

# Upper Greenbrier North Decision Notice & Finding of No Significant Impact

USDA Forest Service, Eastern Region 9  
Monongahela National Forest, Greenbrier Ranger District  
Pocahontas County, West Virginia

**March 2012**

## **Introduction**

The Upper Greenbrier North project is a result of over six years of internal planning and a collaborative process, officially initiated by the Forest Service in March, 2009, in coordination with the Central Appalachian Spruce Restoration Initiative. This project will implement various actions, ranging from timber harvest to terrestrial and aquatic ecosystem restoration.

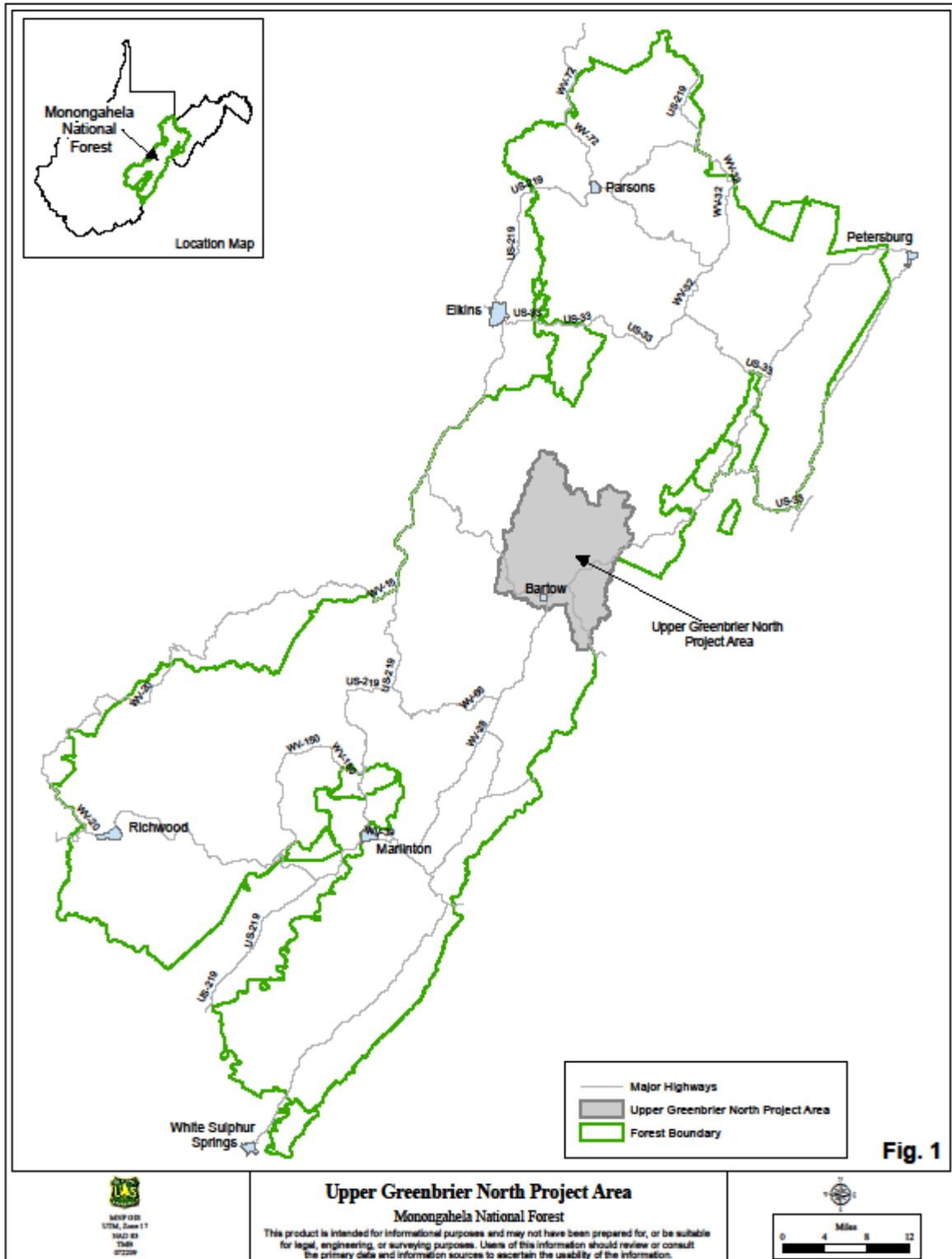
This Decision Notice and Finding of No Significant Impact (DN and FONSI) documents my decision regarding activities analyzed in the Upper Greenbrier North (UGN) Environmental Assessment (EA). The following pages describe the location of the UGN project area, my decision, the activities selected for implementation, reasons for my decision, the public involvement process used, alternatives considered, findings required by laws and regulations, information regarding opportunities to appeal, and persons to contact about the analysis.

## **Background**

The Upper Greenbrier North (UGN) project area is located in the upper part of the Greenbrier River watershed, in Pocahontas County, West Virginia (see Figure 1). The project area is on the Greenbrier Ranger District and includes four sub watersheds: Little River; Headwaters East Fork Greenbrier River; West Fork Greenbrier River; and Outlet East Fork Greenbrier River. Approximately 200 adjacent acres to the north, in the Upper Laurel Fork drainage, are also included in the project area. In the UGN project area boundary, an estimated 69,600 acres (81 percent) are National Forest System (NFS) lands, and 15,800 acres (19 percent) are private lands. Activities will take place on approximately 8,340 acres, all of which are located on NFS lands (see project area and activity maps in the appendices to this Decision Notice). A large project area was chosen to allow better consideration and analysis of cumulative impacts and landscape ecology factors such as spruce-hardwood ecosystem connectivity, age class distribution, and watershed improvement needs and opportunities.

Activities included in this Decision will help move existing conditions toward desired conditions for the project area as described in the Monongahela National Forest Land and Resource Management Plan (Forest Plan, 2006, as updated in 2011). The Upper Greenbrier Watershed Assessment for the East and West Forks of the Greenbrier River (MNF 2007) identified findings, made recommendations, and identified actions needed in the watershed.

**Figure 1.** Upper Greenbrier North Vicinity Map



From the 1880s through the early 1900s, extensive timber harvesting occurred across the state. Construction of railroads doubled in the 1880s and then doubled again in the 1890s, allowing access to and transportation of the timber resource (Lewis, 1998). As a result, much of what is now the Monongahela National Forest had been clearcut by the late 1920s, including the Upper Greenbrier area. For this reason, the UGN project area consists largely of closed-canopy even-aged forest, with a large percentage of the forested stands between 60 and 100 years old. Many of the older trees are competing for nutrients, resulting in slower growth and susceptibility to insects and disease.

In recent years, field reviews of existing conditions have been completed within the UGN project area. These reviews were aimed at comparing existing conditions with the desired future conditions outlined for the UGN planning area. Key differences related to this project were found in Forest Plan Management Prescriptions (MP) 3.0 (vegetation diversity emphasis), MP 4.1 (spruce and spruce–hardwood restoration emphasis), and MP 6.1 (wildlife habitat emphasis).

For MP 3.0, vegetation diversity emphasis, the Forest Plan describes the desired future condition of the forest as a mosaic of stands of predominantly hardwood trees (Forest Plan, p. III-6). It further states, “The stands will vary in size, shape, height and species....” There is a large gap between the desired area in sawtimber-size trees and the amount that currently exists. There is also a large gap between the desired acreages for young trees (10 to 20 percent) and the amount that currently exists (4 percent) (Table 3.3.4.A of the final UGN EA).

For spruce and spruce–hardwood restoration emphasis, MP 4.1, the Forest Plan focuses on ecosystem restoration and management of red spruce and spruce–hardwood communities. Desired future conditions for spruce and spruce-hardwood include a viable spruce component in the overstory and connectivity with adjacent spruce-hardwood ecosystems. Some portions of the project area have little or no understory spruce and consequently have little potential for spruce ecosystem restoration. Many hardwood stands, however, have enough spruce in the understory that various commercial and noncommercial management techniques could be used to release the spruce and eventually increase the overstory spruce component, thereby helping to restore a number of spruce and spruce-hardwood stands in the project area.

For MP 6.1 wildlife habitat emphasis, the Forest Plan describes the desired future condition as providing “...a diversity of habitats for wildlife species.... Management activities result in relatively high levels of sustainable mast production in important species such as oak, hickory, and black cherry” (Forest Plan, p. III-28).

In addition to a loss of age diversity within the UGN project area, there is an advancing front of beech bark disease. This disease results when the bark is attacked by the non-native beech scale insect. Subsequent invasion of the bark by a fungus produces severe injury or mortality. Typically, mortality occurs on an estimated 30 percent of infected trees within a stand and severe injuries occur on up to 60 percent of the remaining trees (Houston 1975). Many of the affected stands in the project area have been previously thinned, and in some locations, beech is the predominant species in the residual stand. Once beech die of the disease, the trees re-sprout, forming dense thickets. The dense regeneration of beech within the infested stands prevents the regeneration of other hardwood or conifer trees. As a result, the productivity of the stands will decline as the disease progresses, decreasing stand health.

In addition, an opportunity exists within the project area to plant disease-resistant chestnut to help improve species diversity and mast production.

The MNF is taking action in the UGN project area to help move existing conditions toward desired conditions as described in the Forest Plan. Although no single project can accomplish all desired conditions, goals, and objectives in an area as large as the UGN project area, this project will help accomplish the most important ones, as identified by my interdisciplinary team of resource professionals. This project is designed to help achieve the following purposes or objectives:

- Restore and/or protect the red spruce–northern hardwood ecosystem;
- Improve the health and vigor of forested stands, with an emphasis toward desirable tree species, especially mast-producing trees in MP 6.1, or red spruce in MP 4.1;
- Restore a fire-adapted oak hickory ecosystem;
- Regenerate selected areas to not only provide a timber resource to the economy, but to create early successional habitat and perpetuate a diversity of mast-producing species;
- Treat infestations of nonnative invasive species;
- Restore aquatic and riparian habitat; and
- Improve recreation opportunities.

More detailed information about Forest Plan direction applicable to the UGN project is included in Appendix I of the final UGN EA (March 2012). More information on the purpose and need for this project is given below.

### **Purpose and Need**

The “Need” for taking action through this project can be thought of as the problems identified in the project area. The “Purpose” can be thought of as objectives – what the end results should be when the problems are solved or reduced.

Table 1 below describes needs or problems in the left column. The right column describes the purpose of the project, which can also be viewed as objectives or desired end results.

**Table 1.** Purpose and need for action in the UGN project area

Need or Problem	Purpose or Objective
<p><b>Current forest stand health and composition, wildlife habitat, and ecosystem conditions:</b></p> <ol style="list-style-type: none"> <li>1. Stands that were previously harvested with a regeneration prescription have regenerated to overly dense stands, which may result in competition that inhibits the growth and survival of desirable species.</li> <li>2. In some areas, species of deciduous and conifer trees desirable for wildlife are lacking or lower than desired.</li> <li>3. Openings, savannahs, and brushy habitat used by wildlife tend to become forested if not maintained.</li> <li>4. Dense overstories of hardwoods, red pine, and Norway spruce may prevent establishment, growth, and survival of red spruce in areas that formerly supported red spruce and mixed red spruce-hardwood forests.</li> <li>5. In some areas, snag densities are lower than desired for wildlife.</li> <li>6. In areas where desired conditions call for a substantial component of early and early-mid successional vegetation, forest stands are dominated by mid and mid-late successional stands. Some existing early and early-mid successional stands will move into later successional stages during the next decade.</li> </ol>	<p><b>Improve forest stand health and composition to enhance future vegetation, wildlife habitat, and ecosystems conditions:</b></p> <ol style="list-style-type: none"> <li>1. Reduce the density of stands that were previously regenerated.</li> <li>2. Increase the presence of species of deciduous and conifer trees desirable for wildlife where they are lacking or low.</li> <li>3. Maintain openings, savannahs, and brushy habitat used by wildlife.</li> <li>4. Increase establishment, growth, and survival of red spruce in areas that formerly supported red spruce, but are now dominated by hardwoods, red pine, and Norway spruce.</li> <li>5. Increase snag densities in areas where they are lower than desired for wildlife.</li> <li>6. Provide more early and early-mid successional forest vegetation.</li> </ol>
<p><b>Current Commercial Timber Situation:</b></p> <ol style="list-style-type: none"> <li>1. Opportunities to commercially harvest timber from National Forest System lands have decreased in recent years.</li> <li>2. Job opportunities and revenue to the local communities from commercial timber harvesting have decreased in recent years.</li> <li>3. Shade-intolerant species may have difficulty competing in stands that are regenerated.</li> <li>4. Deer browse in shelterwood regeneration units can prevent successful regeneration of shade-intolerant species.</li> <li>5. Overly dense stands may inhibit growth and survival of individual trees.</li> <li>6. Current access to proposed vegetation management units is often over roads that are not in good enough condition to safely handle the increased traffic that would result. In some cases, there is no road access to proposed harvest units.</li> <li>7. Road work and vegetation management activities may introduce or spread NNIS species.</li> </ol>	<p><b>Provide Commercial Timber Products:</b></p> <ol style="list-style-type: none"> <li>1. Provide opportunities to commercially harvest timber from National Forest System lands.</li> <li>2. Increase job opportunities and revenue to the local communities from commercial timber harvesting.</li> <li>3. Improve survival and growth of shade-intolerant species in stands that are regenerated.</li> <li>4. Prevent deer browse in shelterwood regeneration units to improve successful regeneration of shade-intolerant species.</li> <li>5. Increase growth and survival of individual trees in overly dense stands.</li> <li>6. Improve road conditions where needed to safely handle increased traffic that would result from vegetation management proposals. Provide road access where needed.</li> <li>7. Prevent NNIS infestation and spread to the extent feasible. Treat NNIS species where proposed activities have the potential to introduce or spread infestations.</li> </ol>

Need or Problem	Purpose or Objective
<p><b>Current watershed, aquatic, and soil conditions:</b></p> <ol style="list-style-type: none"> <li>1. Stream channels are degraded by historic and present day uses and facilities. Forest classified and unclassified (woods) roads contribute substantial sediment and accelerated runoff to many streams. Within-channel sediment relationships are out of balance. Sediment loads and channel bank erosion are elevated. Some stream segments tend toward less stable channel types. Various watershed and stream channel conditions, such as lack of stream shading, likely contribute to increased daily stream temperature fluctuations as well as increased extent and duration of summer maximum and winter minimum stream temperatures.</li> <li>2. Aquatic habitat fragmentation contributes to impaired health of aquatic populations and possibly extirpated segments of isolated aquatic populations by reducing the availability of aquatic habitats. Aquatic organism passage is adversely impacted by numerous USFS and State roads. Passage barriers create isolated populations and reduce available aquatic habitat and connectivity.</li> <li>3. Aquatic habitat composition is highly skewed toward simplistic shallow habitats that are typically characterized as riffles. Deeper water habitats such as pools are largely under-represented and of poor quality and complexity. Though relatively scarce in streams, large woody debris is a primary pool formative feature for the infrequent pools in the upper Greenbrier River watershed.</li> </ol>	<p><b>Improve watershed, aquatic, and soil conditions:</b></p> <ol style="list-style-type: none"> <li>1. Reduce soil erosion, accelerated runoff, and stream sedimentation from roads and unvegetated areas. Revegetate riparian areas and stabilize eroding stream banks.</li> <li>2. Restore aquatic passage and improve population and habitat connectivity.</li> <li>3. Improve aquatic and riparian habitats within and along both cool water and cold water streams in the watersheds of the West Fork Greenbrier River and the East Fork Greenbrier River. Increase in-channel large woody debris and stream shading.</li> </ol>
<p><b>Current Recreation Conditions:</b></p> <ol style="list-style-type: none"> <li>1. Approximately 1 mile of Span Oak Trail, from the Little River Forest Road 44 intersection, is swampy and wet. This section of trail produces erosion and delivers sediment to the stream, resulting in degradation of aquatic habitat.</li> <li>2. The wet swampy section of the trail can be hazardous to hikers, especially in wet weather.</li> </ol>	<p><b>Recreation Improvements:</b></p> <ol style="list-style-type: none"> <li>1. Reduce erosion and sediment delivery to the stream and resulting degradation of aquatic habitat coming from the wet, swampy section of the Span Oak Trail.</li> <li>2. Improve hiker safety resulting from the wet, swampy portion of the Span Oak Trail.</li> </ol>

## **My Decision**

Based on my review of the Upper Greenbrier North EA, supporting information in the project file, and public comments received throughout the process, it is my decision to implement a modified Alternative 5 as my Selected Alternative.

