. Most of this planting will occur in the Oak Forest and Woodland system.
- To restore the ecological health of the forest, one American chestnut research and restoration (seed orchard) site is established on the forest and 1 to 4 American chestnut restoration projects per district are developed in partnership with other American chestnut support organizations.

Pine Forest and Woodland Ecological System

OBJ ESD-7: The area of the Forest represented by this ecological system remains essentially the same; however, there will be a slight shift in acres from oak-pine systems to pine-oak and pine systems as the use of fire increases. By the end of the first decade:

- Approximately 15,000 acres of previously closed canopy stands are in open canopy condition to maintain forest health and sustain foraging and nesting opportunities for species.
- An estimated 18,000 acres of this fire-dependent ecosystem have received a fire return interval of 3-8 years.
- Approximately 8–10% of the open canopy and regeneration has occurred at elevations greater than 3,000 feet.
- Approximately 800 acres are returned to shortleaf pine forests.

Alkaline and Mafic Glade and Barrens Ecological System

OBJ ESD-8: An estimated 500 acres of Central Appalachian Alkaline Glade and Woodland and 400 acres of Mafic Glade and Barrens on the Forest continue to be present. By the end of the first decade, 30% of these systems are at their desired conditions in regard to fire regime, non-native invasive species control, open structure and lack of recreation impacts.

Cliff, Talus and Shale Barrens Ecological System

OBJ ESD-9: An estimated 23,000 acres of the Cliff, Talus and Shale Barrens ecological on the Forest continue to be present. By the end of the first decade, 25% of the shale barren systems are at their desired conditions in regard to fire regime, non-native invasive species control, open structure and lack of impacts from deer and recreation.

Floodplains, Wetlands and Riparian Areas Ecological System

OBJ ESD-10: An estimated 54,000 acres of Floodplains, Wetlands and Riparian Areas on the Forest continue to be present and functioning. Some wetland systems have increased in extent due to beaver activity

Caves and Karst Ecological System

OBJ ESD-11: Human impacts on caves are not adversely affecting the hydrology or biology of any caves.

Special Biological Areas (SBAs)

OBJ ESD-12: Develop strategies for management of 3-5 SBA's annually. Based on periodic monitoring of known special biological areas, identify management activities needed to maintain, enhance or restore the habitat of threatened, endangered, sensitive, and locally rare species, and implement an annual program of work designed to meet these needs.

Species Diversity

Management Approach

As noted throughout the Plan, managing for ecosystem diversity is integral to providing appropriate ecological conditions for a diversity of plant and animal species. In addition to relying on management strategies for ecosystem diversity, species habitat conditions are dependent on a variety of integrated resources and management activities. Management strategies for soils, water, fire regimes, vegetation management, infrastructure, and other resource areas also contribute to healthy conditions for a diversity of plants and animals.

Protection and conservation of threatened and endangered (T&E) species drive much of the Plan direction and are a fundamental part of the overall management strategies for species diversity. The eight T&E species have recovery plans, and the strategy is to follow the finalized plans. The program priorities for T&E species include:

- Implement Forest Service actions as recommended in final recovery plans for federally listed species. In the absence of an approved recovery plan, implement and, if necessary develop interim Forest Service conservation measures. Update interim conservation measures as needed when new science becomes available.
- Work with USFWS and other conservation partners to develop recovery plans for new federally listed species and candidate conservation agreements for species proposed for listing.
- Coordinate with partners to implement measures to resolve conflicts with threatened and endangered species and their habitats.
- Cooperatively monitor trends in population and/or habitat of federally listed species. Amend the Plan as needed when new populations are found.

An important aspect of managing habitat for species is the cooperative work with the Virginia Department of Game and Inland Fisheries, the Virginia Department of Conservation and Recreation Natural Heritage Program, the West Virginia Division of Natural Resources, and US Fish and Wildlife Service. The GWNF will continue the long tradition of working closely with these agencies in all management of species and habitat. This includes work to meet the strategies outlined in each state's wildlife conservation plans and their plans for management of game species.

Most species needs are covered by plan components for ecosystem diversity and documented in the Ecosystem Diversity Report. However, in some circumstances, species require additional plan components specific to their needs. These species and the plan components that address their needs are described and documented in the Species Diversity Report. The management approach for these species includes additional objectives and standards. Most of these were developed to meet the needs of groups of species with similar habitat needs or management strategies. The following strategies were developed for the species identified in the Species Diversity Report as belonging to each group.

Calciphiles. The communities that are most representative of the calciphile associates are established as Special Biological Areas. These include all the areas recommended by the Virginia Natural Heritage Program. As additional significant areas are identified they will be added as Special Biological Areas.

Cavity or Den Tree Associates. Cavity and den trees are generally not limiting and with the increasing age of trees in most of the ecological systems, cavity and den trees will become even more common. The key characteristics for this group are recruitment of new den/cavity trees and retention of existing trees, particularly in areas where management activities are planned. This will be done through the use of den/cavity tree and snag desired conditions and standards.

Cliff, Talus and Rock Outcrop Associates. Cliff, talus and large rock outcrop areas have specific desired conditions and standards. These areas will be managed to enhance habitat for threatened, endangered, sensitive and locally rare (TESLR) species that may occur there.

Hard and Soft Mast Associates. Habitat for these associates will be provided by the restoration and maintenance of the open woodlands, regenerating forests and existing shrublands that produce a mixture of hard and soft mast.

High Elevation Coniferous, Deciduous and/or Mixed Forest Associates. The forested environment at high elevations (>3,000 feet) will be managed to include all successional stages. Spruce restoration may include planting red spruce seedlings, removing exotic tree plantations, and releasing red spruce from hardwood overstory.

Lepidopterans. Specific butterflies and moths in this species group are limited in occurrence on the GWNF and may be especially sensitive to the direct effects of fire. Care should be taken on prescribing the season, size, and intensity whenever fire is used in areas where they are known to occur. There are no direct key characteristics for this group; however monitoring of habitat and/or populations can determine if negative impacts are occurring. When developing prescribed burn plans, the following should be considered at a minimum for all species in this group:

- Is any species from this group present or potentially present in the project area?
- Is habitat for the species present in the project area?
- What are the negative & positive effects of fire to the species and habitat?
- What mitigation can be performed to reduce impacts to species, i.e. burning during specific part of life-cycle (hibernation, non-breeding, dormancy, etc); protecting individuals from direct effects of fire; protecting duff layer in mesic areas; etc.?
- Are there sufficient populations of this species adjacent to the project area to re-populate after the project?
- Are there any additional habitat management techniques that can be used to reduce impacts such as mechanical thinning or removal of vegetation?

Consideration of, and mitigation for, these questions should provide for species in this group.

Species Needing Occurrence Protection. These species are rare in occurrence across the forest and known populations should be protected. Implement the Species Occurrence standards to protect these species.

Open Area Associates. All types of openings are important and existing grasslands and shrublands of all sizes should be maintained. For some species it is important to maintain openings of a given size (greater than 40 acres or greater than 100 acres). Moving towards the desired open woodland component of the Oak Forest and Woodland and Pine Forest and Woodland ecological systems will produce open woodlands of a variety of sizes, including those greater than 100 acres in size. Meeting the regenerating forest objectives and objectives for openings at high elevations are also important for this group. It is important that these open conditions be incorporated within a forested environment. Many species need a combination of closed canopy and open canopy conditions during various parts of their life cycle. This is particularly important for many bird species.

Ruderal Associates. These species require the continued management of the open character of old home sites, roadsides, old fields where these species are found.

Sandstone Glade and Barren Associates. Establish Special Biological Areas for areas that represent high quality examples of this habitat.

Species Sensitive to Over-Collection. The strategy for these species is to continue to educate the public on species needs, restrict access to known populations, and limit approval of collections of these species to permitted scientific purposes only.

