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Department of
Agriculture

Forest Service

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Dear Interested Citizen,

The James River and Warm Springs Ranger Districts of the George Washington and Jefferson National Forests are conducting an environmental analysis for the proposed Lower Cowpasture Restoration Project (Lower Cowpasture). The area is located in northeast Alleghany, southeast Bath, and western Rockbridge Counties, Virginia (see vicinity map). The objective for the project proposal(s) are to advance the natural resource goals for the area as outlined in the goals and objectives of the Revised Land and Resource Management Plan (Forest Plan) for the George Washington National Forest.

A. Introduction

In early 2013, we started working on a unique project called the Lower Cowpasture Restoration Project. This undertaking involves a large, landscape-scale analysis that is designed to:

- 1) consider resource management in a more integrated manner and over a longer timeframe (ten years);
- 2) utilize scientific and technological advances to address resource issues at a larger scale (around 117,000 acres); and
- 3) build upon the collaborative relationships that developed among a diverse set of publics during the recent revision process of the Land and Resource Management Plan (Forest Plan) for the George Washington National Forest (GWNF).

Initially we intended to implement this project under a new revised Forest Plan. At this time, the revised Forest Plan for the GWNF has not been finalized. A Draft Forest Plan and Draft Environmental Impact Statement were released in 2011 for comment. Based on those comments, additional information and analyses, the Forest made adjustments to the preferred alternative in the Draft Plan and prepared a new Draft Plan and EIS that has been submitted for final approval.

The Forest Plan currently in effect for the GWNF was approved in 1993 and still generally provides sufficient direction to support the Forest Service mission of managing the GWNF to “sustain the health, diversity, and productivity of the Nation’s forests and grasslands to meet the needs of present and future generations”. However, since 1993 our experience and knowledge about many resources has advanced. The majority of the Forest has aged and the composition of species coming up in the understory is not always reflective of the overstory. The effects from a lack of fire and from fire suppression on the composition and structure of the different ecosystems are more clearly understood. The technology to inventory and model the complexity of our ecosystems has progressed. The habitat needs in the life cycles of many declining species are better known. The local economy has also changed with respect to the types of



wood products in demand. Local and regional populations have increased, influencing recreational demands and intensifying effects on infrastructure.

For the Lower Cowpasture Project, we will continue working within the direction of the 1993 Forest Plan, but we will incorporate the best available science we gathered during the revision process for a new Forest Plan. If a revised Plan becomes approved before the final decision is made on this project, this project will be consistent with the new Plan.

B. General Description of the Area

The Lower Cowpasture Project Area consists of approximately 117,552 acres of public and private land bounded on the west by the ridge of Warm Springs Mountain, on the north by State Route 39, on the east by State Route 633 and Interstate 64, and on the south by Interstate 64 and State Route 606. Elevations within the project area range from 1,100 ft. along the lower Cowpasture River to 4,229 ft. on top of Warm Springs Mountain's Bald Knob. Approximately 77,680 acres are National Forest System lands. The remaining acres include Douthat State Park, a portion of The Nature Conservancy's Warm Spring Mountain Reserve, and private lands. The project area lies within the Cowpasture River (85,807 acres), Jackson River (27,263 acres), and Calfpasture River (4,482 acres) watersheds in Virginia's Bath and Allegheny Counties.

Past events have played a significant role in creating the vegetative condition existing today. Most of the area, prior to Forest Service acquisition, was extensively harvested for lumber and pulpwood during the latter part of the 19th century and the early 1900's. The chestnut blight during the 1920's and 30's removed all the American chestnut from the overstory and created openings that enabled previously overtopped trees, primarily oak species, to dominate the stand. Planting of white pine has occurred in some stands within the project area. Parts of the project area have been prescribed burned in the past decade. Wildfires in 2012 (Rich Hole and Porters Mill) burned across approximately 16,000 acres of the landscape.

Vegetation is comprised primarily of forested stands of upland oaks with scattered stands of "yellow pine". The most common tree species found in the overstory include chestnut oak, white oak, scarlet oak, black oak, yellow poplar, white pine, Virginia pine, and pitch pine. Examples of common species found in the midstory include black gum, white oak, dogwood, chestnut oak, red maple, scarlet oak, and hickory. Examples of common species found in the understory include: red maple, hickory, white pine, blackgum, white oak, chestnut oak, black oak, scarlet oak, yellow poplar, dogwood, pitch pine, mountain laurel, and sassafras. The mixture of vegetation is typical of acidic soils developed over sandstone and shale bedrock in the ridge and valley portion of the Appalachian Mountains.

Rich Hole and Rough Mountain Wildernesses, 6,450 and 9,300 acres respectively, are within the project area. Millboro Tunnel Shale Barren and the East Sharon Shale Barren Biological Areas are also within the Lower Cowpasture project area and are assigned to MA 4.

This area is part of the larger Appalachian Fire Learning Network and includes the Warm Springs Mountain Restoration area, a 23,000 acre restoration project. The Appalachian Fire Learning Network is a cooperative effort among groups in eight states that include The Nature Conservancy (TNC), Department of Interior land management agencies, state forestry and wildlife agencies, numerous non-governmental organizations and the Forest Service with the goal of restoring the diversity of oak-hickory forests through the use of fire to the benefit of wildlife, timber management, and wildland homeowners.

There are scattered homes and farmland near the project area and this land use is expected to remain the same. Approximately 850 acres of timber harvest has occurred on private lands in the vicinity of the project area within the past 20 years. Douthat State Park, Young Life youth camp, and a portion of TNC's Warm Springs Mountain Preserve are located within Lower Cowpasture project area. A portion of Clifton Forge's municipal watershed is within the project area. A CSX railroad line also transects the project area.