The original proposed action evolved into a modified Alternative 5 over time, influenced by public input, consultation with the U.S. Fish and Wildlife Service, internal discussions, and analysis results.

As described in the draft UGN EA, Alternative 5 was developed from the proposed action (Alternative 2) to respond to public and internal issues and concerns, while still meeting the project's purpose and need. Concerns were expressed about the potential effects to the West Virginia northern flying squirrel (WVNFS), soil erosion, spruce connectivity in relation to timber harvest, watershed health, and wildlife habitat. During the comment period for the draft EA in February 2011, the West Virginia northern flying squirrel was relisted under the Endangered Species Act. I modified Alternative 5 due to this relisting, along with other public and internal concerns. Many of the modifications to Alternative 5 were developed after consultation with the U.S. Fish and Wildlife Service and U.S. Forest Service Research, and they were designed to reduce the overall potential impacts to WVNFS or its habitat, as well as to soil and water resources. Therefore, I find the effects of clarifying and modifying this alternative are within the scope of the EA analysis and the predicted impacts of all the alternatives considered in detail.

The Selected Alternative has the following modifications from Alternative 5:

- In Alternative 5, Units 225, 226, 227, 228, 229, 231, 232, 238, 240, and 245 were prescribed for commercial spruce restoration by removing overstory red pine plantations to release the spruce understory trees. These units will not be harvested in the Selected Alternative.
- Eight conventional timber landings in the East Fork Greenbrier River watershed associated with Units 225, 226, 227, 228, 229, 231, 232, 238, 240, and 245 in Alternative 5 will not be constructed and one existing landing associated with these units will not be used or maintained under the Selected Alternative. Road reconstruction associated with these units (6.3 miles) will not take place under the Selected Alternative.
- In Alternative 5, Units 42 and 43 (prescribed for spruce-hardwood regeneration) have 17 acres within suitable WVNFS habitat. These acres will not be harvested in the Selected Alternative to avoid regeneration cutting in suitable WVNFS habitat and the potential impacts this action could have.
- In Alternative 5, Units 29, 30, and 102 are prescribed for hardwood timber harvests. Based on internal concerns, I have further reduced the unit sizes to add additional protection to the riparian areas in these units. I have also shortened the new road spur in Unit 102 to reduce the potential impacts of road construction on soil and water resources.
- In Alternative 5, Units 246 and 282 were prescribed for commercial thinning for spruce restoration by cutting overstory hardwoods to release spruce understory trees within WVNFS suitable habitat. These units will not be harvested in the Selected Alternative.
- In Alternative 5, Units 82, 83, and 206 were proposed for commercial harvest (prescribed for both spruce regeneration and spruce-hardwood regeneration). Although these units are not located in suitable WVNFS habitat, these units will not be harvested. I decided to drop these units in response to concerns over new road construction. As a result, Forest Road 464 B, which was proposed as 1.5 miles of new road construction on the ridge north of Mikes Run, will only be 0.7 miles.
- Harvest Unit 69 will be under-planted with spruce trees immediately after harvest to improve spruce-hardwood forest and connectivity over the long term.
- In Alternative 5, Forest Trail 367 Hinkle Run is planned for decommissioning. We will continue to decommission the road and trail section with the exception of the northern 0.5

mile section to the junction of Forest Road 248. This 0.5 mile section will be closed to vehicular traffic but will continue to be managed by the WV Division of Natural Resources for wildlife habitat.

- In addition to seasonal clearing restrictions, we will limit the amount of habitat disturbance associated with road decommissioning that occurs within WVNFS suitable habitat per year. UGN projects will conduct no more than 5 miles per year of active decommissioning on road or trail segments as defined in the USFWS concurrence letter.
- In addition to seasonal clearing restrictions, we will limit trees cut around aquatic passage replacement projects in WVNFS habitat to a maximum of 0.25 acres outside the cleared right of way at any given site and shall not affect more than an average of 0.1 acre of land outside the existing right of way for all 39 sites.
- Maintain current access on roads as needed to access noncommercial spruce restoration units until the spruce restoration work is done before decommissioning the roads.

Specifically, I find the effects of these changes are within the scope of the EA analysis for the following reasons. I feel that the Selected Alternative has lowered potential impacts to WVNFS in several key areas. Commercial spruce restoration within suitable WVNFS habitat, including the ten red pine units (225, 226, 227, 228, 229, 231, 232, 238, 240, and 245) will not be harvested in this decision because I feel that an adaptive management strategy needs to be developed to learn from our spruce restoration before we fully understand the impacts to WVNFS. We are not sure whether the squirrels are using the non-native red pine stands and I want to be clearer on the impacts prior to any harvesting and spruce restoration in red pine. The U.S. Fish and Wildlife Service has agreed with this decision. To further protect the WVNFS, I am removing the 17 acres of harvesting within Units 42 and 43. The 17 acres are in suitable WVNFS habitat.

The WVNFS relisting has resulted in these additional adjustments to Alternative 5. Some of the best areas to release spruce are naturally considered suitable WVNFS habitat because of proximity to overstory spruce. I think we have enough knowledge to realize that red spruce dominated forests are an essential habitat component for WVNFS. I also think adequate information is available to design and implement this type of activity in WVNFS habitat as a recovery action. However, as a result of our consultation with FWS, I have decided to postpone management in all areas of our commercial spruce restoration in suitable WVNFS habitat because of the short-term risk for negative impacts to the WVNFS. Although I believe the harvests would have long-term benefits for WVNFS, I feel that we should avoid the potential short-term impacts at this time.

Units 29, 30, and 102 are located in the Mountain Lick Creek watershed that receives sediment from private property. I want to make sure we reduce the sediment load as much as possible in this watershed. Improvements in Mountain Lick Creek watershed have occurred in the past 12 to 18 months with the reconstruction of the Johns Run Road. We can further reduce potential impacts to the stream by exercising additional caution around the riparian areas in these units and reducing the amount of road construction for timber hauling out of Unit 102. I feel that this reduction will help address a key sediment issue in the Mountain Lick watershed.

The internal team worked very hard to minimize new road construction and maximize road decommissioning. I reviewed the analysis and feel that by removing construction of 0.8 miles of new road construction on Forest Road 464 B we can further lower the potential impacts of soil erosion and stream sediment. Additionally, this action will result in lower future road

maintenance costs for this road. I also feel that not harvesting the associated Units 83, 82, and 206 (along with 3 conventional harvest landings) will address concerns both about future road maintenance costs and improving spruce corridor connectivity.

Harvest Unit 69 is in a critical location for spruce connectivity. There is little spruce understory in the unit and I feel that under-planting has been successful in other locations for the Central Appalachian Spruce Restoration Initiative group, of which we are an active partner. Working with this group of partners, we can improve spruce habitat by planting spruce trees, and at the same time, get local volunteer involvement in spruce restoration.

We have worked with the public and outside agencies to assure the access needed to continue authorized activities. We will continue to work cooperatively with the WV Division of Natural Resources to cooperatively decommission Forest Trail 367 at Hinkle Run. The partial decommissioning of this trail will provide both the needed access to manage the wildlife habitat in the area and reduce the soil erosion that is currently occurring.

### **Activities Selected for Implementation**

Because my Selected Alternative includes changes from the Alternative 5 that was analyzed in the UGN EA, I want to be clear about the activities and modifications to Alternative 5 that will be implemented, and so they are described in detail below. All acres and mileages given in this document are estimates obtained either from GIS data files or GPS measurements in the field. Activities are proposed only on NFS lands and roads, with some maintenance occurring on State roads.

With this decision, 2,712 acres will be harvested commercially. This includes the restoration cuts for spruce, hardwood, and spruce-hardwood prescriptions. An estimated 3,550 acres will be non-commercially treated for stand improvement. This includes mechanical thinning using chainsaws and herbicide spraying. The majority of the spraying would occur at the base of the tree/cut tree, but there will also be some foliar spraying. The breakdown of each activity is listed below:

#### **Commercial Spruce Restoration Treatments (591 acres)**

- Commercially thin mature northern hardwood stands to release seedling, sapling, and midstory red spruce (513 acres).
- Spruce-hardwood regeneration from commercial clear cut or heavy thinning (78 acres).

#### **Commercial Timber Harvest and Thinning – Hardwood Emphasis (see Table 2 below)**

- Regenerate selected stands 70 years old or older to create early successional habitat and perpetuate a diversity of mast-producing species. Methods include clearcut with reserves and shelterwood.
- Pre-treat stands to be regenerated with herbicides and/or by hand cutting to allow shade-intolerant species to compete successfully.
- If needed, shelterwood regeneration units will be fenced or otherwise protected after harvest so deer browse does not prevent successful regeneration of shade-intolerant species.

- Plant desired species, such as mast-producing species to provide food for wildlife or red spruce to improve the conifer component (using Central Appalachian Spruce Restoration Initiative partners).
- Commercially thin selected hardwood stands.
- After harvesting, if monitoring shows interfering vegetation is still a problem in the unit, then herbicides may be used for control.
- Site preparation, using hand tools, chainsaws, and targeted herbicide applications would be done to ensure regeneration.
- Landings will be constructed for conventional or helicopter methods of harvest. After use, landings will be ripped if needed to eliminate compaction. They would be seeded with a wildlife mix of native or noninvasive species for temporary wildlife openings. The landings would not be maintained.

**Table 2.** Summary of commercial timber harvest and commercial thinning for spruce and hardwood emphasis regeneration

<b>Commercial Timber Actions and Treatments</b>	<b>Approximate Acres</b>
Clearcut with reserve trees, conventional method	186
Clearcut with reserve trees, helicopter method	278
Shelterwood, conventional method	937
Fencing in shelterwood units to prevent deer browsing	Maximum of 937
Commercial thinning in hardwood stands	316
Treatment with herbicides: Both before and after harvest	1,810
Conventional landings (57), @ 0.5 acres per landing	28.5
Helicopter landings (6), @ 2.0 acres per landing	12.0
Planting red spruce in Units 69, 82	76
Planting American chestnut in Units 49, 50, 55, 57, 64, 88	153

Clearcutting with reserve trees will occur in units with high components of striped maple and/or beech in the understory. Removal of the overstory canopy will allow shade intolerant to moderately tolerant species such as black cherry, red oak, white ash, and yellow poplar to become established in the understory, thus decreasing the competition from striped maple and beech and allowing more desirable species to regenerate and grow. Some wildlife reserve trees would remain in the units after harvest.

#### **Noncommercial Spruce Restoration Treatments (4,751 acres)**

- Release seedling and sapling-size red spruce present throughout treated stands by using herbicides to control competition from hardwood sprouts.
- Precommercially thin units that were previously harvested with a regeneration prescription to improve the health and vigor of those stands with sapling-size trees, with an emphasis on releasing red spruce. Methods include mechanical timber stand improvement (TSI) with

chainsaws in regeneration units less than 15 years old and chemical TSI with herbicides in regeneration units over 15 years old.

- Plant red spruce seedlings in connective corridors that currently have low densities of red spruce (using Central Appalachian Spruce Restoration Initiative partners).
- Create snags for wildlife habitat by girdling trees. Snag creation would take place on 15 to 20 percent of the basal area of selected noncommercial spruce restoration units. An estimated 10 percent of the snag creation would create openings up to 0.1 acre by girdling live red pine or Norway spruce. The remaining 5 to 10 percent of the basal area girdled would be scattered trees. The only snag creation that would take place within Forest Plan default stream buffer zones would be for noncommercial spruce restoration or TSI (approximately 800 acres).

### **Noncommercial Timber and Wildlife Stand Improvement – Hardwood Emphasis (2,125 acres)**

- Precommercially thin units that were previously harvested with a regeneration prescription to improve the health and vigor of those stands with sapling-size trees, with an emphasis on releasing mast-producing species. Methods include mechanical TSI with chainsaws in regeneration units less than 15 years old and chemical TSI with herbicides in regeneration units over 15 years old (879 acres mechanical and 1,246 acres herbicides).
- Create snags where snag densities are lower than desired for wildlife.

### **Herbicide Work Related to Nonnative Invasive Species (46 acres with some acres treated pre and post activity)**

- Treat existing infestations of nonnative invasive species.
- Monitor treated infestations to determine effectiveness of treatments, and survey areas where spread or introduction of nonnative invasive species may occur in order to identify any needs for additional treatments.
- Ensure activities are conducted in a manner to minimize the spread or introduction of nonnative invasive species.

### **Road Work Related to Timber Harvest and Watershed Restoration (see Table 3)**

- Construct, reconstruct, and/or maintain roads necessary for vegetation management and public access.
- Rehabilitate some road sections in order to address runoff and erosion that degrade certain aquatic habitats.
- Decommission some Forest System roads, inventoried “woods” roads, and trails that are contributing to degraded watershed conditions.
- A small portion of the roads to be maintained or decommissioned are in the 2001 East Fork Greenbrier Inventoried Roadless Area (IRA). Road maintenance and decommissioning would be consistent with the Roadless Area Conservation Rule (RACR), which specifically allows road maintenance and prohibits most road construction or reconstruction in IRAs to

improve or maintain watershed conditions. The proposed roads would not be maintained or decommissioned unless or until these activities are approved by the Regional Forester or allowed by the Forest Service following RACR litigation resolution.