Species Sensitive to Recreation Traffic. The species on this list currently occur outside of Special Biologic Areas, rare, and wetland communities. There are no ecosystem diversity plan components which cover these species. The strategy for these species is to continue to educate the public on species needs, restrict access to rare or sensitive populations (this may include road or trail relocation, Forest Supervisor closure orders, barriers, and other means), and implement standards to protect these species where they occur during projects that involve heavy equipment or ground disturbance. New roads and trails should be located to avoid populations of these species and existing roads and trails should be evaluated for closure if they are causing declines to populations. Many roads on the Forest are not under our control, so partnerships and collaborative efforts may be required to help sustain species in this group.

Other Species. The habitat needs of the following two species could not be fully met through the ecological system direction or the direction for the species groups. These two species are both dependent upon both riparian systems and terrestrial systems. Specific direction for each species is added to address their needs that are not met through species groups or ecological system direction.

Tiger Salamander. Eastern tiger salamander egg masses and adults were found at sinkhole ponds outside, the special biological area established to protect their habitat. It is recognized that local amphibian population persistence requires sufficient terrestrial habitat, the maintenance of habitat quality, and connectivity among local populations. New Special Biological Areas are created to protect the newly found eastern tiger salamander populations. This includes habitat management between all the ponds to allow for long-range dispersal, including mature forest and low stem densities.

Wood Turtle. In watersheds with known populations of wood turtles: 1) Maintain or create openings in riparian areas for turtle foraging and thermoregulation; 2) Manage and protect known existing nest sites; 3) Create additional suitable nest sites where appropriate; 4) Maintain or create instream woody debris; 5) Minimize sediment, pollutant, and pesticide loading to stream channels; 6) Avoid channelizing streams, impounding streams, and stabilizing streambanks with over-hanging vegetation; 7) Allow beaver activities that create suitable habitat; 8) Human interactions, such as motorized vehicle use and recreation, are managed to minimize impacts to wood turtles; and 9) The Forest Service, working cooperatively with the Virginia Department of Game and Inland Fisheries and the West Virginia Division of Natural Resources, will identify hibernacula with significant turtle concentrations and/or other areas where there is a high potential for

human interaction with wood turtles. They will evaluate the need for seasonal restrictions on road use or other activities to protect the turtle. The time that turtles are nesting or foraging away from the stream and most subject to terrestrial impact would be from April through October. Instream activities would be of greatest concern during the period of November through March. Within the Paddy Run watershed, including Vance's Cove: 1) Consider creating and/or maintaining openings with a mixture of grass, forbs and shrubs in the riparian corridor for turtle foraging areas. Mowing decks will be raised a minimum of 8 inches above the ground; 2) Consider creating nest sites away from roads and trails; and 3) Consider placing LWD and rootwads into the stream channel to provide over-wintering habitat.

Objectives for Species Diversity

OBJ SPD-1: Maintain and enhance old fields, short/medium/tall grasslands at old farm tracts at Hidden Valley, Evans Tract, Wallace Tract, Marshall Tract, Whitting Tract, Cullers Tract Moody Tract, and Zepp Tannery. Maintain some of these areas in tracts 100 acres or larger in size.

OBJ SPD-2: Maintain at least 4,800 acres of grassland habitat. Maintain all current areas that are greater than 40 acres in size in patches at least that size, or greater. Maintain all current areas that are greater than 100 acres in size in patches at least that size.

OBJ SPD-3: Maintain at least 1,500 acres of shrubland habitat.

OBJ SPD-4: Approximately 18,000 to 30,000 acres of forest will be in the 0-10 year age class from regeneration harvest at the end of the first decade.

OBJ SPD-5: Restore and maintain 12,000 acres to 20,000 acres of forest in open woodland conditions through the use of wildland fire on an annual basis.

OBJ SPD-6: Create or maintain grasslands, shrublands or regenerating forests on approximately 1,000 acres at elevations greater than 3,000 feet on a decadal basis.

OBJ SPD-7: Maintain or create old fields or clusters of maintained openings (1-5 acres in size) on sites greater than 2,000 feet elevation on at least fifteen sites around the forest.

OBJ SPD-8: Maintain a stable and/or increasing population trend for the Indiana bat through protection and proactive management of Indiana Bat Primary and Secondary Conservation Areas. (See Management Prescription Area 8E4)

OBJ SPD-9: Maintain a stable and/or increasing population trend for the Cow Knob salamander over the planning period through protection and maintenance of the Cow Knob Salamander Habitat Conservation Area. (See Management Prescription Area 8E7)

OBJ SPD-10: Maintain or increase populations/occurrences of northeastern bulrush, swamp pink, Virginia sneezeweed, shale barren rockcress, and smooth coneflower through protection and maintenance of existing sites. (See Management Prescription Area 4D)

OBJ SPD-11: Maintain stable and/or increasing population trends for all Management OBJ SPD-1: Indicator Species.

OBJ SPD-12: Maintain about 400-600 acres of wildlife grassland openings through mechanical means, maintain wildlife improvements through burning on about 800 acres, improve conditions on about 100-200 acres of wildlife openings and old fields, and create about 20-30 acres of new temporary openings per year to meet structural diversity needs for migratory birds and other species.

OBJ SPD-13: Manage 900-1,500 acres of early successional habitat per decade using practices designed to emphasize habitat for ruffed grouse and American woodcock.

Non-Native and Native Invasive Species

Management Approach

Management of all non-native invasive species will focus on four components: 1) prevention of new infestations; 2) elimination of new infestations before they become established; 3) containment or reduction of established infestations; and 4) reclamation of native habitats and ecosystems. Integrated pest management approaches will be used in all four of these components. Monitoring of new and existing infestations is an important part of the monitoring strategy (Chapter 5). Since non-native invasive species are a problem on all lands, a key component of the management strategy is coordination and cooperation with other federal, state, and local agencies and local interest groups. The Forest will contribute, whenever possible, to research aimed at suppression of hemlock woolly adelgid, beech bark disease, dogwood anthracnose and other introduced significant non-native invasive pest problems. The GWNF will actively participate with other groups in developing and implementing control strategies. Education of forest users, particularly in high use areas will be another component of the management strategy.

Non-Native Invasive Plants (NNIP). Given the current known distribution of non-native invasive plants (NNIP) on the George Washington National Forest, there is a need to implement an integrated program of NNIP control to protect forest resources and reduce the potential to spread from Forest lands to adjacent private or public lands. New infestations and new NNIP species are likely during the life of the Plan but a list of priority species for treatment will be maintained on the Forest. Prevention of new infestations is important, as is control of existing infestations. Before management activities take place it is important to identify potential NNIP threats and develop a control/eradication plan that includes follow up monitoring of any NNIP treatments for effectiveness. High priority treatment areas for NNIP are:

- Locations with threatened, endangered or sensitive plant species;
- Special Biological Areas/rare communities
- Research Natural Areas
- Hot Spots of NNIP infestation
- Infestations of new NNIP species
- Areas disturbed by fire, insect, disease or storm damage
- Designated Wilderness
- Recommended Wilderness Study Areas
- Roadsides and parking areas
- Trails and trailheads
- Riparian areas
- Wildlife openings
- Other disturbed areas

Gypsy moth (*Lymantria dispar* (L.)) is a non-native insect defoliator that favors many deciduous tree species, primarily oak. The abundance of oak species throughout the forest makes the George Washington National Forest prime habitat for the gypsy moth. The mature and overmature state of these oak forests over a vast majority of the Forest results in high probabilities of severe mortality and loss of hard mast production over time. Gypsy moth suppression priorities are:

- Where threatened, endangered, proposed, or sensitive species or their habitats may be negatively impacted by the gypsy moth;
- Rare communities likely to be severely affected by gypsy moth if no action is taken;
- Developed recreation areas and other concentrated use areas;
- Areas of high site productivity to maintain stump sprouting capability for oak regeneration in the short-term, resulting in long-term maintenance of hard mast production and forest diversity;
- Scenic byways and viewsheds; and
- Old growth forest communities.