C. Proposed Action

All the proposed actions are within National Forest System lands. The project area, approximately 77,680 acres, is within compartments 891-893, 915-918, 921, 925-929, 931-935, 953-959, 961-984, 1004-1006, 1305-1306, 1308-1311, 1315, 1317, 1320, 1322, 1324-1328, 1348-1351, 1354, 1356-1359, 1369, and 1374. These proposed actions would occur over the next ten years.

Vegetation Management/Wildlife Habitat Improvement

- Regenerate approximately 981 acres using the shelterwood with reserves method. This is the traditional regeneration method that has been used on the George Washington National Forest for the past 20 years. Approximately 10-20% of the canopy is left (15-25 square feet of basal area), creating a two-aged stand structure. Age is reset and a new age class is created while maintaining some hard mast production from the residual stems. Residual stems would be clumped in groups to maximize sunlight to the forest floor and enhance dense woody growth. Early successional habitat is created by this treatment.
- Harvest approximately 180 acres using the shelterwood method. This is the first cut of a two-step shelterwood regeneration treatment. Approximately 35-45% of the canopy is left (40 – 50 square feet of basal area) to provide a partial shade environment and foster the development of seedlings. The residual stand would be evenly distributed through the treated area. A new age class would not be created by this first entry, but ultimately all or most of the residual stand would be removed to release the regeneration and create a new age class in approximately 10 to 15 years. The second, or removal cut, would result in an even-aged or two-aged stand structure depending on the residual stand left at that time. This treatment is prescribed where site quality and tree size allow the second entry to be economically feasible and on relatively gentle slopes where damage to residual stems is less likely. Late-open habitat is created by this treatment until the final harvest 10 to 15 years later which would result in early successional habitat.
- Thin approximately 163 acres using the free thinning method. A free thinning is an intermediate stand treatment where trees from any crown class (intermediate, co-dominant, or dominant) may be removed to achieve the desired condition. In this case, we are using the term to describe a treatment that would look very much like the first cut of a two-stage shelterwood as described above. However, the residual stand would not be removed in the foreseeable future and the ultimate purpose is not to regenerate a new stand. Instead, prescribed fire, would be used to maintain the late-open habitat condition into the foreseeable future.

- Thin approximately 83 acres using the thinning from below method. This treatment is a commercial thinning that would remove trees in the intermediate and perhaps lower co-dominant crown positions. Generally 50-60% of the canopy would be retained (60-70 square feet of basal area). Late-open habitat conditions would be created, but open conditions are expected to last only 10-15 years as the canopy would close again over time.
- Thin approximately 541 acres using a commercial timber stand improvement (CTSI). This treatment is very similar to the thinning from below; 50-60% of the canopy would be retained (60-70 square feet of basal area). However, these stands are younger and have a smaller average diameter, resulting in stands that normally would not be economical to harvest commercially. The recent installation of a wood fired boiler at the MeadWestvaco mill in Covington provides a new market for this small diameter material that would be removed. Mid-open conditions would be created, but canopies would be expected to eventually close in 10-15 years.
- Conduct hardwood restoration on approximately 259 acres. This commercial treatment is assigned to white pine plantations considered to be in an uncharacteristic habitat condition. These stands were often oak dominated stands on somewhat poorer sites that were converted to white pine as long as 30 years ago. While white pine was planted, many stands currently contain enough hardwood species to attempt restoring them back to a hardwood dominated stand in the future. The treatment would remove most, if not all, white pines and retain hardwood species. The percentage of the canopy left would vary widely depending upon the amount of hardwoods currently present in the stand; the residual canopy may be from 20% to 60% of the existing stand. This treatment would result in early successional or mid-open habitat conditions depending upon the density of the residual trees.
- Conduct timber stand improvement (TSI) on approximately 1,498 acres. This is a non-commercial intermediate stand treatment in stands less than 25 years old. Approximately 20 to 25 crop trees per acre are identified. Any trees whose crowns are touching the crop tree are cut and left. Stands in this condition would remain in the mid-closed canopy habitat condition since not enough trees would be removed to result in open habitat conditions.
- Conduct site preparation natural (SPN) on approximately 981 acres. This treatment is applied soon after a regeneration harvest, a shelterwood with reserves in this case, to enhance the regeneration success of desirable species. Competing undesirable vegetation 2"-6" in diameter is cut and left. Spring-poles and broken saplings may also be cut. The occasional "flat topped" oak sapling that has lost apical dominance may also be cut to foster resprouting of a well formed and vigorously growing stem.
- Conduct non-commercial thinning on approximately 658 acres: This treatment is quite similar to SPN, but may be applied in non-regeneration harvests (e.g. thinnings from below, shelterwoods, and/or hardwood restoration). The purpose of this treatment is to improve the visual appearance of the commercially harvested stands by cutting spring-poles and any broken saplings.
- Construct approximately 322 acres of permanent wildlife clearings. Clearing are to be disked, limed, fertilized, and seeded with a non-invasive wildlife mix.

- Construct up to 24 waterholes.

Associated actions for vegetation management activities include construction of approximately 11 miles of temporary roads, pre-haul maintenance on Forest System Roads, and construction of 94 landings. Following completion of the proposed management activities all landings, temporary road surfaces, and skid trails would be closed and revegetated with a non-invasive wildlife seed mixture following their use.