**Table 3.** Summary of road work

Road work related to Timber Harvest and Watershed Restoration	Approximate miles
Road construction	8
Road reconstruction	0.8
Skid roads/trails for timber harvest	60
Road maintenance on FS system roads	81
Non-system roads converted to FS system roads and maintained	2.1
Forest system roads and trails decommissioning	32
Non-system (woods) roads decommissioning	88

#### **Aquatic Passage Restoration (51 acres)**

- Restore 51 aquatic passage sites in streams by treating road-related structures (such as culverts or low water crossings) that presently impair or prevent aquatic passage, through structure maintenance, repair, replacement, or removal (one acre each).

#### **Aquatic and Riparian Restoration (see Table 4).**

- Improve aquatic habitat in streams throughout the project area by delivering large wood to stream channels that are deficient in the large woody debris habitat component.
- Restore aquatic and riparian habitats by improving riparian conditions along numerous streams within the project area. Restoration would be accomplished primarily by planting a variety of riparian-suited woody plant species along stream segments that are deficient in riparian woody vegetation.
- Some of the large woody debris recruitment and riparian restoration would occur within the 2001 East Fork Greenbrier IRA to provide for ecosystem restoration. Ecosystem restoration activities are consistent with the RACR, and these would not involve road construction or timber harvest. These activities would not be implemented unless or until they are approved by the Regional Forester or allowed by the Forest Service following RACR litigation resolution.

**Table 4.** Summary of riparian and aquatic restoration for watershed restoration, in number of stream segments, stream miles, and acres

Treatment	Approximate acres
Planting for riparian and aquatic restoration - # of stream segments	70
Planting for riparian and aquatic restoration - # of stream miles	36.23
Planting for riparian and aquatic restoration - acres	660
Large woody debris placement – maximum # of stream miles	Up to 197
Large woody debris placement – average # of trees per mile	53

### Recreation Improvements

- Re-route a section of the Span Oak Trail to avoid a swampy, wet area. Rehabilitate the old trail location (1 mile).
- Manage dispersed recreation sites by: installing culverts where needed; closing some sites; converting some sites from drive-in to walk-in; and hardening and/or barricading other sites, as needed, to prevent or minimize resource damage (77 sites less than 1 acre each).

### Prescribed Burning (approximately 610 acres)

- Conduct low-intensity prescribed burning to help restore fire-adapted oak hickory ecosystems (610 acres and 1 mile of machine/hand line).

Current activities and policies such as routine road maintenance and fire suppression will continue along all roads displayed above that are not scheduled for storage or decommissioning. All applicable Forest Plan standards and guidelines will be implemented to accomplish the projects in my decision. Also, as a result of site-specific field reviews of the project area, riparian management guidelines will be implemented that go beyond what is required in the Forest Plan. These guidelines, as well as other site-specific mitigation measures, will be implemented as described in Design Features and Mitigation Measures in Appendix A of this document.

### Reasons for My Decision

I have chosen to implement the Selected Alternative because, when compared to the other alternatives, it provides the best balance between meeting the desired conditions for project area vegetation management, spruce restoration, and wildlife habitat (Forest Plan, pp. III-6, III-12, and III-28), while protecting the other resources in an ecologically and economically efficient manner. Specifically, my Selected Alternative addresses the following concerns and objectives.

- I received considerable comments of concern for the WVNFS and potential impacts to this listed species. Alternative 5 was created during the preparation of the environmental assessment in part to reduce impacts to sensitive wildlife species, including the WVNFS. Based on the relisting of this species and comments received on the draft EA, I have modified Alternative 5 to further reduce potential impacts in the Selected Alternative. I have removed 12 commercial spruce restoration units and portions of 20 commercial spruce restoration units from harvest in this modification, and added spruce under-planting in Unit

69. I feel that these measures, along with the mitigations listed in the appendix to this decision, will adequately protect WVNFS and its suitable habitat.

- The 1,479 acres of commercial regeneration harvests will help reduce the disparity that exists between Forest Plan MP 3.0 forest diversity goals and existing conditions. The result will be a decrease in mature timber stands, moving closer to the desired conditions for mid-to-late successional communities, and an increase in seedling/sapling stands, moving closer to the desired conditions for early successional communities. These harvests will also help ensure that different types and ages of vegetation habitat are dispersed throughout the area.
- The 829 acres of commercial thinning harvests (both spruce restoration and hardwood regeneration) will reduce vegetative competition and improve stand composition and overall health in the project area. Low quality, poorly formed, and diseased trees will be removed. This will enhance the overall growth and quality of remaining trees, and provide for healthier stands. Spruce trees will grow much more quickly in full sun to reach maturity and help provide suitable habitat for the WVNFS.
- Both the regeneration and thinning harvests will help meet the desired future conditions of having a mosaic of stands of predominantly hardwood trees, resulting in relatively high levels of sustainable timber and mast production (Forest Plan, III-6). They will also help ensure the project area contains stands that vary in size, shape, height, and species.
- Treatment of stands for beech bark disease will result in increased health and vigor to remaining trees within these stands.
- The Selected Alternative will provide the opportunity for planting disease-resistant chestnut trees in regenerated stands to increase stand diversity and mast production.
- The analysis indicates that this alternative can be implemented while adequately protecting resources. With regards to soil and water resources, the Selected Alternative will use helicopter yarding to remove trees from those stands with steep slopes and erosive soils to reduce the potential for adverse soil and sediment impacts. Helicopter logging will contribute little to soil compaction, rutting, soil erosion, or stream sedimentation because no mechanized equipment will be driven over these acres. The conventional, ground-based skidding used in stands with less sensitive soils could compact, rut, and erode soils and potentially contribute to stream sedimentation because skid road development and over-land skidding will disturb soils. However, given that less than 60 miles (of skid roads) are expected to be created, which is well below any threshold of concern for soil disturbance, that Forest Plan standards and guidelines and mitigation that will be implemented, and that additional protective measures have been included to further minimize these impacts, such effects are expected to be minor.
- The disturbance in the watershed will be phased over a period of 10 years. Some restorative actions will have finished prior to others starting due to the sequencing of the project. I feel that the total and cumulative disturbances have been analyzed and the effects are minor. All of the selected actions have extensive mitigation (Appendix A of this Decision) to reduce potential impacts as the project is implemented. Total acres of all disturbances over 10 years will be approximately 9.3 percent (7,994 acres) of the 85,400 acres watershed. This includes actions that would help to restore the watershed such as road decommissioning, maintaining

roads, improving aquatic passage, placing large woody debris, rerouting a trail, and planting in riparian areas.

- The Selected Alternative is consistent with Forest Plan goals, objectives, and desired conditions, and it will comply with Forest-wide and MP standards and guidelines.

My decision and the analyses it is based upon utilize the best scientific information available at this time. The need to employ the best science is not new, as Agency decisions have always required a sound technical basis. What constitutes best available science can vary over time and across scientific disciplines. My conclusion is based on a review of the record that shows a thorough review of relevant scientific information, a consideration of responsible views, and the acknowledgement of incomplete or unavailable information, scientific uncertainty, and risk.

### **Public Involvement Process**

Section 2.1 in Chapter 2 of the final UGN EA describes in detail the processes that were used to solicit public and internal comments on the Proposed Action and alternatives considered for implementation. Public input on the UGN proposed activities was solicited from the general public, Forest Service employees, other public agencies, and organizations. Public involvement was sought through various means:

- On April 1, 2009, the UGN proposal was listed in the Monongahela Schedule of Proposed Actions (SOPA), a publication that is mailed to over 140 individuals and organizations and is posted on the MNF's website. The project has been listed in each subsequent issue of the SOPA.
- The week of August 3, 2009, a scoping letter requesting input was sent to over 180 interested parties, permittees, and landowners. This scoping letter summarized the purpose and need for action, the Proposed Action, and described various ways to get additional information and how to provide input.
- On August 6, 2009, a legal notice was published in *The Pocahontas Times*, the newspaper of record, requesting input. This legal notice gave a short summary of the purpose and need and Proposed Action, and described how to get additional information and how to provide input.
- On August 7, 2009, the proposal and request for input were posted for review on the MNF's website at [www.fs.fed.us/r9/mnf/](http://www.fs.fed.us/r9/mnf/) under "Forest Planning".
- On August 20, 2009, an open house about the proposed UGN project was held at the National Radio and Astronomy Observatory in Greenbank, WV.
- On February 2, 2010, the scoping letter, appendices, and maps were attached in the SOPA/PALS database so that the public could access them from: [http://www.fs.fed.us/nepa/project\\_content.php?project=28198](http://www.fs.fed.us/nepa/project_content.php?project=28198).
- On February 24, 2011, the UGN draft EA was released for a 30-day notice and comment period. This release was accompanied by a legal notice published in *The Pocahontas Times*.

Over 150 individuals and organizations contacted us about the UGN proposal in the form of letters, e-mails, phone calls, or by attending the public meeting since the public input process began in April 2009 (project file). The Interdisciplinary Team (IDT) and I reviewed information

received from individuals, organizations, and other agencies. The disposition of the comments that were received is documented in the project file.

All public and internal comments were reviewed and considered in my decision. Some of the comments received were either outside the scope of this analysis or not applicable to the decision being made, and were therefore not relevant to the EA. Comments relevant to the EA and the decision to be made were used to help define potential issues, develop and modify alternatives, develop design features or mitigation measures, identify environmental effects, and guide the analysis and decision processes.

## **Issues and Concerns Identified and Other Alternatives Considered**

### **Issues and Concerns**

One purpose of soliciting comments is to determine whether there are substantive issues that could affect the Proposed Action, or that would result from the Proposed Action. Seven issues and concerns were identified through scoping and determined to be substantive enough to warrant the development of a new alternative, or the modification of an alternative, or the development of design features or mitigation measures, or the analysis of potential effects. These issues and concerns are summarized below. Detailed information is described in Sections 2.2.1 through 2.2.7 in the final UGN EA.

Soil Erosion and Stream Sedimentation - The effects of ground-disturbing activities could result in more soil erosion and delivery to stream channels, which could adversely affect in-stream habitat for trout and other aquatic biota. This issue was addressed through design features and mitigation measures, alternative modification, and effects analysis. It will also be addressed by following Forest Plan standards and guidelines.

Herbicide Use - The herbicides used may affect both target and non-targeted plants, and move off-site and possibly adversely impact terrestrial and aquatic plants, animals, water quality, and human health and safety. This issue was addressed through design features and mitigation measures, and effects analysis. It will also be addressed by following Forest Plan standards and guidelines, and herbicide labeling instructions.

#### Watershed, Riparian, and Aquatic Resource Health

Earth-disturbing and other activities have the potential to affect watershed, riparian, and aquatic resource health. Aquatic and riparian restoration actions can eliminate or reduce the amount, severity, and/or duration of existing degraded conditions, offset added effects of some new actions, and speed resource recovery. This issue was addressed through design features and mitigation measures, alternative modification, and effects analysis. It will also be addressed by following Forest Plan standards and guidelines.

Location and Arrangement of Harvest Units in Relation to Spruce Connectivity - Management Prescription 4.1 emphasizes restoration of red spruce and red spruce-hardwood ecological communities, and addresses landscape ecology issues by specifying that restoration efforts focus on expanding and connecting existing habitat patches. Even-aged hardwood regeneration in some proposed units in the Proposed Action would have reduced the opportunity to enhance the landscape connectivity of late-successional red spruce and red spruce-hardwood communities. In parts of the MP 3.0 portion of the project area, spruce restoration would allow alternative landscape connections to be pursued that would reduce the need for spruce restoration in some of

the more marginal areas of MP 4.1. This issue was addressed through alternative development and modification.

Access for West Virginia Division of Natural Resources (WV DNR) to Maintain Wildlife Openings - Road decommissioning could eliminate access for WV DNR to maintain some wildlife openings used by wild turkey. This issue was addressed through alternative development and modification.

Road Access for Future Vegetation Management and Other Uses - Decommissioning roads could eliminate some road access for private individuals and for future forest management. This issue was addressed through alternative development and modification.

Commercial Timber Harvest for Hardwood Management Within Northern Flying Squirrel Habitat - WVNFS is an endangered species and adverse effects to this species must be avoided or minimized to the maximum extent practical. The intent of the Forest Plan as well as USFWS's WVNFS Recovery Plan update (2001) is that activities in WVNFS habitat should be designed to have either no effect or a beneficial effect on the squirrel and its habitat. Furthermore, the WVNFS is a management indicator species (MIS) because it is of high interest and appears to be associated with certain late-successional characteristics. This issue was addressed through design features and mitigation measures, alternative development and modification, and effects analysis.

Due to the extensive measures that were taken to address these issues and concerns, I am confident that they were adequately considered and resolved in the Selected Alternative.

### **Alternatives Considered but Eliminated from Detailed Study**

During initial planning and scoping, six alternatives to the Proposed Action were suggested and considered. Sections 2.3.1 through 2.3.6 in the final UGN EA describe the alternatives that contributed to the overall range of alternatives that were considered, but were eliminated from detailed study for the reasons noted below.

#### **1. Do Not Include Any Conventional Logging; Only Log by Helicopter**

An alternative was considered which would have used only helicopter logging; it would not have included any ground-based logging. Helicopter logging eliminates the need for skid roads and greatly reduces ground disturbance. Reduced ground disturbance would mean less erosion and less sediment input to streams. However, helicopter logging does not provide as many opportunities for local employment as conventional logging. Additionally, helicopter logging is very expensive, and may not be feasible on a large scale, especially with timber prices as low as they have been for some time. Management activities associated with timber harvest-- herbicide treatments, deer control, timber stand improvement treatments, wildlife enhancement work, monitoring, etc. – would also be very expensive, difficult, and time-consuming without access roads. Using helicopter logging only would greatly increase the likelihood that timber and associated activities would not be funded and implemented. Therefore this alternative would no longer meet fundamental parts of the purpose and need and objectives for this project. For these reasons, a helicopter logging only alternative was eliminated from detailed study.

#### **2. Do Not Include Any Herbicide Use**

An alternative was considered which would not have used any herbicides. It would have implemented all the same activities as the Proposed Action, except that no herbicides would have

been applied. Beech bark disease has spread throughout the project area, which has led to the formation of dense thickets of beech root sprouts. This dense understory of beech root sprouts prevents the establishment of desirable regeneration and reduces species diversity. Cutting beech without using herbicides would lead to an increase in the number of beech root sprouts competing with desirable regeneration (Kochenderfer et al. 2006, see final UGN EA for references).