Hemlock woolly adelgid (*Adelges tsugae*) is a non-native aphid-like insect that infests hemlock trees. The insect feeds on the sap of the tree at the base of the hemlock needles. Infested trees decline over a few years and eventually die. Most of the Forest is generally infested and severe mortality has already occurred in most

of the hemlock stands found predominantly along our creeks and streams on the GWNF. Although there is little to do to prevent further mortality, opportunities to mitigate the loss of the hemlocks in the riparian ecological system will be explored.

Emerald ash borer (*Agrilus planipennis*) is a non-native borer that attacks ash species. This recently introduced pest is not yet known to occur on the Forest; however, it has been identified in other areas of Virginia and West Virginia. The insect can cause severe mortality of ash. Although this Forest does not have a large ash component, this insect pest is still of great management concern due to uncertainty of the extent of mortality this pest could cause (e.g. elimination of all ash from our ecosystems).

White-Nose Syndrome (WNS). WNS is a fungus caused disease that was first seen in New York caves during the winter of 2006-2007. The newly discovered, cold-loving fungus (*Geomyces destructans*) has spread south during the past several years and was first confirmed in Virginia and West Virginia during the winter of 2008-2009 with additional spread and caves contaminated in 2009-2010. To date well over 1-million bats have been killed by this fungus which irritates bats during hibernation causing them to wake and use precious fat reserves. The bats then starve and or freeze when they attempt to fly and leave the cave in search of food during the midst of winter conditions. Important caves used as hibernacula by endangered bats have been gated and locked, and will stay that way. Additionally, all caves and mines on the Forest are currently closed per Regional Forest order to halt human disturbance of bats and prevent spread of fungal spores on clothing, boots, and equipment.

Southern Pine Beetle (*Dendroctonus frontalis*) is a native bark boring insect that attacks primarily yellow pines (shortleaf, pitch, and table mountain, Virginia pines on this Forest). However, it can also infest white pine and even red spruce. Although a native insect, populations can reach outbreak proportions causing undesirable widespread mortality in pine ecosystems. Priorities for reducing or eliminating potential losses from Southern pine beetle are:

- Where threatened, endangered, proposed, or sensitive species or their habitats may be negatively impacted by the Southern pine beetle;
- Rare communities likely to be severely affected by Southern pine beetle if no action is taken;
- Potential spread onto adjacent landownerships;
- Developed recreation areas and other concentrated use areas;
- Scenic byways and viewsheds; and
- In pine stands adjacent to Wilderness, where spot spread from Wilderness is possible.

Didymo (*Didymosphenia geminata*) is a freshwater diatom (type of alga) that can form massive blooms on the bottoms of streams and rivers where it attaches itself to the streambed by stalks. These stalks can form a thick brown mat that covers rocks, submerged plants and other materials.

Objectives for Non-native and Native Invasive Species

OBJ NNI-1: Survey 5,000 to 10,000 acres for non-native invasive plants annually.

OBJ NNI-2: Treat 5,000 to 10,000 acres of non-native invasive plants annually.

Climate Change

Management Approach

We have historically experienced droughts, flooding, extreme weather events, catastrophic fire, insects and diseases, and to a more gradual degree, movement in the ranges of flora and fauna. Many of our current management strategies already strive to maintain or enhance the health and resiliency of various forest resources to better withstand environmental stresses and human-induced pressures. However, the effects of

an accelerated rate of change and an increase in the intensity of these impacts on forest resources and ecosystems are still largely unknown and unpredictable. Climate change effects are multiple, varied, and interact with many other stressors/variables. Therefore, an adaptive management approach that monitors forest resource conditions, and incorporates the current state of scientific knowledge related to responses to climate change, is needed that will allow us to proactively adjust current strategies or adopt new strategies as needed.

Climate change strategies for the George Washington National Forest focus on both adaptation (ways to maintain forest health, diversity, productivity, and resilience under uncertain future conditions) and mitigation (such as carbon sequestration by natural systems, ways to provide renewable energy to reduce fossil fuel consumption, and ways to reduce environmental footprints). These strategies focus on: 1) reducing vulnerability by maintaining and restoring resilient native ecosystems; 2) providing watershed health; 3) providing carbon sinks for sequestration; 4) reducing existing stresses; 5) responding to demands for cleaner energy including renewable or alternative energy; and 6) providing sustainable operations and engaging in partnerships across landscapes and ownerships.

Reduce Vulnerability and Restore Resilient Native Ecosystems. A primary focus of the revised Forest Plan is an emphasis on ecosystem resiliency that will support ecological systems diversity and species viability now and in the future. Maintaining and restoring healthy ecosystems that can tolerate, or appropriately adapt to, changes in environmental and social conditions are our best strategy for preparing for potential changes from unusual climate variations. Management strategies to maintain and restore resilient native ecosystems include:

- Identify desired conditions and objectives to maintain the resilience and function of nine identified ecological systems and determine the desired disturbance regimes, including fire, for those ecosystems.
- Increase the use of wildland fire as a tool for achieving resource management desired conditions.
- Maintain or restore ecological conditions that are rare on the forest, such as spruce, high elevation early successional habitat, open woodlands, old fields, rare communities, and Special Biological Areas.
- Manage the forest to maintain connections of forested landscapes to facilitate movement of species that may need to move or migrate for populations to remain viable.
- Manage the forest to maintain remote settings in areas identified as high priorities for providing core reserves
- Identify land acquisition and exchange priorities that include high elevation habitats or connectivity corridors.

Watershed Health. Specific management strategies the George Washington National Forest will use to address the management and conservation of aquatic resources in light of predicted effects from climate change are:

- Protect and restore beaver meadows, wetlands, and floodplains to improve natural water storage, reduce flood hazards, and prolong seasonal flows. Beaver ponds and wetlands recharge groundwater, raise the water table, retain sediment and organic matter, store water during floods and release it slowly, mitigate low flows and drought, reduce carbon turnover rate, raise pH and ANC, while reducing SO₂, Al, and NO₃.
- Protect and restore riparian forests to moderate changes in stream temperature, maintain stream bank stability, and provide instream habitat, particularly in key native brook trout streams.
- Remove migration barriers and re-establish habitat connectivity so that species can move to more suitable habitat, or move to or from refugia, particularly in systems supporting native brook trout.
- Improve or decommission roads to reduce adverse impacts during large storms to prevent surface erosion and fill slope failure and landslides. Construct stream crossings and bridges to withstand major storm and runoff events.

- Include standards to assess geologic hazards from management activities, including potential landslide hazards and risks, particularly as the population and infrastructure continue to increase in areas adjacent to the Forest.
- Revegetate bare soil as soon as possible. Suspend or eliminate recreation uses that are causing elevated sediment levels to streams or large areas of long term loss of soil productivity outside the designated use area.
- Riparian corridor widths are expanded and standards included for protecting channeled ephemeral streams.
- Consider nutrient replacement when planning vegetative management and/or look for alternative solutions (such as watershed liming or fertilization) in acid-sensitive watersheds.
- Identify soils highly sensitive to acid deposition and nutrient loss. Do not allow whole tree harvesting in those areas and consider possible soil fertilization treatments.
- Relocate, close or decommission roads causing significant resource damage.

Carbon Sequestration. National Forest System lands have opportunities for 1) biomass sequestration and storage of CO₂, and 2) geologic sequestration and storage of CO₂.

Biomass sequestration: Sustainable forestry practices can increase the ability of forests to sequester atmospheric carbon while enhancing other ecosystem services, such as improved soil and water quality. Planting new trees and improving forest health through thinning and prescribed burning are some of the ways to increase forest carbon in the long run. The most defensible options for managing forests for their carbon storage are keeping forests as forests, reforesting areas where forests historically occurred, using forest biomass to offset fossil-fuel use (burning forest biomass generally means that fossil fuel will not be burned), and promoting long-lived forest products such as wood-framed buildings. Forests (particularly older forests) generally store carbon better than forest products, so harvesting old-growth forests for their forest products is not an effective carbon conservation strategy (Harmon et al. 1990). However, harvest and regeneration of young to middle-aged forests for long-lived forest products can help with carbon storage (Ryan 2008). The Plan provides for a diversity of ages and structure in the forest to provide multiple strategies for addressing carbon storage.