Chemically treat non-native invasive plant (NNIP) on approximately 1,400 acres after harvesting. This treatment would utilize a directed foliar application of herbicides to control NNIP species soon after harvesting. Herbicides used will include glyphosate or triclopyr amine depending upon the species to be controlled. The herbicide would be applied by backpack sprayer to individual plants. The need for this treatment will be assessed on a case by case basis depending upon the severity of any NNIP infestations one growing season after harvest. It is anticipated that most regeneration treatments and many shelterwood and hardwood restoration treated areas will require this follow-up chemical treatment.

Table 1. Summary (in Acres) of Proposed Vegetation Treatments

Area	Regeneration Harvest	Shelterwood	Thinning	Restoration	TSI	Total
Beards Mountain	240	50	13	32	339	734
Clifftondale	42	0	35	18	0	95
Craft Road	56	0	27	0	0	83
Limekiln	449	130	393	113	614	1,699
McGraw Hollow	81	0	54	29	127	291
Pads Creek	0	0	95	67	72	234
Sandy Springs	113	0	170	0	286	569
TOTAL	981	180	787	259	1,498	3,705

Prescribed Burns

- Prescribe burn approximately 12,907 acres in thirteen (13) burn units. Most of the burn units will use existing roads, trails, and burn boundaries as burn boundaries. In addition, there is a need to construct approximately 11.8 miles of dozer line. This acreage does not include prescribed burns approved in the Warm Springs Mountain Restoration Project.

Aquatic Passage/Watershed Improvements

- Stabilize slope failures in Simpson Creek drainage by diverting water from the I-64 culvert outflow to the base of the slope via a flexible pipe extension. An outlet control protection measure would be utilized at the base of the pipe extension. The failed slopes would be cut back to facilitate revegetation of exposed slopes.
- Replace approximately fifteen (15) impassible culverts with passable structures and remove three (3) culverts on Slicky Slide road.
- The following slope-dependent riparian corridor widths will be adopted and used in the project area. The slope-dependent riparian corridor widths are measured in on-the-

ground surface feet perpendicular from the edge of the channel or bank (stream, water body, etc.) and extend out from each side of a stream. For ponds, lakes, sloughs, and wetlands (including seeps or springs associated with wetlands) the measurement would start at the ordinary high water mark and go around the perimeter. For braided streams, the outermost braid will be used as the water's edge. An interrupted stream (a watercourse that goes underground and then reappears) will be treated as if the stream were above ground. The riparian corridor includes human-created reservoirs, wildlife ponds, wetlands, and waterholes connected to or associated with natural water features. In addition, those areas not associated with natural water features, but support riparian flora or fauna, will have a riparian corridor designation.

Table 2. Minimum Riparian Conservation Zone (In Feet) On Each Side of Stream

	Slope Class		
	0-10% Core Area	11-45% Core Area Plus Extended Area†	45%+ Core Area Plus Extended Area†
Perennial*	100	125	150
Intermittent	50	75	100
Channeled ephemeral	25	25	25

*Perennial streams, lakes, ponds, wetlands, seeps, and springs

†The Extended Area is the outer 25 feet (on 11-45 % slopes) and 50 feet (on 45 % + slopes).

Non-native Invasive Species

- Chemically treat non-native invasive plants (NNIP) on approximately 280 acres. This treatment would utilize a directed foliar application of herbicides to control NNIP species as needed on approximately 55 miles of open and seasonally open National Forest System roads (FSR) and in the Mares Run and Walton Tract areas. The herbicide would be applied to individual plants. Herbicides used will include glyphosate or triclopyr amine depending upon the species to be controlled.

Transportation

- Reconstruct FSR 194 (Limekiln) in an entrenched section and close approximately 19 unauthorized roads.

Recreation/Wilderness

- Construct approximately 17 miles of National Forest System trails in the Pads Creek and Rich Hole areas. Trails would be constructed to the minimum standard necessary for protection of soil, water, vegetation, visual quality, user safety, and long-term maintenance.
- Construct/improve connector trail segments that connect with Douthat State Park.

American Chestnut

- Establish a minimum of one (1) chestnut progeny site in cooperation with The American Chestnut Foundation.
- Plant chestnut seedlings, on approximately 15 acres, as a supplemental planting in proposed harvest units after harvest.

Archeological Resources

- Stabilize Wilson Creek dam.

Amending the 1993 Revised Land and Resource Management Plan (Plan) with non significant amendments specific to the Lower Cowpasture project area.

Amend the 1993 Revised Land and Resource Management Plan (Plan) for the George Washington National Forest with site specific amendments. If a new Plan is approved before the decision is made for this project, these actions should already be incorporated into the new Plan.

- Special Biological Areas are considered Special Interest Areas-Biologic and are allocated to Management Area 4 in the 1993 Plan with management direction developed specifically for these types of areas. Twelve (12) biological areas totaling approximately 4,905 acres were identified during the recent plan revision process are not currently within MA 4 areas so the 1993 Plan would need to be amended to change these land allocations.
- Recommended Wilderness Study Areas are allocated to Management Area 8 in the 1993 Plan with management direction developed specifically for these areas. The new Plan is expected to identify two Recommended Wilderness Study areas within the Lower Cowpasture project area, the Rough Mountain Addition (approximately 1,030 acres) and the Rich Hole Addition (approximately 4,630 acres). These areas identified during the recent plan revision process are not currently within MA 8 areas so the 1993 Plan would need to be amended to change the land allocation.
- Due to anticipated changes in classification of suitable habitat in the new Plan, the Lower Cowpasture project proposes harvesting approximately 189 acres currently classed as unsuitable habitat. If the new Plan is not yet in effect at the time the decision for this project is made, the analysis and project decision will also include an amendment to the 1993 Plan to allow up to 189 acres of land classed as unsuitable to be harvested to advance progress toward successional conditions indicated by the ecosystem and species diversity analysis conducted during the recent plan revision process.
- The new Plan is expected to allow regeneration harvest units up to 40 acres in size. The 1993 Plan allows a maximum regeneration size of 25 acres in MA 15. The Lower Cowpasture project proposes harvesting thirteen (13) regeneration harvest units over 25 acres in size. If the new Plan is not yet in effect at the time the decision for this project is made, the analysis and project decision will also include an amendment to the 1993 Plan to allow regeneration harvest units up to 40 acres in MA 15 for the

Lower Cowpasture project. This will advance progress toward successional conditions indicated by the ecosystem and species diversity analysis conducted during the recent plan revision process.