Prescribed fire was also considered as an alternative to using herbicides. This area of the Forest receives over 50 inches of precipitation a year, making a majority of the units in the UGN area too wet to effectively use prescribed burning. The Allegheny hardwood forest type does not develop a fuel accumulation large enough to sustain large-scale burns (USDA 1991). Fire does not control fern and grasses, which are a major problem within the project area (Cody et al. 1977; Darbyshire et al. 1989; see final UGN EA for references).

Eliminating the use of herbicides would reduce our ability to control nonnative invasive plants that may be spread by project activities. While some species can be controlled using non-herbicide methods such as hand pulling, mowing, and grubbing, these methods are only practical for small infestations and are not effective at all on some species (e.g., reed canary grass). Some of the existing infestations in proposed activity areas are too large to control practically without using herbicides. These activity areas likely would have to be dropped to maintain consistency with Forest Plan direction that requires measures to reduce the spread of invasive species due to project activities. Dropping these areas would adversely affect our ability to achieve desired conditions and project objectives.

For these reasons, management without using any herbicides would not meet the purpose and need of this project, and it was therefore eliminated from detailed study.

### **3. Do Not Use Any Even-Aged Timber Management**

An alternative was considered that would have used only uneven-aged timber management, such as single-tree selection or diameter-limit harvesting; no even-aged management would have been used.

Uneven-aged management would not move the hardwood management portions of the project area toward the desired age class diversity. Uneven-aged management would create a mosaic of age classes within individual stands, but it would not move toward a mosaic of tree stands of various heights, shapes, and ages across the project area.

Uneven-aged management over the long term would favor shade-tolerant species, changing the overstory species diversity from what it is now. Repeated partial harvests that do not create sizable canopy openings would lead to a reduction in species diversity because the resulting light conditions favor relatively few species (Miller and Kochenderfer 1998; see final UGN EA for references). Reproduction in uneven-aged managed stands becomes dominated by shade-tolerant species, such as striped maple and American beech (Trimble 1970). Given this project area's ecological setting, such an alternative would not create the growing conditions needed to allow shade-intolerant mast-producing tree species to flourish. Shade-intolerant mast-producing species important to wildlife, such as red oak and black cherry, which are currently in the overstory, would not be able to compete with shade-tolerant beech and maple that are growing in the understory. Uneven-aged management would regenerate mast-producing beech, but due to the wide-spread existence of beech bark disease, beech could not be relied on to provide a long-

term supply of mast for wildlife, although it would likely out-compete species that would provide a reliable mast source.

Deer browsing has negatively affected past regeneration in some stands within and near the UGN project area. Regeneration under uneven-aged management is slower growing (because of low light levels), and subject to deer browsing for a longer time than regeneration under even-aged harvest.

Regeneration of desired species would be much lower without even-aged management, while regeneration of undesirable species would be abundant. This would negatively impact growth and survival of species that would provide wildlife habitat and future timber products. For these reasons, using only uneven-aged timber management would not meet the purpose and need of this project, and it was therefore eliminated from detailed study.

#### **4. Limit Proposed Project Activities to 5 Years Instead of 10 Years**

An alternative was considered which would have limited proposed activities to 5 years, instead of 10 years.

A typical project of this size takes ten years to implement all of the activities effectively. The UGN project is a large area with many different proposed activities. The sheer volume and sequential nature of the work would make implementing all of these activities within five years very difficult, if not impossible. Contracts for just timber harvest are often at least five years long to allow the contractor time enough to complete multiple and staged activities while addressing fluctuating factors such as weather, equipment availability and breakdowns, other work commitments, etc. Add in needed pre-harvest and post-harvest work, and 10 years is a much more reasonable time frame for this type of project.

Although activities would occur for ten years rather than five, the impacts from those activities would be more spread out over time and would likely be less intense than if they were to occur in an abbreviated time frame. The longer schedule of implementation would also provide local jobs and income over a longer period of time.

Many of the activities need to be done sequentially. For example, many of the regeneration cuts being proposed are shelterwood harvests, which require two separate harvests. The first harvest is done to let enough light in to establish regeneration, and the second harvest is done to release the regeneration. This cutting cycle is dependent on adequate seed crops, which only occur every 4 to 5 years. Some road work needs to be done before timber harvest, while other road work would be done after timber harvest. Monitoring of effects is done before, during, and after specific project components are completed. With a many-faceted project such as this, laying out boundaries on the ground, conducting other ground-based pre-requisites, and finalizing paperwork, such as that required by contracting, are all time-consuming.

It is not expected that all the aspects of the project could be completed within a 5-year time frame. Therefore, a 5-year time frame would not effectively meet the purpose of the project or fully address the need for the project, and this alternative was eliminated from further study.

#### **5. Developed Recreation and Trails Proposals**

The proposals about developed recreation centered on Island Campground, which is a six-unit campground popular in the local area. The facilities provided at Island Campground are outdated, do not meet accessibility requirements, and need to be replaced or improved. The

campground is also located in a floodplain, raising public safety concerns. It is anticipated that the planning effort started in the spring of 2010 to address recreation on the Greenbrier Ranger District will be a multi-year process. The Forest is requesting public input regarding the campground and developed recreation as a whole in the UGN project area, to determine the best long-term approach to deal with safety and resource concerns at Island Campground. A separate EA will address this situation.

Trails are a popular recreation activity within the Upper Greenbrier North project area. Some comments from the public requested that the Forest expand the trail system to provide more opportunities. With the passage of the Public Lands Management Act of 2009, the MNF was directed by Congress to develop a plan for non-motorized trail opportunities on the Forest (US Congress 2009). Until this plan is completed and Forest-wide priorities are determined, no new trails will be planned on the Forest. This plan will help determine trail maintenance and construction priorities for the next several years and is expected to be completed during 2012.

### **6. Alternatives 3 and 4**

Alternatives 3 and 4 were only partially developed. Alternative 3 was being developed primarily by a subgroup of the ID Team that focused on eliminating or minimizing potential adverse effects on soil and water resources. Alternative 4 was being developed primarily to incorporate public comments and requests for changes to the Proposed Action.

We did not finalize these alternatives in detail because each would leave unresolved issues, conflicts, or concerns that were identified both internally and from the scoping comments received. Additionally, through interdisciplinary team discussions, it was determined by me that many of the suggested changes to the Proposed Action that were being included in Alternatives 3 and 4 could be integrated or incorporated into a single alternative. By integrating changes suggested for both Alternatives 3 and 4 into Alternative 5, a large majority of the issues and concerns that had been identified could be addressed. Therefore, Alternatives 3 and 4 were not finalized, and were eliminated from detailed study.

### **Finding of No Significant Impact**

After considering the potential environmental effects described in the UGN EA, I have determined that implementing the Selected Alternative will not have a significant effect on the quality of the human environment (40 Code of Federal Regulations (CFR) 1508.27). Therefore, an Environmental Impact Statement is not needed.

To determine significance, I considered both the context and the intensity of these actions.

Significance of an action is to be considered in several contexts such as society as a whole, the affected region, affected interests, and the locality, depending on the setting of the proposed projects. This decision notice and finding of no significant impact is for a set of projects that are site-specific in nature, and their effects were analyzed as such. Significance in this case is heavily based on the effects in the local area rather than the larger regional, national, or global context where effects would be diluted to a relatively meaningless level.

Intensity refers to the severity of the impact. I based my determination of intensity of impacts on the following ten criteria (40 CFR 1508.27).

## 1. Impacts that may be both beneficial and adverse.

As described in Chapter 3 of the final UGN EA, both beneficial and adverse impacts to the human environment may result from implementation of the UGN project:

- Soil disturbance that will occur during implementation of the Selected Alternative may result in sediment being released to nearby streams in the short term. Harvest units, roads, and skid roads have been located to minimize their impact to sensitive soils, such as steep slopes and wet soils. Existing skid trails from previous timber sales will be used to the extent possible. The Selected Alternative incorporates changes that will reduce impacts from what would have resulted with implementation of the Proposed Action or Alternative 5. We will follow design features and mitigation measures (see Appendix A to this Decision), and Forest Plan direction to ensure that sediment delivery is minimized. Mulching and revegetation will help retain soil on-site. Contract provisions will include erosion control measures. Based on the analysis, the impacts to the soil resource would fully comply with Forest Plan direction.
- The short-term spike of sediment that is expect to occur in stream channels as a result of conventional logging, new road construction, road reconstruction, and road maintenance may impact individual fish and other aquatic biota. In the long term, however, activities in the Selected Alternative are not expected to be detrimental to the viability of aquatic populations, including sensitive fish species and wild brook trout (see final UGN EA, Chapter 3, Section 3.3.6).
- Impacts to wildlife and botany vary depending upon the species. The Selected Alternative potential impacts are discussed in the final UGN EA (Chapter 3, Sections 3.3.7 through 3.3.10), Biological Assessment, Biological Opinion, and Specialist Resource Reports (in the project file).
- Monitoring will allow us to detect any potential problems over time and develop solutions (UGN EA, Chapter 2, Table 2.4.4.A).
- The Selected Alternative will reduce current long-term sources of sediment by decommissioning roads and improving the existing road system in the project area. Road improvements will be made to 82 miles of roads. About 120 miles of road will be decommissioned to help correct existing erosion problems in the project area, which will help to reduce the potential for future soil erosion and stream sedimentation (Chapter 2, Section 2.4.2.7 and 2.4.2.8, final UGN EA).
- By regenerating over 1,479 acres, the Selected Alternative will increase acreage in the 0 to 19 year old age class, creating additional early successional habitat that is currently under-represented in the area relative to desired conditions (Chapter 3, Section 3.3.1). Mast is likely to decline in the future, no matter what we do, because of the current imbalance in age classes. Regenerated stands will eventually contribute to a small but important rebound in mast production as these stands reach mast-producing age. If no action were taken in the project area, the quality and distribution of early successional habitat conditions and mast production would not show the rebound that will come with regeneration.
- Disturbance will be noticeable to the public for the next decade while projects are being implemented. All of the timber harvest units will meet Forest Plan requirements for spacing between regeneration units (Forest Plan, p. II-40) and be consistent with scenic integrity direction (final UGN EA, Section 3.4.3).

- The Selected Alternative will provide job opportunities and timber products to local communities (final UGN EA, Chapter 3, Sections 3.4.4).

## **2. The degree to which the proposed actions affect public health or safety.**

- Public health and safety will not be affected by implementing the UGN project. Standard provisions will be included in all timber sale contracts to protect the safety of others. Signs will be placed along roads to inform individuals of increased traffic resulting from timber sale operations and other treatments. Closure orders may be issued to prevent public access to units and areas being harvested or treated; roads being constructed, reconstructed, maintained, or decommissioned; roads, trails, and other areas that helicopters are flying over; and areas (e.g., dispersed camping and picnic sites) where the safety of individuals or property could be impacted by project activities if closure orders were not issued (EA, Chapter 2, Section 2.4.2.6).
- Some opposition and concern about herbicide use was voiced (see public comments in project file). Analysis of the herbicides to be used indicates very little risk to the environmental or human health. Monitoring of water has been included as a part of the Selected Alternative. Water and drift card monitoring show little to no undesired effects for the Monongahela's Hogback Project and the Little Beech Project (same type projects in same forest types) for four of the same herbicides to be used in the UGN project. Safeguards include buffer strips between herbicide treatments and adjacent stream channels, target-specific application methods, and wet weather restrictions on application. See the analyses for aquatics and soils in Sections 3.2.2 and 3.2.1 in Chapter 3 of the final UGN EA.
- The Selected Alternative will be consistent with all applicable Federal and West Virginia air and water quality standards (Air Quality and Water/Hydrology and Aquatic Resource Reports in the project file, UGN EA, Chapter 3, sections 3.2.1 and 3.2.2). Harvesting operations will emit pollutants, but the expected emissions from the Selected Alternative will not significantly impact air quality in the airshed in any way (UGN EA, Chapter 3, section 3.2.3). The effects will be transient and the amount released each day is not expected to exceed National Ambient Air Quality Standards.
- All Forest-wide standards and guidelines (including those related to public safety) will be followed and are incorporated in this decision. In addition, measures have been incorporated into the project design for public safety. These include visitor and/or operator road-use restrictions and signing (see Appendix A to this Decision). Also, a prescribed burning plan will be developed for every burn implemented in the project area. Within the burn plans will be a "Smoke Management and Air Quality" section.

## **3. Unique characteristics of the geographic area.**

There will be no significant impact on unique characteristics of the geographic area. Historic and cultural resources are discussed in the UGN final EA (Section 3.4.1).

- Project activities will not occur within, nor will they significantly impact any congressionally designated areas (Wilderness, Wilderness Study Areas, National Parks or Monuments or Wildlife Refuges, National Recreation Areas, Wild and Scenic Rivers, etc.), Research Natural Areas, or other special areas on the Forest. Noncommercial spruce restoration through snag creation will occur within Inventoried Roadless Areas (IRAs) as allowed by the Forest Plan. Other non-developmental activities - such as road decommissioning, road

maintenance, riparian tree planting, and large woody debris recruitment to improve watershed and habitat conditions - would occur within the East Fork Greenbrier IRA if they are approved by the Regional Forester or allowed by the Forest Service following RACR litigation resolution. Analysis of these activities determined that they would not have significant impacts on the IRAs (Special Area Report in project file).

**4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.**

Controversy in this context refers to cases where there is substantial dispute as to the size, nature, or effect of Federal action, rather than opposition to its adoption. None of the issues within the scope of this analysis are believed to be highly controversial within the scientific community (UGN final EA, Chapter 3, and Resource Special Reports in the project file).

- The UGN is a large watershed and project activities will take place on approximately 8,340 acres, which is 9.7 percent of the watershed. We have planned the UGN project to be phased in over an estimated 10 years. We do not plan on disturbing more than a fraction of those acres in any one year. These activities represent normal work that we accomplish on a routine basis. Activities included in this Decision will help move existing conditions toward desired conditions for the project area as described in the Forest Plan.
- The effects of the Selected Alternative on various resources is not considered to be highly controversial by professionals, specialists, and scientists from associated fields of forestry, wildlife biology, entomology, recreation, fuels, etc. I do not believe that there is significant controversy over the effects of this project in that context (UGN final EA, Chapter 3 Sections 3.2, 3.3, and 3.4).