Geologic Sequestration: In May 2009, the U.S. Department of Energy released a comprehensive study of geologic carbon sequestration and storage (CSS) on federal lands in “Storage of Captured Carbon Dioxide Beneath Federal Lands”, (National Energy Technology Laboratory, 2009). This report characterizes and estimates the geologic storage potential as well as regulatory issues on all federal lands. The FS and BLM are the two agencies with the lion’s share of opportunity for geologic CSS. At the current time, it is not possible to assess what role geologic CCS may play on federal land. However, an adaptive management approach may evaluate this opportunity in the future.

Existing Stresses. An early detection and response strategy associated with non-native invasive species will be critical to limit new introductions. Aggressive treatment of established invasive species, along with the control of insects and diseases, are likely to become more critical to maintaining desired conditions for healthy forests under a changing climate. Due to fragmented land ownership patterns, success in reducing invasive species will often require going beyond Forest boundaries, and continued work with partners will be needed. In addition, management practices (such as thinning and age class diversity) that sustain healthy forests and provide adequate nutrients, soil productivity, and hydrologic function promote resilience and reduce opportunities for disturbance and damage. Management strategies for mitigating existing stresses are:

- Southern pine beetle infestations should be quickly addressed. Silvicultural options for decreasing the vulnerability of attack could include thinning and/or low intensity fire to lower basal areas.
- Aggressive treatment of highly invasive non-native invasive plant and animal species.

Alternative Energy Demands. Among fossil fuels, natural gas is a cleaner source of energy, producing less greenhouse gas than oil or coal. Natural gas is part of strategies for using cleaner energy. The Forest Plan addresses opportunities to explore for and supply natural gas as part of the Congressionally-mandated consideration of federal oil and gas leasing on National Forests System lands (Federal Onshore Oil and Gas

Leasing Act of 1987). Over 900,000 acres on the Forest are available for federal oil and gas leasing. However, the Plan prohibits horizontal drilling. The Forest places a very high priority on water quality. There has not been any drilling in the Marcellus formation on the Forest or surrounding area. Horizontal drilling and the associated hydrofracturing of the Marcellus shale formation may impact water quality. Given the questionable nature of the development potential on the Forest, along with the high level of concern for water quality, the Plan does not allow horizontal drilling. Should production in nearby areas demonstrate that the gas is developable and it can be done without impact to water quality, the Forest could reconsider the issue in the future.

Wind energy development is another opportunity on the GWNF. Environmental effects of wind energy development, such as impacts to bats and birds and visual quality, have not been evaluated on the Forest. The Forest Plan has identified areas where wind development would not be compatible with management of other resources. There are opportunities to evaluate potential wind development on some suitable ridges of the GWNF. Evaluation of wind development will occur on a project-specific basis after a specific request is submitted to the Forest.

Sustainable Operations and Partnerships. The Forest will work with the state of Virginia to incorporate the data on greenhouse gas emissions from our management activities into a State inventory, just as we have done with the fine particulates inventory. The Forest will continue striving to reduce its environmental footprint and decrease the greenhouse gases emitted through day-to-day operations, including the use of more fuel-efficient vehicles, reducing the number of miles driven and making facilities more energy-efficient. The Forest will also continue working with partners, including other federal agencies, State and local governments, non-governmental organizations and other stakeholders to be more effective in efforts to adapt lands, ecosystems, and species to climate change. Examples are The Nature Conservancy in the Fire Learning Network and the Chesapeake Bay Partnership, the Chesapeake Bay Partnership, Appalachian Joint Venture, Eastern Brook Trout Joint Venture, and USFWS Landscape Conservation Cooperatives Initiative.

Restoration

Management Approach

Restoration has already been discussed under several other sections. Restoration activities expected to occur include:

- Improving connectivity of stream systems through replacement of standard culverts with crossing structures that allow for full passage of all aquatic organisms.
- Controlling sources of erosion and sedimentation and restoring stream channels to fully functional levels.
- Road decommissioning in areas where roads are causing unacceptable resource damage.
- Encouraging active populations of beaver to facilitate wetland creation.
- Planting American chestnut seedlings.
- Managing fire to restore fire-dependent pines like table mountain pine and shortleaf pine.
- Expanding the Spruce Forest ecological system to its full extent in the Laurel Fork area.
- Creating and maintaining high elevation grasslands and old fields.
- Using fire to restore vegetation composition and structure, particularly in the Pine and Oak Forest and Woodland systems.
- Controlling the introduction and spread of non-native invasive species.
- Improving wetlands through removing drainage structures and ditches in old agricultural lands.
- Enhancing bottomland hardwoods in the few major floodplains on the GWNF.
- Retention of riparian buffers in the riparian corridor.
- Maintaining and improving habitat for mussels.
- Maintaining and improving habitat for rare community species.
- Maintaining the processes that allow for oak reproduction.
- Managing for warm season grasslands.

- Converting pine plantations to native pines and hardwoods.
- Closing abandoned mine lands and restoring native vegetation.
- Identifying Priority watersheds for focusing restoration needs.
- Liming of streams that have high acidity levels.

Fire

Management Approach

Wildland fires are categorized into two distinct types of fire: 1) wildfires are unplanned ignitions or prescribed fires that are declared wildfires; 2) prescribed fires are planned ignitions. Wildfires are managed according to the Federal Wildland Fire Management Policy (latest is February 2009). Our strategy for responding to wildfires is based on the ecological, social, and legal consequences of the fire. The circumstances under which the fire occurs and the likely effects on firefighter and public safety dictate the appropriate response to the fire. All wildfires are assessed and managed following the Wildland Fire Decision Support System (WFSS) process that examines the appropriate range of responses.

The number of acres treated each year by prescribed burning varies based on factors such as weather conditions, fuel conditions, budget, and available resources (staffing). Changes in any of these factors or unexpected events can sometimes dramatically affect the acreage burned forest-wide from year to year. Based on anticipated funding levels and capacity, it is projected that approximately 12,000 – 20,000 acres will likely be prescribed burned annually across the GWNF, with increases in the number of acres burned possible with favorable weather conditions, additional agency capacity, or opportunities for joint efforts with State programs, partners, or other cooperative opportunities such as the Fire Learning Network. When these opportunities occur, our strategy is to take advantage of these occasions to accelerate ecosystem restoration and make improvements toward desired conditions

Conditions for managing fire can be unpredictable; however, where necessary to control erosion, we will generally install water diversions on firelines during their construction and revegetate firelines after suppression.

Timber, ecological, wildlife and prescribed fire objectives will be closely coordinated. For example, it may be undesirable to burn regenerated areas when the desired residual tree species cannot withstand the effects of fire with minimal degradation. Areas should not undergo prescribed burning for at least 30 days after herbicide treatment.

Objectives for Fire

OBJ FRE-1: Where fire regimes have been moderately (Condition Class 2) or significantly (Condition Class 3) altered from their historic range, 120,000 to 200,000 acres per decade are prescribed burned to move these acres toward a Condition Class 1. Fire regimes in Fire Condition Class 1 areas are within historical ranges.

OBJ FRE-2: To increase or maintain structural diversity in Oak Forests and Woodlands and Pine Forests and Woodlands, 12,000 to 20,000 acres of prescribed burning annually are implemented.

OBJ FRE-3: Demonstrate conformity with the State Implementation Plan for any prescribed fire planned within EPA-designated “non-attainment” and “maintenance” areas.

OBJ FRE-4: Protection of fire fighter and public safety is the most important objective during wildland fire management activities. Once fire fighters have been assigned to a wildland fire, their safety becomes the highest value to be protected.