- The new Plan is expected to have direction for the utilization of small diameter woody biomass (logging slash, smaller diameter trees, tops, limbs) under certain conditions, whereas the 1993 Plan does not. If the new Plan is not yet in effect at the time the decision for this project is made, the analysis and project decision will also include an amendment to the 1993 Plan to allow removal of small diameter woody biomass on up to 541 acres in the Lower Cowpasture project area.

D. Purpose and Need for the Proposed Action

The Final Revised Land and Resource Management Plan for the George Washington National Forest (Revised Forest Plan) has allocated the Lower Cowpasture project area to nine Management Areas. The management area allocation and acreage are summarized in Table 3.

Table 3. Lower Cowpasture Project Area Management Area Allocation

Management Area (MA)	Approximate Acres
MA 4 - <i>Special Interest Areas</i>	731
MA 7 - <i>Scenic Corridors and the Highland Scenic Tour</i>	6,912
MA 8 - <i>Wilderness/Wilderness Study</i>	15,827
MA 9 - <i>Remote Highlands</i>	14,065
MA 10 - <i>Scenic Rivers & Recreational Rivers</i>	633
MA 13 - <i>Dispersed Recreation Areas</i>	959
MA 14 - <i>Remote Habitat for Wildlife</i>	17,643
MA 15 - <i>Mosaics of Wildlife Habitat</i>	17,656
MA 17 - <i>Timber Production</i>	3,209
Total	77,680

MA 4 emphasizes maintaining and protecting significant biological, historical, geological values (Forest Plan, page 3-4).

MA 7 emphasizes maintaining or enhancing a variety of scenic views in the foreground and middle ground zones along outstanding scenic routes (Forest Plan, pages 2-25 and 3-29) and allows vegetation manipulation for improvements to visual resources, recreation opportunities, safety, and wildlife habitat (Forest Plan, page 3-30).

MA 8 wilderness resources are maintained and perpetuated as one of the multiple uses of National Forest System land in existing wildernesses. Wilderness character and public values are protected and perpetuated and include, but are not limited, to opportunities for solitude, education, physical and mental challenge, inspiration, scientific study, and primitive recreation that includes hunting and fishing. The ecosystem is the result of natural succession and natural processes. (Forest Plan, page 3-35).

MA 9 ecosystems in this area are generally the result of natural processes. MA 9 areas are managed to provide older vegetation in remote and isolated areas where recreationists can obtain a degree of solitude. These areas are classed as unsuitable for timber production (Forest Plan, page 3-43).

MA 10 eligible river segments and their immediate environments are managed to preserve free-flowing conditions and to protect the outstanding values of the segments. National Forest System lands associated with each eligible corridor are managed to perpetuate or enhance each rivers current conditions. Wildlife habitat improvement activities are performed to enhance viewing and hunting opportunities. (Forest Plan, page 3-47).

MA 13 lands are managed to provide a variety of dispersed recreation opportunities and experiences (Forest Plan, page 3-70).

MA 14 emphasizes management with longer rotations (100-120 years) of hardwood and pine stands provide habitat for denning, cavity nesting and hard/soft mast projection. As a result of prescribed fire, this area also has openings and dense understory species. Regeneration areas (0-10 age class) up to 25 acres in size provide dense thickets of escape for various wildlife species. Timber activities are scheduled to minimize the overall disturbance to disturbance sensitive species. Normally, periods between timber sales entry will range from 7-10 years. (Forest Plan, page 3-74). Habitat management activities include development of water sources, prescribed burning, creation/maintenance of openings (Forest Plan, page 3-75). Prescribed burning to increase herbaceous vegetation, browse, berry production. (3-76).

The desired conditions of MA 15 are to optimize hard and soft mast production and to provide a dispersed system of permanent forest openings. Open, park-like understories are created and maintained to promote moderate herbaceous ground covers and abundant insect populations. Vegetation consists of a mosaic of hardwood and pine stands with varying ages that provide habitat for a variety of wildlife species preferring habitat ranging from permanent forest openings to hardwoods of mast-bearing age. A sustained yield forest of balanced age classes with a minimum of 60% of the stands in mast bearing age is considered desirable. The even-age mgmt. is emphasized to maintain oak regeneration, to create open understory conditions as well as provide stand diversity. (Forest Plan, page 3-80). Open stands are developed and maintained to promote moderate growth of grasses, forbs and legumes. (Forest Plan, page 3-81). Regeneration harvest should not exceed 10% of land base in a compartment or group of compartments (Forest Plan, page 3-82). Maximum size of openings is 25 acres.

MA 17 Timber Production. The desired condition is a balanced age class distribution for forest stands containing native tree species capable of sustained, high value timber production. (Forest Plan, page 3-88). Stand size up to 40 acres.