**5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.**

We have considerable experience with the types of activities to be implemented. The effects analysis shows the effects are not uncertain, and do not involve unique or unknown risks. I have made this determination because:

- No highly uncertain, unique, or unknown risks have been identified. The technical analyses conducted for determinations of the impacts to the resources are supportable with the use of accepted techniques, reliable data, and professional judgment documented throughout the UGN EA and the Specialist Reports in the project file. The best available and relevant scientific information was used to evaluate the site-specific effects of these projects (UGN final EA - Chapter 3 by resource, and resource specialist reports in the project file).
- Timber harvest, timber stand improvement, herbicide applications, road work, prescribed burning, and wildlife, aquatic, and riparian habitat improvement projects similar to these have been successfully conducted in these types of ecosystems in the past on this Forest and across the Region. Results have been similar to the effects described in Chapter 3 of the UGN final EA and the Specialist Reports in the project file. Forest Plan Monitoring Reports and inspection reports of timber sale projects across the Forest and within the project area support the fact that these activities do not involve unique or unknown risks. The Selected Alternative does not contain new types of activities for which the possible effects would be highly uncertain or involve unique or unknown risks (Chapter 3 UGN final EA and Specialist Reports in the project file).

**6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.**

The Selected Alternative will not establish a precedent for future actions with significant effects. The activities are commonly implemented management activities and they do not compel additional actions by their completion (UGN final EA throughout Chapter 3). These activities have been implemented on the same soil types and in the same watersheds types in the past across the Forest and Region. No other actions are expected in the project area that would cause selected projects to establish a precedent for future actions with significant effects (Cumulative Effects sections throughout Chapter 3 of the UGN final EA and Reasonably Foreseeable Future activities, Section 3.1). All activities in the Selected Alternative are within the scope of the Forest Plan EIS analyses and would comply with the Forest Plan (Forest Plan Consistency sections throughout Chapter 3 of the EA).

**7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.**

The cumulative impacts will not be significant. Table 3.1 at the beginning of Chapter 3 in the UGN EA describes the past, present, and reasonably foreseeable future actions that may have a bearing on the cumulative effects of implementing the UGN project. The “Scope of Analysis” sections throughout Chapter 3 of the EA and in the Specialist Reports in the project file identify the areas and rationales used to assess the cumulative effects of various resources. The “Cumulative Effects” sections throughout Chapter 3 of the UGN EA and in the Specialist Reports in the project file explain how the past, present, and reasonably foreseeable future actions are considered and why the impacts of the UGN project will not be cumulatively significant. The Selected Alternative would have fewer impacts than Alternative 5 as analyzed, and the analysis determined there would be no significant cumulative impacts with Alternative 5 (see project file for more information). In addition, this project is not connected to a larger project that could result in significant cumulative effects.

**8. The degree to which action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historic resources.**

The Selected Alternative will not adversely affect infrastructure, scientific, cultural, or historic resources. I have made this determination because:

- The area has been surveyed for heritage resources. Survey information is contained in the MNF heritage files. Heritage resources have been located, mapped, and marked so that the Selected Alternative can be implemented on the ground in a manner that avoids impacts to them (UGN final EA, Section 3.4.1, Heritage Specialist Report in project file).
- Known heritage sites will be avoided as described in design features and mitigation measures attached to this document and Chapter 2 of the UGN final EA. Should additional or potential prehistoric or historic sites be identified during the course of project implementation, the Forest Archeologist will be notified and activity in that area will cease immediately until protection measures can be applied, as specified in the standard timber sale contract. Thus, the analysis shows that there would be no significant effects to heritage resources (UGN EA, Chapter 3, Heritage Specialist Report in project file).

- The West Virginia State Historic Preservation Office has been consulted regarding this project, and concurs with these findings (UGN EA, Section 3.4.1, Heritage Specialist Report in project file).
- There are no Native American concerns that will be adversely affected by the proposed activities (UGN EA, Section 3.4.1, Heritage Specialist Report in project file).

**9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973, as amended.**

Potential impacts to species listed as threatened or endangered (T&E) under the Endangered Species Act were evaluated in the Biological Assessment (BA) for the UGN EA (March 2011) and the Addendum to Biological Assessment for the UGN EA (May 2011). The addendum was due to the relisting of the WV northern flying squirrel. All actions are consistent with the Forest Plan for T&E species. As supported in the UGN BA and Addendum, the project activities are not likely to result in significant direct, indirect, or cumulative effects to any T&E species or their critical habitats, and they are not anticipated to cause any loss of viability of populations of sensitive species or create a trend toward federal listing (UGN final EA, Sections 3.3.3, 3.3.6, 3.3.7, and 3.3.8).

Implementing the selected activities resulted in the following determinations for species listed as threatened or endangered under the Endangered Species Act:

- May affect, and is “likely to adversely affect”: Indiana bat (No effects beyond those previously disclosed and addressed in the Biological Assessment (USDA 2006) and Biological Opinion (USFWS 2006) for the Forest Plan EIS. Because the entire Monongahela National Forest is potential Indiana bat foraging and roosting habitat, prescribed fire and large scale tree removal that occur outside the hibernation period have the potential to adversely affect the Indiana bat. The Forest consulted with the USFWS on a programmatic BA written for T&E species management direction for the Forest Plan. This was documented in the Forest Plan T&E Amendment (2006). Through this process, an incidental take statement was issued to the Forest for the Indiana bat.
- May affect, but is “not likely to adversely affect”: Virginia big-eared bat; running buffalo clover; small-whorled pogonia; and Virginia spirea.
- Will have “no effect” on: Cheat Mountain salamander; and shale barren rock cress.
- Gray wolf, eastern cougar, and the gray bat are not believed to exist in the area, and therefore there will be no effect on them (BA March 2011).

The U.S. Department of Interior Fish and Wildlife Service (USFWS) has been consulted regarding this project and concurs with the findings in the UGN BA (USFWS correspondence, March 2, 2012, in project file). Mitigation Measures and Design Features attached to this decision will be followed to help reduce the potential for adverse effects to threatened, endangered, and sensitive species. If any federally-listed endangered or threatened species are found during project design or implementation, and they are not already protected by Forest Plan standards and guidelines, or the design of these projects, including design features and mitigation measures, all activities that could impact the listed species within that area will cease until coordination with USFWS has been concluded.

## **10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.**

The Selected Alternative will not violate Federal, State, and local laws or requirements for the protection of the environment. I have made this determination because no Federal, State, or local laws (e.g., the Clean Air Act, Clean Water Act, Endangered Species Act, various heritage resource laws, Multiple Use Sustained Yield Act, Wild and Scenic Rivers Act, WV Best Management Practices) will be violated (UGN final EA, Chapter 3, and information in the project file).

Based upon the review of the test for significance and the environmental analyses conducted, I have determined that the UGN project is not a major federal action and that its implementation will not significantly affect the quality of the human environment. Therefore, this EA is a sufficient and appropriate level of NEPA-related analysis, and an EIS is not needed.

### **Findings Required by Other Laws and Regulations**

#### **Multiple Use Sustained Yield Act**

The UGN proposal and subsequent analysis was completed in an integrated fashion using an interdisciplinary team of resource professionals (UGN EA, Chapter 4, and project file) and through public involvement (UGN final EA, Chapter 2, project file). Vegetation manipulation and ecosystem restoration is being used to meet goals and specific needs identified in the Forest Plan and in the UGN final EA. The effects of these actions are described in Chapter 3 of the EA and in the Specialist Reports in the project file.

#### **National Forest Management Act (NFMA)**

The activities approved under this decision meet the requirements of the NFMA and its implementing regulations for the following criteria:

**Forest Plan Consistency** (16 USC 1604(i)). All actions implemented as part of the Selected Alternative are consistent with management direction identified in the Forest Plan (UGN final EA, Chapter 3). Approved activities will comply with Forest-wide standards and guidelines and direction for Management Prescriptions 3.0, 4.1, 6.1, and 6.2.

**Suitability for Timber Production** (16 USC 1604(e)(2)). Proposed timber harvest activities will occur on lands suitable for timber production [16 U.S.C. 1604(k)]. Lands within the area are productive forest sites (UGN final EA, CDS Land Suitability Classification information, and Vegetation Specialist Report in the project file). No harvesting will occur on unsuitable land.

**Vegetation Manipulation.** NFMA and its implementing regulations require that manipulation of tree cover for any purpose must comply with the following seven requirements found at 36 CFR 219.27(b).

- *Be best suited to the goals in the Forest Plan.* The applicable Forest Plan goals and objectives are given beginning in Chapter 1 of the UGN final EA. This decision is responsive to those goals and is best suited to meet those goals.
- *Assure that technology and knowledge exists to adequately restock lands within five years after final harvest.* Commonly used stocking surveys will be used to check stocking

adequacy in regeneration units. Stocking can be supplemented by common reforestation practices if surveys show a deficiency, which would be highly unusual on this Forest.

- *Not to be chosen primarily because they give the greatest dollar return or the greatest output of timber (although these factors shall be considered).* While economics were considered in my decision, other factors also played a part in my decision, such as ecosystem restoration and various environmental constraints. As discussed above, this alternative will move the area toward desired conditions while protecting resources in an economically efficient manner.
- *Be chosen after considering potential effects on residual trees and adjacent stands.* Potential effects on residual trees and adjacent stands have been considered in the EA analysis.
- *Be selected to avoid permanent impairment of soil productivity and to ensure conservation of soil and water resources.* Potential effects to soil productivity are within the Soil Management direction in FSH 2509.18 and Forest Plan direction. Mitigation measures are included in my decision to further protect the soil and water resources.
- *Be selected to provide the desired effects on water quality and quantity, wildlife and fish habitat, regeneration of desired tree species, forage production, recreation users, aesthetic values and other resource yields.* This decision is consistent with the Forest Plan and I believe it would provide the desired effects on the above resources.
- *Be practical in terms of transportation and harvesting requirements and total costs of preparation, logging, and administration.* The activities in this decision have been designed to be practical and to accomplish project objectives.

### **Environmental Justice**

I do not believe any groups will be disproportionately affected by this decision because of the implementation of the Selected Alternative. Environmental Justice is discussed in detail in the final UGN EA.

### **Other Legal Requirements**

I have reviewed the UGN final EA and the project file and have determined that my decision does not threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment (EA - Chapter 3 by resource, resource specialist reports in project and Forest files). As documented in the UGN EA, and in reports in the project and Forest files, my decision is consistent with applicable laws and executive orders, including:

- Multiple-Use Sustained-Yield Act of 1960;
- National Historic Preservation Act of 1966 (as amended);
- Wild and Scenic Rivers Act of 1968, amended 1986;
- National Environmental Policy Act (NEPA) of 1969 (as amended);
- Clean Air Act of 1977 (as amended);
- Endangered Species Act (ESA) of 1973 (as amended);
- Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 (as amended);

- National Forest Management Act (NFMA) of 1976 (as amended);
- Clean Water Act of 1977 (as amended);
- American Indian Religious Freedom Act of 1978;
- Archeological Resource Protection Act of 1979;
- Executive Order 11988 (floodplains);
- Executive Order 11990 (wetlands);
- Executive Order 12898 (environmental justice);
- Executive Order 12962 (aquatic systems and recreational fisheries);
- Executive Order 13112 (invasive species).

### **Administrative Review and Appeal Opportunity**

This decision is subject to appeal pursuant to regulations at 36 CFR 215. An appeal may be filed by those who provided comment or otherwise expressed interest in the proposed action during the 30-day notice and comment period. To appeal this decision, a written Notice of Appeal must be postmarked or received within 45 calendar days of when the Legal Notice is published in *The Pocahontas Times*, the newspaper of record for this decision, published in Marlinton, West Virginia. However, when the 45-day filing period would end on a Saturday, Sunday, or Federal holiday, then the filing time is extended to the end of the next Federal working day. The date of the publication of the Legal Notice is the exclusive means for calculating the time to file an appeal. Those wishing to file an appeal should not rely upon dates provided by any other source.

The Notice of Appeal must be sent to: Chuck Myers, Appeal Deciding Officer, Attn: Appeals & Litigation, USDA - Forest Service, Eastern Region, 626 East Wisconsin Avenue, Milwaukee, WI 53202. The Notice of Appeal may alternatively be: faxed to (414) 944-3963, Attn: Appeals Deciding Officer; mailed electronically (in a format such as pdf, txt, rtf, or other format compatible with Microsoft Office applications) to [appeals-eastern-regional-office@fs.fed.us](mailto:appeals-eastern-regional-office@fs.fed.us); or hand delivered to the Eastern Region office between the hours of 7:30 am and 4:00 pm., Monday through Friday. Contents of the Notice of Appeal must meet the requirements of 36 CFR 215.14.

### **Implementation Date**

The appeal period for this decision begins the day after notice of this decision is published in *The Pocahontas Times*. If an appeal is not filed, implementation may begin on, but not before the fifth business day from the close of the appeal-filing period (36 CFR 215.9(a)). If an appeal is received, implementation may occur on but not before the fifteenth business day following the date of appeal disposition. In the event of multiple appeals, the date of the disposition of the last appeal controls the implementation date (36 CFR 215.9(b)).

Timber may be sold in calendar year 2012 or later. Projects could begin in the next few months and be completed in approximately ten years. Competitively bid timber sales or other contracts will be used to accomplish many of these projects. The area will be evaluated according to the attached monitoring plan in Appendix A.

### **Contact Person and Responsible Official**

Further information about this decision may be obtained from Kristine Vollmer during normal office hours (weekdays, 8:00 a.m. to 4:30 p.m.). Her contact information is:

Kristine Vollmer, North Zone NEPA Coordinator  
Cheat Potomac Ranger District  
2499 North Fork Highway  
Petersburg, WV 26847-5471  
Phone: (304) 257-4488  
Fax: (304) 257-2482  
E-mail: [kvollmer@fs.fed.us](mailto:kvollmer@fs.fed.us)

A copy of the UGN EA can be obtained from the MNF website at <http://www.fs.fed.us/nepa/fs-usda-pop.php/?project=28198> ; by e-mailing a request to [comments-eastern-monongahela-greenbrier@fs.fed.us](mailto:comments-eastern-monongahela-greenbrier@fs.fed.us); or by writing or calling Kristine Vollmer. Records that support the conclusions of the EA and that were used to make this decision are available for review at the Cheat Potomac Ranger District Office in Petersburg from 8:00 am to 4:30 pm Monday through Friday, except on federal holidays. Please call Kristine to let her know when you would like to view the project file to make sure she will be available to help you find what you're looking for.

The Greenbrier District Ranger of the Monongahela National Forest is the Responsible Official for the Upper Greenbrier North decision.

*Jack Tribble*

3/5/2012

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JACK TRIBBLE  
Greenbrier District Ranger

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Date

## Appendices and Maps for the UGN DN/FONSI

### Appendix A: Tables of Design Features, Mitigation Measures, and Monitoring

- **Table A.1.** Design features and implementation strategies
- **Table A.2.** Mitigation measures
- **Table A.3.** Monitoring

### Maps of Activities in the Selected Alternative – Alternative 5 Modified

- Alternative 5 Modified Vegetation Treatments
- Alternative 5 Modified Watershed/Aquatics Restoration Action
- Alternative 5 Modified Recreation Activities

#### **USDA Nondiscrimination Statement**

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.