Recreation

Management Approach

The Forest's primary emphasis for the developed recreation program on the GWNF is to continue providing the full spectrum of opportunities, ranging from minimally developed (where facilities are provided primarily for the protection of resources) to highly developed (where facilities and services for the comfort and enjoyment of visitors are provided). To achieve a financially sustainable recreation program the Forest will analyze current and future direct and indirect costs of proposals (originating internally and externally) for new facilities, expanded or enhanced facilities, new services, and major deferred maintenance such as replacing buildings, water or septic systems, etc. The Forest will utilize existing methods, to the extent possible, such as the Excellence by Design project proposal review process.

However, based on our current agency capacity, development of new facilities is not anticipated and some less-frequently used sites could be closed in the future. Over the next few years, our focus will be on reducing facility maintenance backlogs and aligning facilities and services with demand and our capability to manage it. A key part of this strategy will be to seek long-term funding and establish additional partnerships as a way to add desired facilities in the future to meet increasing recreation demands.

A similar management strategy is anticipated for dispersed recreation. The focus will be on improving trail conditions and long-term sustainability. Much of the focus on trails is expected to target high-use areas near larger urban population centers. This work is expected to emphasize bringing existing trails up to sustainable standards through redesign and reconstruction as necessary. New trail construction will be evaluated as opportunities arise, with emphasis on loop trails. The possibilities of utilizing decommissioned roads for trails will be examined. Programs for achieving technically challenging trail maintenance, resources protection, user education, and various inventory and monitoring activities will be achieved primarily through partnerships with various organizations, such as the Appalachian Trail Conservancy, Appalachian Trail clubs, universities and others, to the extent funding allows.

The mileage of roads maintained for high clearance vehicles (OHV) is estimated to be about 1,030 miles across the Forest, near current levels.

A majority of the areas that provide Semi-primitive Non-Motorized (SPNM) recreation opportunities will be maintained by the use of management prescription areas that restrict road construction and timber harvest. These prescription areas are allocated to 85 – 90% of the currently inventoried SPNM areas

For Semi-Primitive Motorized areas, the objective is to maintain at least 85% of the inventoried areas as SPM. New permanent road construction within semi-primitive motorized will generally be limited to roads that are closed after the immediate resource access need is met. Road restoration and maintenance is generally limited to that necessary to protect soil, water, and biological resources. Road restoration is done in such a manner as to maintain the unimproved nature of the road. Temporary road construction within semi-primitive motorized and non-motorized areas is allowed provided such roads are closed and revegetated following the temporary use.

Objectives for Recreation

OBJ REC-1: Maintain approximately 170,000 - 200,000 acres of Semi-Primitive Non-Motorized (SPNM), 180,000 – 210,000 acres of Semi-Primitive Motorized (SPM), and 650,000 – 710,000 acres of Roaded Natural (RN) recreational opportunities across the Forest.

OBJ REC-2: Maintain approximately 1,000 to 1,100 miles of non-motorized trails.

OBJ REC-3: Maintain a total of 60-75 miles of motorized trail within the Management Prescription Area 7C (All-Terrain Vehicle Use Areas).

OBJ REC-4: For the Appalachian National Scenic Trail, the remaining Priority 1 and 2 tracts are acquired over the next decade.

OBJ REC-5: For the Appalachian National Scenic Trail, an Agreement for Sponsored Voluntary Services between the Pedlar Ranger District and the partner Appalachian Trail Club is maintained annually.

OBJ REC-6: Agreements for Voluntary Services for trail maintenance are in place and up-to-date for all groups. This includes an annual program of work which will be reviewed by staff specialists to prevent trail maintenance conflicts with other resources.

OBJ REC-7: Maintain a total of at least 244 miles of open or seasonally open roads as high clearance roads to meet Off-Highway Vehicle user needs.

Landscape and Scenery

Management Approach

The Scenery Treatment Guide for the Southern Region (issued April 23, 2008) and the scenic integrity objectives (SIO) within the standards of the Plan will provide guidance for mitigating scenery impacts for management activities and should be incorporated into project planning and implementation.

Table 3.2 Relationship between the new Scenery Management System (SMS) and the previous Visual Management System (VMS)

New SMS-Scenic Integrity Objectives	Appearance	Old VMS-Visual Quality Objectives
Very High	Unaltered	Preservation
High	Appears Unaltered	Retention
Moderate	Slightly Altered	Partial Retention
Low	Moderately Altered	Modification

The following guidelines in Table 3.3 offer a listing of management activities and various treatment clauses that should be used to meet the desired conditions for scenery. The listing of management treatments and management activities is not all-inclusive. There are additional treatments provided as forest-wide standards in Chapter 4 – Design Criteria. The treatment guidelines should not be used to automatically determine which treatments should be applied. Each project may have unique conditions that need to be considered.

Table 3.3 Scenery Treatment Guide

Activity	Scenic Integrity Objectives		
	High	Moderate	Low
Clearcut or Overstory Removal	N/A	B,C,D,F,G,H,J,M,N,U,V	L,O,U,V
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

Activity	Scenic Integrity Objectives		
	High	Moderate	Low
Shelterwood with Reserves	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
Salvage	A,B,C,D,F,G,H,K,U,V	A,B,C,D,F,H,K,U,V	B,L,U,V
Uneven-age System	A,B,C,D,F,G,H,I	A,B,C,D,F,G,H,I	I
Any Thinning	A,B,C,D,F,G,H	A,B,C,D,F,G,H	A,B
Maintaining Roadsides	A,B,E,G,S,T,W	A,B,E,S,T,W	A,E,S,T,W
Road Construction or Reconstruction	C,G,H,S,T,W	A,B,C,H,S,T,W	A,B,S,T,W
Temporary Road Construction	C,G,H,S,T,W	A,B,C,G,H,S,T,W	A,B,S,T,W
Utility or Energy Corridor Construction	A,B,C,D,E,G,H,Q,R	A,B,C,D,E,H,Q,R	B,H,Q,R
Prescribed Fire	G	G	G

- A. Trees should be selectively removed to improve scenery within high use areas, vista points, and along interpretive trails.
- B. Flowering and other visually attractive trees and understory shrubs should be favored when leaving vegetation.
- C. During temporary or permanent road construction, eliminate or remove from view, slash and root wads as viewed from the immediate foreground of High and Moderate SIO viewing platforms to the extent possible. Some slash may be aligned parallel to roads at the base of fill slopes to collect silt.
- D. Slash should be removed, burned, chipped or lopped to within an average of 2 feet of ground, when visible within 100-foot zone of concern level 1 and 2 travelways and use areas.
- E. Stems should be cut to within 6 inches of the ground when doing roadside maintenance or at utility crossings.
- F. Leave tree or unit marking should be applied so as to not be visible within 100 feet of concern level 1 and 2 travel routes.
- G. Scheduling work outside of major recreation seasons should be considered on roads leading to recreation facilities.
- H. Special road and landing design should be used. When possible, log landings, roads and bladed skid trails should be located out of view to avoid bare mineral soil observation from concern level 2 travel routes. (See also forestwide standards in Chapter 4 that address road, skid trail and landing design in concern level 1 travel routes.)
- I. An opening size should generally not exceed 1.5 acres.
- J. An actual opening size up to 10 acres could occur in the foreground zone and 25 acres in middleground and background zone in concern level 1 & 2 travel routes.
- K. An actual opening size up to 25 acres with inclusions could occur.
- L. An actual opening size up to 40 acres with inclusions could occur.
- M. Along concern level 1 and 2 travel routes, openings should be spaced at a minimum of 1000 feet apart next to the travel route.
- N. Along concern level 1 and 2 travel routes with a high SIO, openings of up to 200 feet could occur.
- O. Along concern level 2 travel routes with a moderate SIO, openings of up to 400 feet could occur.
- P. Removal of overstory should be delayed until understory is 10 feet in height.
- Q. Utility rights-of-ways should be located to conform with natural patterns of vegetation.
- R. Overhead utility lines and support towers should be screened where possible.