Existing Condition

Rich Hole and Rough Mountain Wildernesses are within the project area. Millboro Tunnel Shale Barren and the East Sharon Shale Barren Biological Areas are also within the Lower Cowpasture project area and are assigned to MA 4. No activities are planned in the biological areas.

More than 50 named and unnamed creeks are contained in the project area totaling over 400 miles of potential aquatic stream habitat on National Forest System and private land. The Virginia Department of Game and Inland Fish uses a method of classifying trout streams based on aesthetics, productivity, resident fish population and stream structure. Classes I through IV rate wild trout habitat; Classes V through VII rate cold water habitat not suitable for wild trout but adequate for year-round hold-over of stocked trout. The stream miles in each Class are summarized in Table 4.

Table 4. Summary of Lower Cowpasture Project Area Coldwater Stream Habitat by VDGIF Classification

CLASS	Project wide (miles)	NFS (miles)
I	4.86	0.36
II	84.80	63.70
III	5.05	2.87
IV	0.00	0.00
V-VIII	17.28	13.15
Total Cold Water Fisheries	111.98	80.07

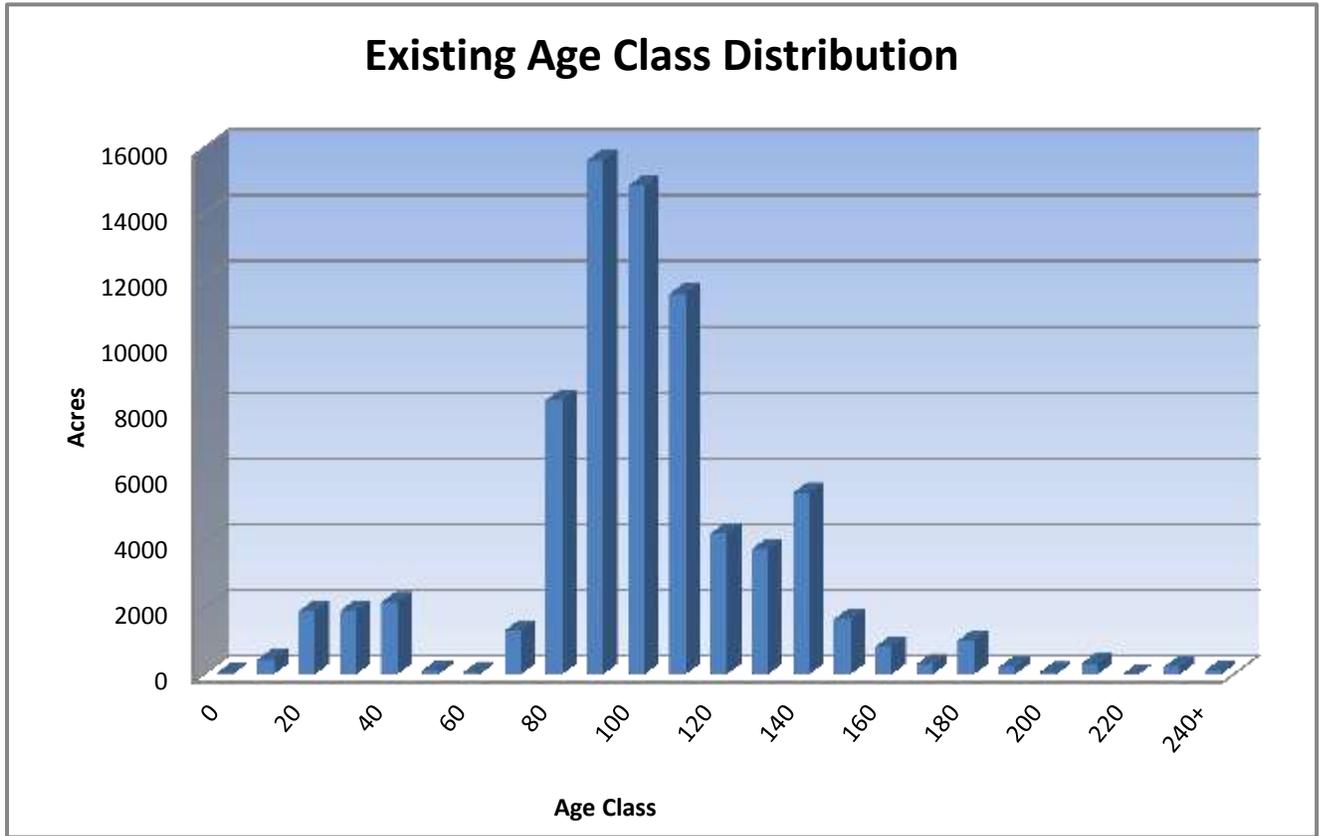
Twenty-two Forest Service timber sales have occurred within the current project area from 1989 to present. The following table summarizes historical stand treatments.

Table 5. Historical Stand Treatment Summary within the Lower Cowpasture Restoration Project Area.