## **Appendix A Design Features, Mitigation Measures, and Monitoring**

Table A.1 below gives additional detail on how to implement Forest Plan direction, especially when Forest Plan direction is general, or a specific method of implementation was recommended to ensure the desired results.

**Table A.1.** Design features and implementation strategies

<b>Resource and Concern</b>	<b>Forest Plan Direction</b>	<b>Implementation Practice or Feature</b>
Resource: Sensitive Plants. Concern: Potential damage to butternut trees.	Standard VE13, p. II-19	Avoid cutting and applying herbicide to butternuts. Butternut is not known to occur in any of the activity areas, but potential presence cannot be ruled out completely. Due to similarity of appearance to butternut, species identification of black walnuts to be cut must be confirmed by checking nut shape and/or pith color.
Resource: Long stalked holly. Concern: Potential damage to this sensitive plant.	Standard VE13, p. II-19	<p><u>Alternative 2 Locations:</u></p> <ul style="list-style-type: none"> <li>• Commercial restoration Unit 204.</li> </ul> <p><u>Alternative 5 Locations:</u></p> <ul style="list-style-type: none"> <li>• Noncommercial restoration Unit 285.</li> </ul> <p><u>Design Features:</u></p> <ul style="list-style-type: none"> <li>• Do not cut or apply herbicide to long stalked holly.</li> <li>• Do not cut pole size or larger trees within 75 feet of long stalked holly.</li> <li>• Within 75 feet of long stalked holly, avoid all soil disturbance, including, but not limited to, road construction/reconstruction, skid trails, overland skidding, landing construction, and ripping and outsliping associated with road decommissioning.</li> <li>• Avoid foliar herbicide application within 150 feet of long stalked holly unless necessary to control NNIS that directly threaten long stalked holly. Any such application must not expose long stalked holly to herbicide.</li> <li>• Cut surface and basal bark application of herbicide for the control of underbrush or NNIS is allowed near long stalked holly; however, any such application must not expose long stalked holly to herbicide.</li> <li>• Soil-mobile herbicides (including but not limited to imazapyr) may not be used within 150 feet of long stalked holly.</li> </ul>

Resource and Concern	Forest Plan Direction	Implementation Practice or Feature
<p>Resource: Blunt-lobed grape fern.</p> <p>Concern: Potential damage to this sensitive plant.</p>	<p>Standard VE13, p. II-19</p>	<p><u>Alternatives 2 &amp; 5 Locations:</u></p> <ul style="list-style-type: none"> <li>• Hardwood thinning Unit 104 near the landing (71) and main skid trail.</li> <li>• Southern edge of regeneration Unit 9.</li> <li>• Western fire unit.</li> <li>• Near beginning of GR 6 decommissioning.</li> <li>• FR 287 decommissioning.</li> <li>• GR 61 decommissioning.</li> <li>• FR 855 decommissioning (2 locations).</li> </ul> <p><u>Design Features:</u></p> <ul style="list-style-type: none"> <li>• Do not cut pole size or larger trees within 75 feet of blunt-lobed grape fern.</li> <li>• Within 75 feet of blunt-lobed grape fern, avoid all soil disturbance, including, but not limited to, road construction/reconstruction, skid trails, overland skidding, landing construction, and ripping and outsliping associated with road decommissioning.</li> <li>• Avoid foliar herbicide application within 150 feet of blunt-lobed grape fern unless necessary to control NNIS that directly threaten the fern. Any such application must not expose blunt-lobed grape fern to herbicide.</li> <li>• Cut surface and basal bark application of herbicide for the control of underbrush or NNIS is allowed near blunt-lobed grape fern; however, any such application must not expose blunt-lobed grape fern to herbicide.</li> <li>• Soil-mobile herbicides (including but not limited to imazapyr) may not be used within 150 feet of blunt-lobed grape fern.</li> <li>• Avoid burning within 75 feet of blunt-lobed grape fern.</li> <li>• Construct only leaf-blower fire lines within 75 feet of blunt-lobed grape fern.</li> </ul>

Resource and Concern	Forest Plan Direction	Implementation Practice or Feature
<p>Resource: Shriver's frilly orchid.</p> <p>Concern: Potential damage to this sensitive plant.</p>	<p>Standard VE13, p. II-19</p>	<p><u>Alternatives 2 &amp; 5 Locations:</u></p> <ul style="list-style-type: none"> <li>• Proposed new road FR 756 B.</li> <li>• FR 174 decommissioning.</li> <li>• Western fire unit.</li> <li>• Hawchen Hollow (2 locations) near ukn 26 and GR 41 A decommissioning.</li> <li>• Near beginning of GR 6 decommissioning.</li> <li>• FR 57 maintenance.</li> </ul> <p><u>Design Features:</u></p> <ul style="list-style-type: none"> <li>• Do not conduct even-aged harvesting within 75 feet of Shriver's frilly orchid.</li> <li>• Do not conduct thinning or selection cutting of pole size or larger trees within 25 feet of Shriver's frilly orchid.</li> <li>• Locate log landings at least 75 feet away from Shriver's frilly orchid. Measure distance to the edge of the landing, not the center.</li> <li>• Within 25 feet of Shriver's frilly orchids, avoid all soil and vegetation disturbance, including, but not limited to, timber harvest, road construction/reconstruction, skid trails, overland skidding, and ripping and outsliping associated with road decommissioning.</li> <li>• Avoid foliar herbicide application within 150 feet of Shriver's frilly orchid unless necessary to control NNIS that directly threaten the orchid. Any such application must not expose Shriver's frilly orchid to herbicide.</li> <li>• Cut surface and basal bark application of herbicide for the control of underbrush or NNIS is allowed near Shriver's frilly orchid; however, any such application must not expose Shriver's frilly orchid to herbicide.</li> <li>• Soil-mobile herbicides (including, but not limited to imazapyr) may not be used within 150 feet of the orchid.</li> <li>• Avoid burning within 75 feet of Shriver's frilly orchid.</li> <li>• Construct only leaf blower fire lines within 75 feet of Shriver's frilly orchid.</li> </ul>

Resource and Concern	Forest Plan Direction	Implementation Practice or Feature
<p>Resource: Canada yew. Concern: Potential damage to this sensitive plant.</p>	<p>Standard VE13, p. II-19</p>	<p><u>Alternatives 2 &amp; 5 Locations:</u></p> <ul style="list-style-type: none"> <li>• TSI Unit 70 (old record).</li> </ul> <p><u>Design Features:</u></p> <ul style="list-style-type: none"> <li>• Do not cut or apply herbicide to Canada yew.</li> <li>• Do not cut pole size or larger trees within 75 feet of Canada yew.</li> <li>• Within 75 feet of Canada yew, avoid all soil disturbance, including, but not limited to, road construction/reconstruction, skid trails, overland skidding, landing construction, and ripping and outsliping associated with road decommissioning.</li> <li>• Avoid foliar herbicide application within 150 feet of Canada yew unless necessary to control NNIS that directly threaten Canada yew. Any such application must not expose Canada yew to herbicide.</li> <li>• Cut surface and basal bark application of herbicide for the control of underbrush or NNIS is allowed near Canada yew; however, any such application must not expose Canada yew to herbicide.</li> <li>• Soil-mobile herbicides (including, but not limited to imazapyr) may not be used within 150 feet of Canada yew.</li> </ul>
<p>Resource: Roan Mountain sedge. Concern: Potential damage to this sensitive plant.</p>	<p>Standard VE13, p. II-19</p>	<p>Re-survey the harvest units that have the highest likelihood of occurrence for Roan Mountain sedge. These units are 02, 21, 26, 72, 90, 91, and 104. If Roan Mountain sedge is found, apply the following protection measures:</p> <ul style="list-style-type: none"> <li>• Do not cut pole size or larger trees within 75 feet of Roan Mountain sedge.</li> <li>• Within 75 feet of Roan Mountain sedge, avoid all soil disturbance, including, but not limited to, road construction/reconstruction, skid trails, overland skidding, landing construction, and ripping and outsliping associated with road decommissioning.</li> <li>• Avoid foliar herbicide application within 150 feet of Roan Mountain sedge unless necessary to control NNIS that directly threaten Roan Mountain sedge. Any such application must not expose Roan Mountain sedge to herbicide.</li> <li>• Cut surface and basal bark application of herbicide for the control of underbrush or NNIS is allowed near Roan Mountain sedge; however, any such application must not expose Roan Mountain sedge to herbicide.</li> <li>• Soil-mobile herbicides (including but not limited to imazapyr) may not be used within 150 feet of Roan Mountain sedge.</li> </ul>

Resource and Concern	Forest Plan Direction	Implementation Practice or Feature
Resource: White alumroot. Concern: Potential damage to this sensitive plant.	Standard VE13, p. II-19	<u>Alternatives 2 &amp; 5 Locations:</u> <ul style="list-style-type: none"> <li>• Near GR 45 B and GR 46 B decommissioning routes.</li> </ul> <u>Design Features:</u> <ul style="list-style-type: none"> <li>• Avoid all soil and vegetation disturbance within 75 feet of white alumroot.</li> </ul>
Resource: TES plants. Concern: Potential damage to TES plants.	Standard VE13, p. II-19	<u>Alternatives 2 &amp; 5 Locations:</u> <ul style="list-style-type: none"> <li>• As yet unknown.</li> </ul> <u>Design Features:</u> <ul style="list-style-type: none"> <li>• If any other TES plants are found near any activity areas, suspend all activities within 150 feet of the occurrence until protective measures can be developed and implemented.</li> </ul>
Resource: Native plants; NNIS Concern: Seeding for stabilization has the potential to introduce undesirable nonnative plants.	Guideline VE06, p. II-18	<u>Alternatives 2 &amp; 5 Locations:</u> <ul style="list-style-type: none"> <li>• Everywhere seeding is done for revegetation or soil stabilization.</li> </ul> <u>Design Features:</u> <ul style="list-style-type: none"> <li>• All seeding for soil stabilization, wildlife openings, etc. should use a site-appropriate mix of native grasses and/or forbs. A cover/nurse crop should be included in the mix to ensure adequate soil stabilization while the native grasses and forbs become established. The cover/nurse crop does not have to be native as long as it is not invasive.</li> <li>• Ideally, all seed mixtures used for soil stabilization, wildlife openings, etc. should be certified weed-free. However, there is a good possibility that certified seed would not be available. In this case, the seed vendor's test results for noxious weed content should accompany the seed shipment and should demonstrate that the seed is substantially free from noxious weed seeds.</li> </ul>
Resource: Soil erosion Concern: Revegetation and stabilization of disturbed soils, if not done promptly, can lead to soil displacement, erosion, and delivery to streams.	Guidelines SW11 & SW13 & SW14, p. II-10	Soil stabilization procedures should take place as soon as practical after earth-disturbing activities are completed or prior to extended periods of inactivity. Special revegetation measures may be required, such as silt fences and use of geotextiles or other mulches on steep sections during the non-growing season. If seeding is to occur, liming (if needed) and fertilization should be done prior to seeding.

Resource and Concern	Forest Plan Direction	Implementation Practice or Feature
<p>Resource: Rare communities.</p> <p>Concern: Soil and vegetation disturbance associated with timber harvesting could impact seeps and other wetlands, which are potential habitat for rare plants and animals.</p>	<p>Guideline SW51, p. II-13</p>	<p><u>Alternatives 2 &amp; 5 Locations:</u></p> <ul style="list-style-type: none"> <li>• Seeps and other wetlands.</li> </ul> <p><u>Design Features:</u></p> <ul style="list-style-type: none"> <li>• Maintain leave clumps in and immediately adjacent to seeps and other wetlands. Specific locations of seeps and wetlands are not known at this time; however, if any are encountered during sale layout, they should be protected in this manner.</li> <li>• Avoid dragging logs through seeps and piling slash in seeps.</li> <li>• Consider seep location in skid trail layout. Avoid seeps to the extent possible. Essential crossings should be at right angles and should keep cut and fill to a minimum to minimize damage to seeps.</li> </ul>
<p>Resource: Rare communities.</p> <p>Concern: Planting woody species in emergent wetlands could impact rare species dependent on this habitat.</p>	<p>Guideline VE14, p. II-19</p>	<p>For the riparian restoration activities, do not plant woody species in emergent wetlands.</p>
<p>Resource: Rare communities.</p> <p>Concern: Soil and vegetation disturbance associated with timber harvesting could impact rock outcrops, which are potential habitat for rare plants and animals.</p>	<p>Guideline VE14, p. II-19</p>	<p><u>Alternatives 2 &amp; 5 Locations:</u></p> <ul style="list-style-type: none"> <li>• Rock outcrops.</li> </ul> <p><u>Design Features:</u></p> <ul style="list-style-type: none"> <li>• Locate skid trails, roads, landings, cable routes, etc. such that they do not impact major outcrops.</li> </ul>

Resource and Concern	Forest Plan Direction	Implementation Practice or Feature
<p>Resource: Vegetation diversity.</p> <p>Concern: Management activities could reduce the component of desirable conifers in MP 4.1.</p>	<p>Goal VE07, p. II-18;</p> <p>Goals 4102 &amp; 4110, p. III-14</p>	<p><u>Alternatives 2 &amp; 5 Locations:</u></p> <ul style="list-style-type: none"> <li>• In Management Prescription (MP) 4.1.</li> </ul> <p><u>Design Features:</u></p> <ul style="list-style-type: none"> <li>• In timber harvest and TSI units in MP 4.1, as well as all spruce ecosystem restoration units regardless of Management Prescription, do not cut or apply herbicide to red spruce or eastern hemlock of any size. Roads, skid trails, and landings in these areas should avoid red spruce and eastern hemlock as much as is practical, but exceptions may be granted where relocation of these features is not practical.</li> <li>• In MP 4.1, road decommissioning should avoid impacting pole or sawtimber-sized spruce trees to the maximum extent practical. Where seedling or sapling spruce occur on the road prism, but are scarce in the surrounding forest, impacts should be minimized to the extent practical. Where removal of such spruce seedlings is unavoidable, planting of spruce seedlings should occur upon completion of decommissioning activities. Where spruce seedlings or saplings are abundant in the surrounding forest, no special protection measures are necessary for seedlings and saplings on the road prism.</li> <li>• For commercial spruce restoration activities in MP 4.1, retain all overstory red spruce to the maximum extent practicable. Exceptions may be made in limited circumstances for skid trail layout or safety concerns.</li> </ul>