- S. The visual impression of roads should be blended so that they remain subordinate to the existing landscape character in size, form, line, color, and texture.
- T. Gravel pits and borrow areas should be excluded from seen area of visually sensitive travelways and viewing points.
- U. No adjacent regeneration cutting should occur until dominant and codominant species reach 20 percent of height of tallest adjacent stands for even-aged timber harvest cutting methods.
- V. Openings should be shaped and oriented to contours and existing vegetation patterns to blend with existing landscape characteristics. Edges should be shaped and/or feathered where appropriate. No geometric shapes should be used.
- W. Cut and fill slopes should be revegetated.

Objectives for Scenery

OBJ SCE-1: Manage the George Washington National Forest with the following Scenic Integrity Objectives (acres are approximate): Very High 45,000 acres; High 433,000 acres; Moderate 182,000 acres; and Low 405,000 acres.

Cultural Resources

Management Approach

Significant cultural resources are protected from loss. Our overall strategy for sustaining the cultural resources, which are a desirable part of the setting and character of the GWNF, involves continuing to identify significant sites and stabilizing them, taking appropriate measures and employing current treatments needed to protect them from damage, and preserving them for future scientific research and interpretation opportunities. Surveys are conducted prior to site disturbance activities. Visitors have opportunities to learn about the past and how to protect cultural resources through on and off-site interpretation and hands-on programs such as Passport in Time. Partnerships and agreements with State Historic Preservation Offices and universities play an important role in helping to achieve desired conditions.

Cultural resources are managed through a process of identification, evaluation, and allocation to appropriate management categories (preservation, enhancement, scientific investigation, or release from management under the National Historic Preservation Act) that protect cultural resource values and benefit the public. A Heritage Program Plan for the George Washington National Forest is complete and implemented. Historic Property Plans are complete and implemented for highly significant cultural sites, particularly Priority Heritage Assets.

Roads, Access and Facilities

Management Approach

The main priorities for managing the roads and facilities that make up the GWNF infrastructure are on safety and maintenance of existing systems. This includes backlogged repairs and upgrades, improvements for environmental protection, disposal of facilities that are no longer needed, and rehabilitation of user-created trails and roads. Infrastructure additions are anticipated to be limited and dependent on funding availability.

The minimum road system needed to manage the GWNF has been identified. While a few new roads will be needed for future access to manage the Forest, there will be a net decrease in the road mileage over the next ten to fifteen years. Decisions on roads to be decommissioned will be made on a project-level basis based on

appropriate site-specific environmental analysis and disclosure to assure compliance with the NEPA. These decisions will be based on the need for the road to meet resource objectives and the environmental risks of maintaining the road (including the location of the road in priority watersheds).

Maintenance priorities for roads will include bridge safety, adequate signs, suitable stream crossings, and any resurfacing or reconstruction needed to provide an overall road system that is useable and safe for motorized vehicle use. Unauthorized travelways will either be decommissioned or left to naturally re-vegetate.

The facilities program includes new construction and maintenance of a variety of structures and associated utilities across the Forest that are used for recreation, administration, maintenance, storage, and other general management purposes. Program priorities for the future will be directed toward: (1) reducing the backlog of facility deferred maintenance, particularly those items associated with health and safety; (2) right-sizing the facility inventory to match current management needs, including decommissioning and disposing of those facilities which are no longer required to support management objectives; (3) reducing the operating and maintenance costs associated with the facility portfolio; and (4) providing limited new facilities to support priority programs and areas.

New facility construction in the future is expected to be limited to improvements and expansions. Recreation facilities are generally newer than administrative facilities, and compliance with applicable accessibility requirements will continue to be a priority.

Objectives for Roads, Access and Facilities

OBJ RDS-1: No net increase in the current miles of open roads on the forest.

OBJ RDS-2: Over the next 10 years, 100 to 200 miles of roads (classified and unauthorized) are decommissioned. Priorities for decommissioning are roads causing resource damage and roads in priority watersheds.

OBJ RDS-3: Maintain to standard a minimum of 75 miles of passenger car roads (OML 3-5) and a minimum of 105 miles of high clearance vehicle (OML 1-2) roads on an annual basis.

OBJ RDS-4: Conduct condition surveys on at least 25% of passenger car roads (OML 3-5) per year. Annually survey a representative sample of high clearance vehicle roads (OML 1-2) to provide for a forest-wide indication of OML 1-2 road conditions.

OBJ RDS-5: Over the next decade, turn over a portion of the 107 miles of forest development roads where the majority of traffic is not related to Forest use to the State Department of Transportation.

Lands and Special Uses

Management Approach

The lands and special uses program manages the real estate-related activities associated with GWNF lands. The overall direction for the program is on consolidating these lands through acquisitions and exchanges while providing appropriate access to Federal property for public services and other special uses. For land ownership adjustments, this typically focuses on land parcels within or adjacent to Forest Service boundaries; however, isolated tracts that have special values or contribute to the mission of the Forest Service are also included in our goals.

Following the early land acquisition period during the mid-1930s to early 1940s when the bulk of lands for the GWNF were purchased, the land adjustment program has historically been pursued as a small scale program of tract-by-tract land acquisition and disposal actions to improve consolidation of land ownership. Due to the occasional nature of land acquisition opportunities, it is difficult to predict likely land ownership adjustments in future years, but a generally low level of program activity is expected to continue into the near term. Main concerns for consolidating and expanding land holdings include acquiring high-value ecosystems,

threatened, endangered and sensitive species habitat, critical water corridors, and desirable adjoining or private inholdings.

Our program strategy for continued land ownership adjustments is to give priority to the following situations:

- Priority tracts for the Appalachian Trail.
- Tracts which help consolidate large blocks of existing Forest lands (as opposed to adding onto small or isolated blocks).
- Acquisitions that protect resource values on adjacent Forest land.
- Acquisitions that contribute to the recovery of threatened, endangered or sensitive species or will aid in the protection of diverse species.
- Lands that enhance recreation, public access, and protection of aesthetic values, especially those that provide public access to waterways.
- Lands that are needed for the protection of important cultural resources.
- Acquisitions that will compliment a designated area such as a Wilderness.
- Lands needed for new administrative or recreational sites and/or protection of existing improvements.
- Other environmentally sensitive lands such as tracts containing unusual geographic features, wetlands or floodplains, rare plant or animal communities, or other attributes of uncommon or striking character.

New land acquisitions should generally be managed according to the adjacent or surrounding area's Forest Plan direction.

Special use authorizations provide for those private uses of Forest lands that are necessary to serve the public interest and which cannot be accommodated on non-Federal land. This includes Forest lands used for utility corridors and transmission lines, communication sites, military training activities, and special events. Our management approach for maintaining desired conditions on the GWNF is to continue to include and enforce appropriate environmental protection controls in leases, easements, right-of-way grants, licenses, and other special use permits. Special uses should be located where they minimize the need for additional designated sites and best serve their intended purpose. Co-locating special uses on land is preferred, when feasible.

Objectives for Land and Special Uses

OBJ LAN-1: Survey and maintain to standard about 100-150 miles per year of boundary lines.

Timber Management

Management Approach

The timber sale program and commercial timber sales are used as a valuable tool to achieve other multiple resource objectives in conjunction with providing wood and fiber for society. Multiple use objectives that may benefit from timber management are primarily those described in the Ecological Systems Diversity and Restoration sections of this Chapter. Commercial timber sales often provide the most cost effective method for creating early successional habitat, open woodland settings, and varied forest structures. The timber sale program will also help maintain processes that allow for oak reproduction and may be used in the conversion of pine plantations to native pines and hardwood forests. A dual purpose of the timber management program is to provide a stable supply of wood products for local needs. The timber program may also provide supplies of those wood products where the Forest Service is in a unique position to make an impact on meeting the demand for those products, especially as regards emerging markets such as biomass fuels.