Timber Sale	Year	Compartment	Acres	Harvest Method*
Mares Run	In Progress	892, 893	150	SHW
Brattons Run Salvage	2005	1305	81	SAL
Shooting Range	2002	889	54	GS
Barranca	2000	983, 1005	48	SHW, TH
Little Mare	1998	892, 933	77	SHW
Diamond Mine	1998	926, 965	146	CC, SHW, TH
Gap	1996	1328	76	SHW, TH
McGraw Hollow	1996	1380	204	CC, SHW, TH
Lick Block Run	1996	953, 984	54	SHW
Nixon Road	1995	1305	30	GS
Blue Grass	1994	916	155	SHW, TH, GS
Big Hollow	1993	1319	102	SHW TH
Black Water	1993	1319	70	SHW
Boneyard	1993	1319	43	TH
Slim Branch West	1993	981, 982	97	CC, SHW, GS
Jordon Run	1992	895	26	CC
Marchant	1991	1374	64	SHW
Smith-Thompson	1991	891, 984	38	GS
California	1991	1306	96	CC, GS, TH
Blueberry Hill	1990	917, 958	114	CC
Hickman	1990	931, 932	97	CC, GS
Cigar Ridge	1989	932, 958	50	CC

* Harvest Method: CC = Clearcut, GS = Group Selection, SAL = Salvage, TH = Thinning

The stands harvested during the above sales have regenerated and are no longer classed as early successional habitat which is important to the objectives of the area. To move toward the desired structural diversity, to maintain mast producing capabilities, provide a continuing supply of mast, create early successional habitat, there is a need to establish some young forests and thin other areas in this project area. This, in turn, would provide forest products to the local economy.

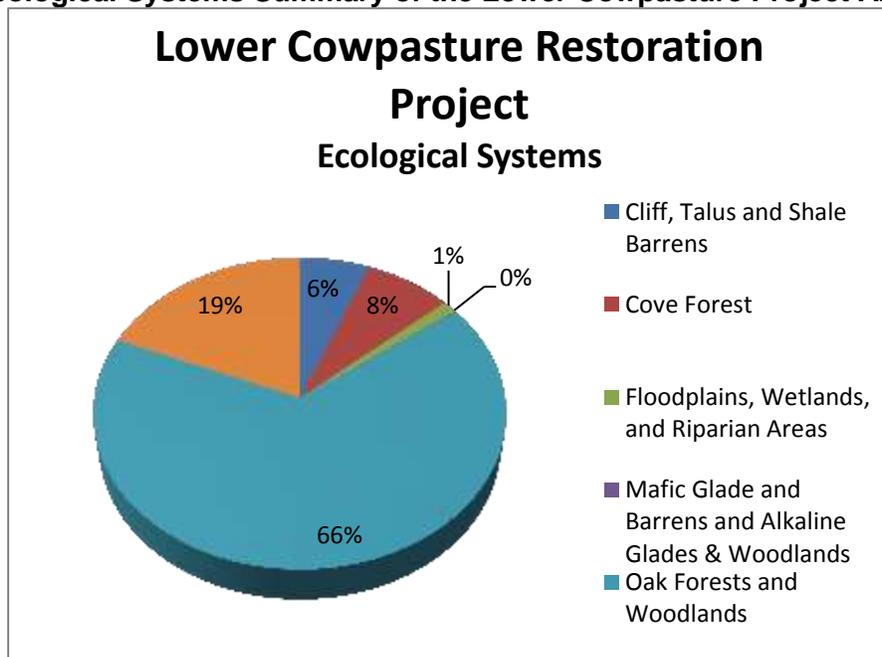


During the revision process for the Forest Plan, twenty-five ecological zones on the GWNF were classified, spatially modeled, and ground truthed, with statistical analysis (Simon 2011). Simon defines the ecological zones as units of land that can support a specific plant community or plant community group based on environmental and physical factors that control vegetation distribution. These zones may or may not represent existing vegetation, but represent the vegetation that could occur on a site with historic disturbance regimes (wind, snow, ice, fire flood events) based on environmental variables such as temperature, moisture, geology, and solar radiation. For the revised Plan, the ecological zones were simplified and combining into nine (9) Ecological System Groups. These groups were then used in the ecosystem and species diversity analyses. The ecological system groups identified in the Lower Cowpasture project area are summarized in Table 6 and illustrated in Figure 1.

Table 6. Summary of Ecological Zone Potential of Project Area

Ecological System Group	Acres
Cliff, Talus and Shale Barrens	4,699
Cove Forest	5,814
Floodplains, Wetlands, and Riparian Areas	987
Mafic Glade and Barrens and Alkaline Glades & Woodlands	66
Oak Forests and Woodlands	51,633
Pine Forests and Woodlands	14,481
Total	77,680

Figure 1. Ecological Systems Summary of the Lower Cowpasture Project Area



Desired Conditions ('93 Plan).

The '93 Plan provides a variety of resource benefits, including wood, wildlife, fish, range, dispersed recreation, developed recreation, minerals, wilderness and special uses, in a manner that maintains the diversity, productivity and long-term sustainability of ecosystems. The '93 Plan stresses the need to sustain a high quality environment while also producing needed goods and services. It uses an ecological approach to achieve multiple use management of the Forest. Lands and resources are managed for a number of purposes such as producing, restoring, or sustaining certain ecological conditions; for desired resource uses and products; and for aesthetic, cultural or spiritual values (Plan, p. 2-30).

MAINTAINING BIOLOGICAL DIVERSITY

Maintaining biological diversity on the Forest is a major goal of the '93 Plan (Plan, p. 2-1).

During the recent Forest Plan revision process, the GWNF did an ecological sustainability analysis to evaluate ecosystem diversity (Ecosystem Diversity Report, Appendix E, Draft EIS) and species diversity for both terrestrial (Species Diversity Report, Appendix F, Draft EIS) and aquatic diversity (Aquatic Ecological Sustainability Analysis, Appendix G, Draft EIS). The ecological sustainability framework for this analysis was built around principles developed by The Nature Conservancy (TNC) in their Conservation Action Planning Workbook (TNC 2005) and used the best available science as documented in the Ecological Sustainability Evaluation (ESE) relational database tool.

Key Findings from Plan Revision Ecosystem and Species Diversity Analyses.