Resource and Concern	Forest Plan Direction	Implementation Practice or Feature
<p>Resource: NNIS. Concern: Management activities have the potential to spread nonnative invasive plants.</p>	<p>Standards VE21 &amp; VE22, p. II-20; Guidelines VE23 &amp; VE24, p. II-20</p>	<p><u>Design Features:</u></p> <ul style="list-style-type: none"> <li>• Existing infestations of Japanese stiltgrass, crown vetch, reed canary grass, Japanese barberry, Japanese spiraea, bush honeysuckle, garlic mustard, and hairy chess located in or near activity sites must be controlled to limit potential spread by timber harvest, road construction, and road decommissioning. Pre-treatment should occur for at least one growing season prior to the beginning of soil and vegetation disturbance.</li> <li>• Follow-up control and monitoring of high priority NNIS would be necessary on an annual basis during and after timber harvest, spruce restoration, road construction, road decommissioning, and other soil or vegetation-disturbing activities. Control and monitoring should continue until infested areas are shown to be free of these species for three consecutive growing seasons, or until the Responsible Official determines that effective control is not possible.</li> <li>• New or expanded infestations of high priority NNIS caused by project activities must be controlled and monitored using the same protocols used for existing infestations.</li> <li>• If any on-Forest sources for gravel or borrow material are used, they should be inspected prior to use to ensure that they are free of NNIS plant material.</li> <li>• Before entering National Forest land, all logging equipment, construction equipment, maintenance equipment, decommissioning equipment, and any vehicles to be used off of currently maintained roads must be free of all soil, seeds, vegetative matter, or other debris that could contain or hold seeds. Equipment and vehicles that are used on infested sites must be cleaned to the above standard before being moved to other harvest units, landings, or road segments on National Forest System land.</li> <li>• When equipment used for constructing, reconstructing, maintaining, or decommissioning roads is operated in a known infestation of high priority NNIS, it should be cleaned as thoroughly as is practical using dry methods prior to continuing along the route.</li> <li>• Any necessary wet cleaning of equipment and vehicles used by contractors and timber purchasers should be conducted off of National Forest System land, or at a Forest Service-approved wash station if cleaning on National Forest System land is the only practical option. Any necessary wet cleaning of Forest Service equipment and vehicles should be conducted at an administrative site or other designated wash station. Cleaning must not introduce invasive plants to unimpacted sites and must not contaminate soil or water.</li> </ul>

Resource and Concern	Forest Plan Direction	Implementation Practice or Feature
<p>Resource: Riparian and Aquatic Resources.</p> <p>Concern: TSI actions could adversely impact riparian vegetation, and riparian and aquatic habitat quality and functions.</p>	<p>Standard SW37, p. II-12</p>	<p>To protect and enhance riparian values associated with stream channels:</p> <ul style="list-style-type: none"> <li>• Do not cut trees within or on the banks of any streams, including ephemeral ones.</li> <li>• Do not cut trees within 25 feet of perennial or intermittent streams.</li> <li>• A maximum of 25 trees per acre would be released within 25 feet of ephemeral stream channels.</li> <li>• A maximum of 25 trees per acre would be released between 25 and 100 feet of large intermittent and perennial stream channels.</li> <li>• A maximum of 25 trees per acre would be released between 25 and 50 feet of small intermittent channels.</li> <li>• Within the allowable treatment area of stream channel buffers: <ul style="list-style-type: none"> <li>• Some tree species, such as butternut, American chestnut, hemlock, and shagbark hickory, are generally recognized as either uncommon or valuable riparian species on the Forest. This status can provide a compelling reason to accept these species as target crop trees for TSI release when they occur within stream channel buffers and are being crowded out by other species.</li> </ul> </li> </ul>
<p>Resource: Riparian and Aquatic Resources.</p> <p>Concern: Treatment of woody or other vegetation in stream channel buffers with herbicides may adversely impact riparian habitats, aquatic biota, and water quality.</p>	<p>Goals SW20 &amp; 21, p. II-11;  Goal SW31, p. II-12;  Standard SW37, p. II-12;  Goal VE19, p. II-19;  Standard VE32, p. II-20</p>	<p>Do not spray or apply any herbicide by any method within the first 25 feet of the bankfull channel elevation for any stream channel, regardless of size, and regardless of whether the herbicide is registered for aquatic use, except that for treatment of NNIS, herbicide application may take place within 25 feet of the channel, but only with a formulation registered for aquatic use.</p>
<p>Resource: Riparian and Aquatic Resources.</p> <p>Concern: Broadcast (foliar) spray treatment with herbicides may adversely impact riparian vegetation, aquatic biota and water quality.</p>	<p>Goals SW20 &amp; 21, p. II-11;  Goal SW31, p. II-12;  Standard SW37, p. II-12;  Goal VE19, p. II-19;  Standard VE32, p. II-20</p>	<p>Do not broadcast (foliar) spray herbicides within FP default channel buffers (SW37) for perennial, intermittent, and ephemeral streams.</p>

Resource and Concern	Forest Plan Direction	Implementation Practice or Feature
<p>Resource: Watershed and Aquatic Resources.</p> <p>Concern: Proper design criteria and methods are needed in the sizing and design of culverts and bridges.</p>	<p>Goal WF04 &amp; Objective WF07, p. II-30; Guideline WF21, p. II-31; Goal SW32, p. II-12</p>	<p>Ensure coordination between the Hydrologist, Aquatic Specialist, and Engineering to properly design aquatic passage projects and other elements of road work involving undersized culverts.</p>
<p>Resource: Water and Aquatic Resources.</p> <p>Concern: Conventional logging outside the Normal Operating Season could cause soil and water effects.</p>	<p>Standards SW09 &amp; SW07, p. II-10</p>	<p>The Normal Operating Season (NOS) specified in all timber sale (commercial harvest) contracts would be from May 1 through November 30. To avoid resource damage attributable to freeze/thaw cycles, conventional logging would be prohibited from December 1 through April 30 of each year.</p>
<p>Resource: Riparian and Aquatic Resources.</p> <p>Concern: Cutting and removal of cut trees from channel buffers in noncommercial spruce release units could reduce habitat quality.</p>	<p>Alternative 5; Standard SW34, p. II-12</p>	<p>In noncommercial spruce restoration areas, apply the following limits to release of spruce within default stream channel buffers:</p> <ul style="list-style-type: none"> <li>• Do not cut or otherwise kill woody vegetation on the banks of any stream channel, including ephemeral channels.</li> <li>• Do not cut or otherwise kill woody vegetation within 25 feet of the banks of perennial or intermittent streams.</li> <li>• Within the remainder of the channel buffer, release no more than 50 spruce trees per acre (total). This action would usually be accomplished by treating competing vegetation in the understory and leaving this material on site. However, as many as 8 overstory trees per acre may be killed for spruce release, when doing so would mutually benefit stream management objectives for large woody debris loading and not materially impact stream shade.</li> <li>• When killing an overstory tree, the tree should be girdled or directionally felled into or toward the stream channel if possible.</li> <li>• Overstory trees should not be killed to release spruce that are less than 15 feet tall.</li> </ul>
<p>Resource: Riparian and Aquatic Resources.</p> <p>Concern: Cutting and/or removal of cut trees from channel buffers in commercial spruce release units could reduce habitat quality.</p>	<p>Standard SW34, p. II-12</p>	<p>In commercial spruce restoration units, use only noncommercial methods described above to release spruce within default stream channel buffers. No trees cut within allowable portions of channel buffers would be removed from the channel buffer.</p>

Resource and Concern	Forest Plan Direction	Implementation Practice or Feature
<p>Resource: Water and Aquatic Resources.</p> <p>Concern: Coordination is needed for carrying out road maintenance actions on specified system roads or road segments to improve drainage, reduce erosion and sedimentation, and protect aquatic habitats.</p>	<p>Goals SW32 &amp; SW33, p. II-12</p>	<p>Road maintenance actions for watershed and aquatics restoration would be conducted on specified system roads or road segments to address watershed and aquatic resource concerns, by improving road drainage, runoff, and storm flow, and reducing erosion and sedimentation conditions that pose unacceptable risk of resource damage. These actions generally exceed those considered as routine road maintenance, but are not reconstruction. Site-specific coordination between Engineering and Aquatics specialists would occur in design and implementation of these projects.</p>
<p>Resource: Red spruce component in MP 4.1 areas.</p> <p>Concern: Timber stand improvement in MP 4.1 needs to favor red spruce to maintain consistency with Forest Plan direction.</p>	<p>Goal 4102, p. III-14; Guideline 4110, p. II-14; Guideline 4126, p. III-16</p>	<p>Treat red spruce as the first priority crop tree in all timber stand improvement units within MP 4.1.</p>
<p>Resource: WVNFS.</p> <p>Concern: Cutting trees with cavities may eliminate WVNFS habitat.</p>	<p>Standard TE64, p. II-27</p>	<p>For TSI activities in areas of suitable WVNFS habitat, retain all hardwood trees greater than 6" dbh that have a visible cavity to the maximum extent practicable. Exceptions may be made in limited circumstances for skid trail layout or safety concerns.</p>
<p>Resource: WVNFS.</p> <p>Concern: Cutting large conifers and trees with cavities may eliminate WVNFS habitat or impact young WVNFS if they are present.</p>	<p>Standard TE64, p. II-27</p>	<p>For aquatic and riparian restoration, including large woody debris recruitment and road decommissioning in suitable WVNFS habitat, retain all conifer trees greater than 10" dbh, and all hardwood trees greater than 6" dbh that have a visible cavity. If it is not possible to meet watershed objectives with these restrictions, limit tree cutting to the time of year least likely for young, immobile WVNFS to be present - Sept 15 through Nov 30 - in order to avoid mortality or injury of young WVNFS. See project file for areas affected by this design feature.</p>
<p>Resource: WVNFS.</p> <p>Concern: Limiting the amount of potential disturbance to WVNFS each year will help spread out potential impacts over time.</p>	<p>FWS Letter of Concurrence for UGN (March 1, 2012)</p>	<p>We will limit the amount of habitat disturbance associated with road decommissioning that occurs within WVNFS suitable habitat per year. UGN projects will conduct no more than 5 miles per year of active decommissioning on road or trail segments as defined in the USFWS concurrence letter.</p>
<p>Resource: WVNFS.</p> <p>Concern: Limiting the amount of potential disturbance to WVNFS each year will help spread out potential impacts over time.</p>	<p>FWS Letter of Concurrence for UGN (March 1, 2012)</p>	<p>We will limit trees cut around aquatic passage replacement projects in WVNFS habitat to a maximum of 0.25 acres outside the cleared right of way at any given site and shall not affect more than an average of 0.1 acre of land outside the existing right of way for all 39 sites.</p>

Resource and Concern	Forest Plan Direction	Implementation Practice or Feature
Resource: Wildlife. Concern: Grapevine control would reduce the amount of soft mast for wildlife.	Guideline 6108, p. III-36	Grapevines should not be controlled in MP 6.1. Their control is not necessary to achieve wildlife objectives for this project.
Resource: Vegetation Concern: Vegetation treatments could reduce species diversity.	Guideline 6110, p. III-36	For commercial harvest units and TSI treatment areas in MP 6.1, maintain as much species diversity as practical, with an emphasis on retention of species within the White Oak group (white oak and chestnut oak) and all hickories.
Resource: Oak regeneration & snags for wildlife. Concern: Overstory maple would provide a seed source to compete with oak regeneration.	Guideline 6110, p. III-36	For harvest units and TSI areas within MP 6.1, target overstory maple (red and sugar) for girdling to reduce seed source and provide snags.
Resource: Indiana Bat. Concern: Cutting trees may impact young Indiana bats if they are present.	USFWS 2006. BO for MNF Forest Plan. Pp. 28, 52, 67.	Indiana bats have been documented in one location at two different instances in the project area. Roads proposed for decommissioning in proximity to the Indiana bat captures (FR 495, GR 80, GR 51 A, GR 52 B, GR 54 A and GR 55) and LWD placement to Buffalo Fork and receiving tributaries would abide by seasonal tree cutting restrictions (cut trees from November 15 - March 31) to ensure Indiana bats are not present.  The annual allowable acreage for incidental take associated with road activities is 78 acres, with an estimated acreage during the first decade of 630-780 acres. The amount of tree cutting associated with road activities would be determined on a yearly basis. If the impact would be expected to exceed the annual allowable acreage, measurable tree removal associated with road decommissioning would occur during the hibernation period (November 15 - March 31).
Resource: Heritage. Concern: Project activities, including tree felling, could impact heritage sites.	Standard HR08, p. II-39	All sites having potential direct effects from project activities should be marked and avoided during all phases of project implementation. If tree felling takes place adjacent to a heritage resource, it is recommended that either directional felling away from the site be implemented, or a buffer comprising the height of the nearest possible fell, plus one-half, be established. These buffers have already been incorporated into the field marking of known sites.
Resource: Heritage. Concern: Project activities, including tree felling, could impact heritage sites.	Standard HR09, p. II-39	As project implementation occurs, Forest Service staff and contractors would be made aware of the potential for locating additional historic and prehistoric sites in the project area. Ground-disturbing activities must be stopped if activities may impact any newly discovered heritage resources until the site has been evaluated by the Forest Archaeologist and any appropriate protections and future actions are determined.

The mitigation measures shown in Table A.2 below would be used with the specified actions to help reduce, prevent, or eliminate potential negative impacts and to help meet Forest Plan direction.