A wide variety of even-aged, two-aged, and uneven-aged silvicultural systems and harvest methods are provided for in order to provide adequate flexibility to respond to the specific need for vegetation manipulation in a given area or situation. However, it is envisioned that two-aged systems, mainly shelterwood with reserves (previously known as “modified shelterwoods”), will be the primary harvest system utilized to achieve multiple use objectives and provide for a variety of wood products. The residual density of these regenerated stands may vary quite a bit, from roughly 15 to 40 square feet of basal area for instance, in order to achieve the objective at hand. Intermediate harvest such as pre-commercial and commercial thinning will also be utilized to enhance species composition to benefit wildlife, forest health, and/or commercial values, as well as to enhance growth rates, form and vigor of the residual trees. However, thinning and conventional shelterwood cuts should be deferred in areas where gypsy moth populations are increasing to, or are at, damaging levels (>1,400 egg masses per acre), so as to avoid compounding stresses resulting from harvest and defoliation thereby increasing the probability of significant mortality.

Biomass for fuel will likely become an emerging market. There is a concern that increasing demand for biomass fuel could result in increased harvest levels using whole tree harvest logging methods, especially on formerly low productivity or less commercially valuable sites. We do not envision the production of biomass to be a sole purpose and need of any commercial timber sale. However, we do believe that biomass fuels markets will enable cost-effective removal of wood where it achieves a desired objective (e.g. fuels reduction or thinning in young stands). When such activities occur, whole tree harvesting will be avoided on soils identified as high risk for soil acidification and nutrient depletion due to atmospheric deposition.

Similarly, there is a concern that erosion control activities associated with timber sales, such as the seeding of vegetation on skid roads, trails, and/or landings, introduce non-native invasive species. When seeding temporary roads, skid roads, and log landings on slopes less than 5%, native grasses and wildflowers beneficial as wildlife foods are favored for use. On slopes greater than 5%, vegetation that best controls erosion is favored for use.

Objectives for Timber Management

OBJ TIM-1: A total timber sale program quantity (TSPQ) of 3.8 to 5.4 million cubic feet (MMCF) [19 to 27 million board feet (MMBF)] is provided annually from lands suitable for timber production. This equates to about 1,800 to 3,000 acres per year. The maximum Allowable Sale Quantity (ASQ) for the first decade is 54.3 MMCF.

OBJ TIM-2: Provide 5,500 hundred cubic feet (CCF) of fuelwood available for personal use annually.

Mineral Resources

Management Approach

Energy-related Federal leases, licenses, and permits are processed within 120 days. Energy-related outstanding and reserved mineral rights operations are processed within 60 days. For non-energy mineral resources, emphasize authorizations of minerals needed for environmental protection, public infrastructure, flood protection, erosion control, and watershed restoration. Reclaim energy and non-energy mineral sites at the appropriate stage of the mineral operation. Identify opportunities for reclamation to achieve post-mine land uses that complement the Desired Condition of the appropriate management prescription.

Wilderness, Inventoried Roadless Areas and Eligible Wild and Scenic Rivers

Management Approach

Wilderness will be managed in accordance with the 1964 Wilderness Act as described in Management Prescription Area 1A. Tools, such as the Minimum Requirements Decision Analysis, are used when considering if a project is appropriate in Wilderness. Areas recommended for Wilderness study will be managed to preserve the character of the area that led to their consideration for designation. Any rivers identified as eligible for designation as scenic or recreational rivers under the Wild and Scenic Rivers Act will be managed to preserve their outstandingly remarkable values.

Objectives for Wilderness, Inventoried Roadless Areas, Eligible Wild and Scenic Rivers

OBJ WIL-1: Maintain the characteristics of recommended wilderness study areas that made them eligible for Recommendation for Wilderness Study areas (Management Prescription Area 1B).

OBJ WIL-2: Protect the outstandingly remarkable values and conditions of the eligible Scenic and Recreational River Segments.

OBJ WIL-3: Maintain the roadless character on all Inventoried Roadless Areas (240,000 acres) through restrictions on road construction and timber harvest.

Old Growth

Management Approach

Existing, Possible and Future Old Growth will be identified as described in Appendix B of this Plan and in accordance with *Guidance for Conserving and Restoring Old Growth Forest Communities on National Forests in the Southern Region*. Currently, little existing old growth has been verified on the ground. However, the amount of Possible and Future Old Growth is large. Existing Old Growth, as it is identified, will be managed based on the old growth forest type and the representation of that type in the Existing, Possible and Future Old Growth inventories. In Northern Hardwood, Hemlock-Northern Hardwood, White Pine-Northern Hardwood, Spruce Northern Hardwood, Mixed Mesophytic, Hardwood Wetland Forests, Dry and Xeric Oak Forest, Xeric Pine and Pine-Oak Forest and Woodland, Eastern Riverfront, Rocky, Thin-Soil Conifer Woodland old growth forest types, any existing old growth will be unsuitable for timber production. In the Dry-Mesic Oak Forest and Dry and Dry-Mesic Oak-Pine old growth forest types, any existing old growth, in areas suitable for timber production, will be evaluated during project analysis to determine its suitability for harvest. If, during project analysis, it can be demonstrated that an identified existing old growth patch does not contribute to the Forest old growth inventory, then the patch could be suitable for timber production and harvest of the patch could occur. The project analysis will include a discussion of the old growth characteristics found in the area, the effect 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 inventory.

Objectives for Old Growth

OBJ OLD-1: The following acres of each community type are maintained in an old growth or late-successional condition (based on stand age) by the end of the first decade to ensure the integrity of ecological function and to ensure old growth systems on the GWNF are sustainable.

Table 3.4 Old Growth Acres

Old Growth Forest Type Group	Current Acres	After First Decade Acres
01 - Northern Hardwood Forests	1,200	4,500
2a-Hemlock-North. Hardwd Subgroup	2,500	3,000
2b-Wh. Pine-North. Hardwd Subgroup	700	1,700
2c-Spruce-North. Hardwd Subgroup	100	100
05 - Mixed Mesophytic Forests	5,100	7,900
10 - Hardwood Wetland Forests	0	0
21 - Dry-mesic Oak Forests	151,300	204,800 – 207,200
22 - Dry and Xeric Oak Woodlands	300	500
24 - Xeric pine & Pine-oak Forests	66,500	101,800
25 - Dry & Dry-mesic Oak-pine Forests	16,800	35,600 - 36,200
28 - Eastern Riverfront Forests	6	25
TOTAL ACRES	244,506	362,925

SUITABLE USES OVERVIEW

Suitability (36 CFR 219.3, 219.14): The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices. In addition, the National Forest Management Act requires plans to identify lands that are not suitable for timber production.

National Forest System lands are suitable for a variety of multiple uses (36 CFR 219), including outdoor recreation, livestock grazing, timber harvest, wildlife habitat, Wilderness, energy resource development, mining activities, watershed restoration, and cultural and heritage interpretation, among others.

A plan must identify National Forest System lands as not suited (“unsuitable”) for a certain use under the following circumstances:

- 1) If law, regulation, or Executive Order prohibits that use.
- 2) If agency resource management directives prohibit the use.
- 3) If the use would result in substantial and permanent impairment of the productivity of the land or renewable resources.
- 4) If the use is incompatible with the desired conditions established for all or part of the plan area.

Suitable Uses—Key Activities

The following table is a summary of some of the key suitable uses as defined by the management prescription area descriptions found in Chapter 4. However, it is strongly recommended that Chapter 4 be consulted for the complete understanding of management prescription area direction as some of the uses have certain restrictions or circumstances related to a suitable use within that management prescription area.