- Many high priority species depend on the juxtaposition of both overstory mature and a well-developed grassy/shrubby/herbaceous understory for their life cycle needs. Northern bobwhite quail, red-headed woodpecker, brown-headed nuthatch, northern flicker, Appalachian yellow-bellied sapsucker, eastern wood-pewee, golden-winged warbler, Indiana bat, pine snake, grizzled skipper, box huckleberry, shale-barren rockcress, small-spreading pogonia, sword-leaf phlox, variable sedge, and smooth coneflower are just a few high priority species dependent upon open woodland habitat. Open woodlands are characterized by an overstory of trees that are spaced far enough apart to allow sunlight to reach the forest floor. This structural condition allows the development of a grassy/shrubby/herbaceous/woody understory more typical of early successional forest and grassland/shrublands.
- Early successional forests are important because they are highly productive in terms of forage, diversity of food sources, insect production, nesting and escape cover, and soft mast. Early successional forests have the shortest lifespan (usually about 10 years) of any of the forest successional stages, and are typically in short supply and declining on national forests in the Southern Appalachians (SAMAB 1996:28), and in the eastern United States (Thompson 2001). These habitats are essential for some birds (ruffed grouse, chestnut-sided warbler, golden-winged warbler, prairie warbler, yellow-breasted chat, blue-winged warbler, Swainson's warbler) and key to deer, turkey, and bear in the South (Gobster 2001). Many species commonly associated with late successional forest conditions also use early successional forests periodically, or depend upon it during some portion of their life cycle (Hunter et al. 2001).
- The need for seedling/sapling conditions to provide habitat for birds associated with early successional habitats is a current topic of concern. Old fields can provide conditions required by many early seral species, but this habitat type itself is very uncommon on the National Forest. There is a group of forest songbirds, such as the prairie and golden-winged warblers, which require disturbance patches that are less than 10 years of age and greater than 2 acres in size. In addition to structure and patch size, the elevation at which early seral habitats exist plays a role in providing habitat for some species. The chestnut-sided warbler typically occurs at higher elevations on the GWNF. Thus, provision of seedling/sapling habitat needs to be considered at both high and lower elevations.
- Hard mast is a very important component for many wildlife species such as bear, squirrel, and turkey. The five major oak species (*Quercus alba*, *Q. prinus*, *Q. velutina*, *Q. rubra*, and *Q. coccinea*) all begin hard mast production at ages from 20 to 25 years old. Maximum acorn production is achieved at 40 to 50 years old. *Carya glabra*, *C.*

tomentosa, and *Fagus grandifolia* produce hard mast in quantity at ages of 30 to 40 years. Finally, *Tilia americana* can begin producing adequate amounts of hard mast as early as 15 years old. (Burns and Honkala 1990.) Goodrum and others found that acorn yields tended to be largest in the classes from 40 to 49 years old up to 90 to 99 years old, but declined thereafter (Goodrum et al. 1971). Shaw arrived at a similar conclusion when he found that stands in his study area ranging from 40 to 80 years old comprised 50% of the management unit, but produced 90 percent of the acorn crop. (Shaw 1971.)

- Permanent grass/forb and seedling/sapling/shrub habitats are important elements of early successional habitat. Permanent openings are used by a variety of wildlife, both game and non-game species such as pine warbler, ovenbird, and black-throated green warbler. The greatest number of avian species and highest bird species diversity was found within the edge zone of the openings. Mammals include species such as white-tailed deer, striped skunk, woodchuck, bobcat, black bear, red bat, eastern cottontail, opossum, and several other small mammals.
- The GWNF, for the most part, does not have major ecotypes that were converted to other forest types from previous activities. Forest vegetation structure and composition of the understory, however, are often key features in need of restoration.
- The greatest stresses and threats to the oak forest and woodlands system are the lack of open conditions needed to establish and maintain oak reproduction and the competition of faster growing species due to the exclusion of fire or infestations of non-native invasive species. Given its importance as a food source for many wildlife species, maintaining a high percentage of oak in ages that produce mast is also important.
- The greatest stresses and threats to the pine forest and woodlands system are lack of disturbance to create regeneration and open woodland structure, invasive species including the native pine bark beetle, and climate change that could reduce rainfall and make insect outbreaks more common.
- Aquatic species (such as brook trout) that are non-tolerant of warmer water that is a projected climate change trend may find their habitat reduced. High priority actions would be protection of good habitat, improving connectivity and access to existing habitat. Protect and restore riparian forests to moderate changes in stream temperature, maintain stream bank stability, and provide instream habitat. Remove migration barriers and re-establish habitat connectivity so that species can move to more suitable habitat, or move to or from refugia.
- Acid sensitive aquatic species were identified and acid deposition rates and the underlying geology were used to analyze Forest watersheds for their sensitivity to acidification. About 67% of perennial streams on the GWNF were within the highly sensitive watersheds.

Structural diversity involves both successional stage and canopy conditions that are important to all forested ecological systems. Structure is also important to non-forested systems. Every forested community requires a balance of structural classes representing a diversity of vertical structure that allows for recruitment of young growth to replace losses due to storm events, pest infestations, wildfires, and biological age. An appropriate balance of vertical structure within each community also provides habitat for associated terrestrial species that require either

grass/forb-seedling/shrub (early seral), and/or trees (late seral) at some stage in their life cycle. These concepts are described in more detail in the Species Diversity section of this chapter.