**Table A.2.** Mitigation measures

Resource & Concern	Mitigation Measure	Effectiveness Information & Reference
<p>Resource: Minerals - User Protocols. Concern: To avoid any user conflicts between gas operators and implementation of proposed projects; to avoid any damage to the Glady and Horton Storage Fields and their infrastructure; and to ensure public safety and protection of the environment.</p>	<p>Mitigation required for all actions that involve heavy equipment for soils, timber, road work, watershed restoration, construction activities, etc. working within the Glady Storage Field and Horton Field:</p> <ul style="list-style-type: none"> <li>• Proper representatives from the Gas Company and from the proposed project must meet at least 30 days prior to any activities that involve heavy equipment use in the Glady Gas Storage Field or Horton Field or associated pipeline.</li> <li>• Project must be described and discussed with the gas company, including timing, length of work period, and variety and weight of the heavy equipment proposed to use.</li> <li>• The gas company will locate the lines, mark them, and calculate the need for additional material (dirt and gravel) atop lines to protect the high pressure gas lines and/or designate avoidance by markers, fencing, etc.</li> <li>• Communication between the gas company and project leader(s) will occur prior to operations and continue, as appropriate, throughout the operations.</li> </ul>	<p>Professional opinion of District Minerals Administrator Will Wilson. Direct experience from the Forest using the same measure for past projects within the Glady Storage Field to implement minerals direction from the Forest Plan (pp. II-45 through II-48). These measures will ensure there will be no effects to the gas lines that would affect public safety.</p>
<p>Resource: Minerals. Concern: If the old road off of FR 35 is not (re)constructed before FR 854 is decommissioned, the gas company would not have access to their pipeline groundbed.</p>	<p>(Re)construct the 500 feet of the old road off of FR 35 before decommissioning FR 854.</p>	<p>Common sense on timing of activities.</p>

Resource & Concern	Mitigation Measure	Effectiveness Information & Reference
<p>Resource: Vegetation Diversity.</p> <p>Concern: Control of beech brush and other management activities could eliminate beech trees that are resistant to beech bark disease.</p>	<ul style="list-style-type: none"> <li>• Do not cut or apply herbicide to any immune beech trees that are 11 inches dbh or larger.</li> <li>• Roads, skid trails, and landings should avoid immune beech trees that are greater than 11 inches dbh as much as is practical, but exceptions may be granted where relocation of these features is not practical.</li> <li>• Do not use herbicides to treat sapling-sized beech within 20 feet of immune beech.</li> </ul> <p>Note: Within all commercial timber harvest units, immune beech would be painted as reserve trees.</p>	<p>Prior to the onset of beech bark disease, beech nuts were an important food source for many wildlife species (especially wild turkey) in the northern half of the project area. Avoiding impacts to immune beech would help this species to recover.</p> <p>Kochenderfer et al. 2006</p>
<p>Resource: Terrestrial Ecosystems.</p> <p>Concern: Balsam fir, which is a rare and desirable conifer in MP 4.1 areas, could be damaged by vegetation- and ground-disturbing activities.</p>	<ul style="list-style-type: none"> <li>• Avoid damaging balsam fir in the upper Little River riparian restoration area.</li> <li>• Avoid damaging balsam fir seedlings at the beginning of roads FR 248 and GR 42 C during decommissioning.</li> </ul>	<p>Avoidance would eliminate or minimize damage to balsam fir. Professional opinion of District Wildlife Biologist, Shane Jones</p>
<p>Resource: NNIS.</p> <p>Concern: Materials brought in from off-site could harbor seeds or viable NNIS plant parts.</p>	<ul style="list-style-type: none"> <li>• Do not use hay for mulch. Because a local source for certified weed-free mulch is not yet available, use straw, coconut fiber, wood fiber, synthetic mulch, or other low-risk Forest Service-approved material.</li> <li>• To the extent possible, inspect off-site sources of gravel and borrow material for NNIS plant material. Do not use material that is known or suspected to contain NNIS plants with the potential to invade forested ecosystems.</li> </ul>	<p>Avoidance of hay would greatly reduce risk of NNIS introduction during mulching.</p> <p>Avoidance of contaminated material would greatly reduce the risk of NNIS introduction.</p>
<p>Resource: Water, Riparian, Aquatic Resource.</p> <p>Concern: Drift of herbicide broadcast spray, in certain hardwood regeneration units that occur on steep slopes, wet soils or coves, or in highly dissected terrain, could impact water quality or aquatic organisms.</p>	<p>For portions of six harvest Units (2, 10, 16, 64, 68, 72) with steep slopes and/or wet soils, use site-specific methods of herbicide application on those areas, not broadcast spray treatments.</p>	<p>Using site-specific methods of applying herbicides instead of broadcast spraying on steep slopes and wet soils would minimize potential impacts to water quality and aquatic organisms.</p>

Resource & Concern	Mitigation Measure	Effectiveness Information & Reference
<p>Resource: Soils.</p> <p>Concern: Soil disturbing activities could impact the function of organic soil horizons under red spruce. Protection of the unique mature red spruce habitat that coexists with deep soil organic horizons for the purpose of potential food production for the WVNFS, preserving carbon on the forest floor and within the ecosystem as a whole, and to prevent disruption of soil forming process that lock up heavy metals such as mercury, iron, and aluminum deep within the soil profile. To prevent adverse effects to the soil microbe population in organic horizons under mature red spruce communities.</p>	<ul style="list-style-type: none"> <li>• Avoid and protect organic soil horizons underlying red spruce while implementing the project. This would need to be done by the Forest soil scientist, or someone approved by the soil scientist, with on-the-ground observation of these soil characteristics during design / implementation of new road, landing, or skid road soil-disturbing activities.</li> <li>• For all actions, identify and protect all patches of red spruce-dominated forests ½ acre in size and greater. Avoidance and protection of deep (&gt;5 inches) soil organic horizons under red spruce overstory greater than ½ acre in size should be done while implementing the project in spruce commercial timber units as well as in any other portion of the project area. This will need to be done by the Forest soil scientist, or someone approved by the soil scientist, with on-the-ground observation of these soil characteristics during design / implementation of new road, landing, or skid road soil-disturbing activities.</li> <li>• Herbicide application in non-commercial red spruce restoration units is prohibited in areas greater than ½ acre where deep soil organic horizons are present under mature red spruce over story. NNIS treatment is an exception.</li> </ul>	<p>Avoiding or minimizing disturbance or herbicide application to organic soil horizons would minimize adverse effects to the structure and function of the soil horizons and its biotic components.</p> <p>Professional opinion of Forest Ecologist, Forest Soil Scientist, and District Wildlife Biologist. SERA assessments for proposed herbicides.</p>
<p>Resource: Soils.</p> <p>Concern: To minimize the effects of disturbing soils that have seasonal high water tables. Blading or cutting in the soil profile at depth greater than 18 inches can disrupt subsurface hydrological flows and bring water to the soil surface.</p>	<p>Units 204 and 263 in Alt 5 Skid roads and log landings are to be located to minimize soil and stream buffer disturbance, avoid or limit the number of functioning stream channel crossings, utilize existing old skid routes where desirable, and avoid steeper and wetter areas within the units to the maximum extent practical. Blading skid roads in wet soils should be limited to cuts less than 18 inches deep in the soil profile as much as possible. Laying down slash and using slash to disperse the weight of the equipment in these units could further help to reduce the impacts.</p>	<p>Forest Soil Monitoring Report for Desert Branch Timber EA; Upper Williams Timber EA, and professional opinion and experience of Forest Soil Scientist and Watershed Staff.</p>

Resource & Concern	Mitigation Measure	Effectiveness Information & Reference
<p>Resource: Soils. Concern: Preventing and/or removing standing water from skid roads and to prevent saturation of soils, which may lead to severe rutting and compaction from equipment operation.</p>	<p>Use temporary culverts where seasonal high water tables, seeps, or springs are intercepted in the construction of skid roads. Pull culverts when done using the skid road and follow direction for protecting bare soil.</p>	<p>Best Management Practices for building timber roads as applied within timber harvest units.</p>
<p>Resource: Soils. Concern: Material that breaks down into finer particles and is not durable could become an unintended additional source of sediment.</p>	<p>Select a road-surfacing material that does not readily degrade into finer particles and become a source of sediment. Limestone gravel would be an accepted source of surface material that helps to prevent erosion and road bed failures that result in rutting. However, material that breaks down into finer particles and is not durable would become an unintended additional source of sediment.</p>	<p>The effectiveness of limestone gravel as a road surface to limit soil movement and minimize sediment has been observed on a regular basis across the Forest.</p>
<p>Resource: Soils. Concern: Heavy equipment on skid roads can bring subsurface flows to the surface and creating new water ways on steep hill slopes.</p>	<p>To protect areas where water comes to the surface and runs down a skid road, limbs and tops can be placed on the road surface to act as a cushion and disperse the weight of heavy equipment.</p>	<p>This woody debris acts as a mat to help minimize compaction, rutting, and any ponding of water on the skid system. Personal communications with logging contractors and field experience.</p>
<p>Resource: Soils Concern: Soil and hydrologic restoration of Landing No. 45.</p>	<p>Landing # 45. If used as a landing, restore the site to a functioning floodplain or wetland area that is hydrologically connected to the other wetlands surrounding it.</p>	<p>Based on professional experience and judgment, this mitigation would undo past detrimental soil damage and restore soil function to the site in the floodplain.</p>
<p>Resource: Landmark trees for Point Count Surveys (PCS) for birds on Trail 367 (Hinkle Run). Concern: Trail/road work could inadvertently eliminate or damage landmark trees.</p>	<p>For Trail 367, maintain integrity of PCS by coordinating with Wildlife Biologist to ensure all landmark trees are preserved.</p>	<p>It is necessary to keep the landmark trees for precise location identification to maintain the integrity of this long-term monitoring.</p>

Resource & Concern	Mitigation Measure	Effectiveness Information & Reference
<p>Resource: Small wetland habitats.</p> <p>Concern: Decommissioning could cause loss of wetland habitat on old abandoned roads (especially woods roads), including seepy areas that are the last to dry out in the summer and last to freeze/get snow covered in the winter, which provide habitat for various game and nongame wildlife species, including amphibians and reptiles.</p>	<p>Small wetlands will be established in some areas where the cutslope intercepts groundwater. These may include ephemeral, forested, emergent, shrub-scrub, and wet-meadows types. Where possible, organic material such as mulch and leaves should be added to restore wetlands to improve water quality and wildlife habitat. Wetlands should be used to improve habitat for wildlife and plants, control erosion, and improve water quality. Ensure coordination between the Wildlife Biologist and Hydrologist.</p>	<p>Shane Jones (FS-WL Bio ) Rick Hartzell (WVDNR Little River Area Manager) best professional opinion. Wetland Drainage, Restoration, and Repair; 2007. Thomas R. Biebighauser.</p>
<p>Resource: Access to noncommercial spruce restoration units.</p> <p>Concern: Access to some noncommercial spruce restoration units may be hampered if they are decommissioned before the spruce work is done.</p>	<p>Maintain current access (ATV/UTV or truck) on the following roads as needed (estimated to be approximately 5 years) to access the identified noncommercial spruce restoration units before decommissioning the roads:</p> <ul style="list-style-type: none"> <li>• GR 92 (Unit 278 for 0.3 mile);</li> <li>• GR 93 (Unit 277 for 0.3 mile);</li> <li>• FR 174 (Unit 290 for 0.6 mile);</li> <li>• FR 222 (Unit 290 for 0.75 mile);</li> <li>• FR 854 A (Units 208 and 247 for 1 mile)</li> </ul> <p>Coordinate scheduling of noncommercial spruce restoration and road decommissioning activities between the Wildlife Biologist and the Hydrologist.</p>	<p>Logic. Temporarily delaying road decommissioning (or parts thereof) to ensure road access will result in easier and cheaper implementation of noncommercial spruce restoration.</p>
<p>Resource: WVNFS young and nest box monitoring.</p> <p>Concern: Decommissioning could inadvertently eliminate or damage trees with nest boxes on them or could disturb WVNFS when there are immobile young present.</p>	<p>For decommissioning of roads FR 819 and ukn 24:</p> <ul style="list-style-type: none"> <li>• Coordinate locations and scheduling of road decommissioning between the Wildlife Biologist and the Hydrologist to avoid disturbance to immobile young WVNFS and to maintain the integrity of WVNFS nest box monitoring while addressing watershed concerns.</li> <li>• Do not cut or damage trees with nest boxes on them.</li> <li>• Do not conduct decommissioning activities between April 1 and August 15.</li> </ul>	<p>Coordination between the Wildlife Biologist and Hydrologist would ensure no nest boxes are inadvertently destroyed or damaged, and would minimize disturbance to young WVNFS.</p> <p>FWS. 2006. Final BO for MNF Forest Plan.</p>
<p>Resource: Red spruce habitat</p> <p>Concern: Cutting overstory red spruce would reduce the seed source</p>	<p>For commercial red spruce restoration activities in MP 3.0, retain all overstory red spruce. Exceptions may be made in limited circumstances for skid road layout or safety concerns.</p>	<p>Retaining overstory red spruce would provide a seed source for regeneration.</p>

Monitoring is designed to show if projects are implemented as planned, and to see if we get the results we expect. If monitoring shows we do not get the results we expect, additional work may need to be done to help obtain the results we expect, or to help reach the desired future conditions. Table A.3 below shows the types of monitoring that would take place.

**Table A.3.** Monitoring

Resource	Monitoring Description	Who's Responsible for Monitoring?
Spruce ecosystem restoration impacts on vegetation parameters	<ul style="list-style-type: none"> <li>Monitor a representative subset of spruce restoration units (commercial, noncommercial, and TSI) to determine the effectiveness of spruce release. Such monitoring will include effects on canopy, understory, and ground layer vegetation; cover and height response of spruce; and structural features such as coarse woody debris and snags.</li> </ul>	Ecosystem, Wildlife Staff
NNIS impacts due to commercial harvest and road work	<ul style="list-style-type: none"> <li>A representative subset of commercial harvest units that are not currently known to be infested by high priority NNIS will be monitored for new infestations. Monitoring may be conducted in conjunction with second and fifth year stocking surveys, provided these surveys are conducted at an appropriate time of year for detecting high priority NNIS. Monitoring will concentrate on skid trails, landings, and other areas of disturbed soil, but will also include other parts of harvest units. Methods and extent of monitoring within each unit will be dependent on the characteristics of the unit and proximity to known infestations.</li> <li>A representative subset of new roads, reconstructed roads, and decommissioned roads that are not currently known to be infested by high priority NNIS will be monitored for new infestations during the second growing season after activities are completed. Monitoring does not need to cover the entire length of each road, but will cover reasonably accessible representative sections that total approximately 20 percent of each road. If different pieces of equipment or different source materials for seed and mulch are used on the same road, monitoring will cover segments representing each equipment piece and/or materials source.</li> </ul>	Ecosystem Staff
Herbicide effects on riparian vegetation and stream water quality	Monitor 2 broadcast spray units and 3 hand application units according to a monitoring plan to be developed. Include spray drift and water quality monitoring for broadcast spray units; water quality for others.	Aquatics and Hydrology, Forest Ecologist
Survival of woody plant species used in riparian restoration	Monitor short and long-term survival of woody plant species planted in riparian restoration areas.	Aquatics and Hydrology

<b>Resource</b>	<b>Monitoring Description</b>	<b>Who's Responsible for Monitoring?</b>
Spruce ecosystem restoration impacts on WVNFS	WVNFS Nest Box Monitoring – Monitor a representative subset (probably 3-5) of spruce restoration areas and adjacent areas via nest box monitoring. Box checks will occur once in the spring and once in the fall annually before, during, and post project implementation. This work will also allow for the potential of future research by academia.	District Wildlife program.
Spruce ecosystem restoration impacts on conditions that favor deep organic soil horizons	Soil monitoring – The emphasis will be on measuring whether design features and mitigation measures are successful at preserving conditions that favor deep organic soil horizons and WVNFS microhabitat.	Forest Soil program and District Wildlife programs.
Regeneration of harvest units with desired species	Conduct regeneration surveys 1 and 3 years after harvest to see if there is adequate regeneration of desired species. Evaluate density and species to determine if additional actions are needed to bring the units to desired levels.	Forest and District Silviculture staff.
Undesirable vegetation interfering with desired regeneration in harvest units	Monitor for interfering vegetation in commercial timber units after harvest to determine if herbicide application is needed for their control to help ensure regeneration of desired species.	Forest and District Silviculture staff.