Table 3.5 Lands Suitable for Key Activities on the GWNF

Management Prescription Area		Timber Production	Timber Harvest for Other Resource Objective	Salvage	Permanent Road Construction	Temporary Road Construction	Oil and Gas Leasing*
1A	Designated Wilderness	No	No	No	No	No	No
1B	Recommended Wilderness Study Area	No	No	No	No	No	No
2C2	Eligible Scenic River Corridor	No	No	No	No	No	CSU
2C3	Eligible Recreation River Corridor	No	Yes	Yes	Yes	Yes	CSU
4A	Appalachian Trail Corridor	No	Limited	No	Limited	Limited	NSO
4B	Research Natural Area	No	No	No	No	No	NSO
4C1	Geologic Area	No	No	Limited	No	No	CSU
4D	Special Biological Area	No	Limited	Yes	Limited	No	CSU
4D1	Key Natural Heritage Community Area	No	Limited	Yes	Limited	No	CSU
4E	Cultural/Heritage Area	No	Limited	Yes	Limited	No	NSO
4F	Mt Pleasant National Scenic Area	No	No	No	No	No	No
5A	Administrative Site	No	Limited	Yes	Yes	Yes	Standard
5B	Communication Site	No	Limited	Yes	Yes	Yes	Standard
5C	Utility Corridor	No	Limited	Yes	Yes	Yes	Standard
7A1	Highlands Scenic Tour Byway	Yes	Yes	Yes	Yes	Yes	CSU
7B	Scenic Corridor and Viewshed	Limited	Yes	Yes	Yes	Yes	CSU
7C	All-Terrain Vehicle Area	Yes	Yes	Yes	Yes	Yes	Standard
7D	Concentrated Recreation	No	Limited	Yes	Yes	Yes	CSU
7E	Dispersed Recreation	Limited	Yes	Yes	Yes	Yes	Standard
7F	Blue Ridge Parkway Corridor	Limited	Yes	Yes	Yes	Yes	CSU
7G	Pastoral Landscapes and Rangelands	No	Yes	Yes	Yes	Yes	Standard
8E4a	Indiana Bat Primary Protection	No	No	No	No	No	No
8E4b	Indiana Bat Secondary Protection	Yes	Yes	Yes	Yes	Yes	Timing
8E7	Shenandoah Mtn Crest - Cow Knob Salamander	No	Limited	Limited	No	Yes	CSU
11	Riparian Area and Corridor	Limited	Yes	Limited	Limited	Limited	CSU
12D	Remote Backcountry	No	Limited	No	No	Limited	NSO**
13	Mosaics of Habitat	Yes	Yes	Yes	Yes	Yes	Standard
* NSO-No Surface Occupancy; CSU-Controlled Surface Occupancy; Horizontal Drilling is Prohibited in all Management Prescription Areas							
** All of Laurel Fork is administratively unavailable for federal oil and gas leasing							

Wind Energy Development (Utility-scale)

The following Management Prescription Areas are not suitable for consideration of wind energy development

- Wilderness (1A)
- Recommended Wilderness Study Areas (1B)
- Special Biological Areas (4D)
- Research Natural Areas (4B)
- Special Geologic Areas (4C1)
- Shenandoah Mountain Crest – Cow Knob Salamander Area (8E7)
- Indiana Bat Protection Areas (8E4a, 8E4b)
- Appalachian Trail Corridor (4A)
- Blue Ridge Parkway Scenic Corridor (7F)
- Remote Backcountry Areas (12D)
- Mount Pleasant National Scenic Area (4F)

Lands Suitable for Timber Production

During forest land and resource management planning, the Forest Service is required to identify lands unsuited for timber production (16 USC 1604(k); 36 CFR 219.14). Timber production is defined as “the purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use. For purposes of forest planning, timber production does not include the production of fuelwood or harvests from unsuitable lands.” (36 CFR 219.3, 1982 rule). This identification process involves three stages of analysis. Stage I analysis identifies lands tentatively suitable for timber production. Stage II analysis is designed to explore the financial aspect of varying intensities of timber management on lands identified as tentatively suitable for timber production from Stage I. Stage III analysis identifies the final set of lands as unsuited for timber as determined by the desired conditions and land allocations in the revised Forest Land and Resource Management Plan.

STAGE I: PHYSICAL SUITABILITY

The first stage of the timber suitability analysis addresses the administrative and physical suitability of the land to be managed for the production of timber. Stage I lands unsuitable for timber production include:

- Lands that do not meet the definition of forest land (land at least 10% occupied by forest trees of any size).
- Lands that have been administratively or congressionally withdrawn from timber production by an act of Congress, the Secretary of Agriculture, or the Chief of the Forest Service.
- Forest lands incapable of producing industrial wood.
- Lands where technology is not available to ensure timber production from the land without irreversible soil and water resource damage.
- Lands where there is no reasonable assurance that they can be adequately restocked.
- Lands where there is inadequate information.

Table 3.6 describes the information used to estimate the acreage within the six categories of the Stage I tentatively suitable lands. It is important to note that the net acres displayed in Table 3.7 refer to the acres within that particular category that have not already been removed in a previous category. For instance, there are a total of some 41,000 acres on the Forest that meet the criteria for ‘Irreversible Damage and Can’t Restock’, but only about 29,000 are shown as removed because the other 12,000 acres were already removed by the ‘Withdrawn’ category.

Table 3.6 Tentatively Suitable Lands, Stage I Suitability Analysis

Categories of Stage I Unsuitable Lands	Defining Information	Current Net Acres
Total National Forest System Lands:		1,065,000
1. Non Forest Land	FSVeg Land Class Codes: 110-Lake 120-Reservoir 140-River 210-Cemetery 220-Powerline 230 Road/Railroad 240-Special Use 250-Wildlife Clearing	(7,000)
2. Withdrawn	Designated Wilderness (1A) Mt. Pleasant National Scenic Area (4F) Research Natural Areas (4B)	(54,000)
3. Irreversible Damage	Land Class Code: 826 - Physical barriers AND Site Index < 70	(28,000)
4. Can't Restock	Forest Type: 99 – Brush AND Stand Condition Class: 15 – Non Stocked	(1,000)
5. Incapable of producing industrial wood	Land Class Code: 900 – Incapable of Industrial Wood OR Site Index < 40	(65,000)
Tentatively Suitable Forest Lands		910,000

STAGE II: FINANCIAL ANALYSIS

The second stage analysis is designed to explore the financial efficiency of different timber intensities on the lands identified as tentatively suitable for timber production in Stage I. It does not identify any lands as unsuitable for timber production. Stage III analysis considers the results of these financial efficiencies in making the final determination of lands suited for timber production.

STAGE III: IDENTIFICATION OF SUITABLE ACRES

The third stage analysis is determined by Forest Plan direction. Several criteria were used during this stage to identify lands in this category:

- Based upon consideration of multiple-use objectives, the land is proposed for resource uses that preclude timber production. However, in some management prescription areas that are classified as

unsuitable for timber production, timber harvest may occur to meet the desired condition of other resources.

- Other management objectives limit timber production activities to the point where management requirements set forth in 36 CFR 219.27 cannot be met.
- The lands are not cost-efficient, over the planning horizon, in meeting forest objectives, which includes timber production.

Table 3.7 describes the information used to estimate the acreage within the two categories of the Stage III tentatively suitable lands.

Table 3.7 Determination of Acres Suitable for Timber Production

Categories of Stage III Unsuitable Lands	Defining Information	Current Net Acres
Tentatively Suitable Forest Lands from Stage I Analysis		910,000
1. Withdrawn for Other Resource Purposes – by Management Prescription Area	Recommended Wilderness Study Areas (1B) Eligible Scenic River Corridors (2C2&3) Appalachian Trail Corridor (4A) Special Geologic Areas (4C1) Special Biologic Areas (4D) Special Heritage Areas (4E) Key Natural Heritage Community Areas (4D1) All Administrative Areas (5A, 5B, 5C) Concentrated Recreation Areas (7D) Dispersed Recreation – portion (7E) Blue Ridge Parkway Corridor (7F) Pastoral Landscapes (7G) Indiana Bat Primary Areas (8E4a) Riparian Corridors (11) Remote Backcountry Areas (12D) Possible Old Growth not in Old Growth Forest Types 21 & 25	(357,000)
2. Economically Inefficient from Stage II analysis ¹	Site Index <= 40 or Slope >55% and Forest Type <> 48, 53, 56 and 81	(115,000)
Total Suitable Land		438,000

¹ Economically inefficient lands include all Site Index 40 lands and those lands that are steep slopes greater than 55%, with the exception of those having a forest type of 48, 56, 53, and 81 (northern red oak-hickory-yellow pine, chestnut oak, white oak-northern red oak-hickory, and sugar maple-beech-yellow birch).