Early successional forest is defined as regenerating forest of 0 to 35 years of age, depending upon the ecological system. It is characterized by woody growth of regenerating trees and shrubs, often with a significant grass/forb component, and relatively low density or absent overstory. This condition is distinguished from permanent grass/shrubland habitats by having relatively dense woody vegetation, as opposed to grasses and forbs. Such conditions may be created by even-aged and two-aged regeneration cutting, and by natural disturbance events, such as windstorms, wildfire, and some insect or disease outbreaks.

Ages defining the remaining successional stages vary by ecological system group. Mid-successional forest often begins to develop with the sapling/pole forest characterized by canopy closure of dense tree regeneration, with tree diameters typically smaller than 10 inches diameter at breast height. It then proceeds through stratification of over-, mid-, and understory layers. Late successional forests, from 50 to 100 years in age and older, include old growth conditions. This stage contains the largest trees and often has well-developed crown and canopy layers and scattered openings caused by tree mortality.

Another important type of condition that combines elements of both early and mid – to late successional forest is open woodlands. Created and maintained largely by periodic fire disturbance regimes, open woodlands are characterized by an overstory of trees that are spaced far enough apart to allow sunlight to reach the forest floor. This structural condition allows the development of a grassy/shrubby/herbaceous/woody understory more typical of early successional forest and grassland/shrublands. Many species depend on the juxtaposition of both overstory mature and a well-developed grassy/shrubby/herbaceous understory for their life cycle needs. In this stage canopy openings range from individual or multiple tree gaps to widely spaced trees with open-grown crowns.

Permanent grass/forb and seedling/sapling/shrub habitats are important elements of early successional habitat. Permanent openings typically are maintained for wildlife habitat on an annual or semi-annual basis with the use of cultivation, mowing, or other vegetation management treatments. These openings may contain native grasses and forbs or may be planted to non-native agricultural species such as clover, orchard grass, wheat, or small grains. Old fields are maintained on a less frequent basis (5-10 year intervals), usually with burning and mowing) or are succeeding to forest. They are largely influenced by past cultural activities and may be dense sod or a rapidly changing field of annual and perennial herbs, grasses, woody shrubs and tree seedlings.

Desired/Current Structural Conditions for Cove Forests in the Lower Cowpasture Project Area

Structure	Early	Mid-Successional Closed Canopy	Late Successional Open Canopy	Late Successional Closed Canopy
Desired % of ecological system	4	39	9	48
Current % of ecological system	2	46	1	51
Age	0-10	11-99	100+	100+

Desired/Current Structural Conditions for Oak Forest and Woodlands in the Lower Cowpasture Project Area

Structure	Early	Mid-Successional Closed Canopy	Mid-Successional Open Canopy	Late Successional Open Canopy	Late Successional Closed Canopy
Desired % of ecological system	12	7	10	57	14
Current % of ecological system	6	8	0	3	83
Age	0-15	16-69	16-69	70+	70+

Desired/Current Structural Conditions for Pine Forests and Woodlands in the Lower Cowpasture Project Area

Structure	Early	Mid-Successional Closed Canopy	Mid-Successional Open Canopy	Late Successional Open Canopy	Late Successional Closed Canopy
Desired % of ecological system	13	3	25	54	5
Current % of ecological system	12	5	0	3	79
Age	0-15	16-70	16-70	71+	71+

Management activities such as timber harvest, wildlife clearings, waterholes, prescribed burns, and other applicable habitat management techniques will primarily serve to promote ecological restoration by: 1) promoting oak reproduction, 2) enhancing habitat conditions for declining early successional species and other Species of Greatest Conservation Need in Virginia, and 3) restoring low diversity stands and systems severely altered from their historic range of variability (e.g., stands <40 years old, systems converted to white pine plantations, fire-dependent systems).”

D. Scope of the Analysis

The 1993 Final Environmental Impact Statement (FEIS) for the Forest Plan will be tiered to and will initially guide this analysis. Together with the 1993 Revised Land and Resource Management Plan (Plan), these documents provide the programmatic, or first level of the two level decision process adopted by the Forest Service. The second level is the site-specific environmental analysis associated with the Lower Cowpasture Project. However, if the new Final Revised Land and Resource Management Plan (anticipated in 2014) becomes effective before the decision for this project is made, the analysis will be tiered to the new FEIS and the project will be consistent with the new Plan. The FEIS and Plan documents are available for review at the George Washington and Jefferson National Forests Supervisor’s Office, 5162 Valleypointe Parkway, Roanoke, VA 24019, the James Ranger District Office, 810A East Madison Avenue, Covington, VA 24426, or the Warm Springs Ranger District Office, 422 Forestry Road, Hot Springs, VA 24445.

E. Public Notification

I invite your comments to help refine the proposed activities outlined in this letter. Please provide your comments no later than August 1, 2014.

Comments should be sent to Patrick Sheridan, USDA Forest Service, Lower Cowpasture Restoration Project, 422 Forestry Road, Hot Springs, VA 24445. Oral or hand-delivered comments must be received within our normal business hours of 8:00 a.m. to 4:30 p.m. Comments may be faxed to 540-839-2496. Comments may be mailed electronically to our office, in a common digital format, to

comments-southern-georgewashington-jefferson-warmsprings@fs.fed.us

When sending electronic comments, please note the name of the project in the subject line of the electronic mailing [i.e. Lower Cowpasture Project].

Thank you for your interest in the management of your National Forest.

Sincerely,

/s/ Patrick Roy Sheridan
PATRICK ROY SHERIDAN
District Ranger

Attachments

Lower Cowpasture Restoration Project Proposal

Areas Under Consideration For Vegetation Management/Wildlife Habitat Improvement

The proposed vegetation and wildlife habitat improvements areas are located in the Management Area (MA) 7, MA 14, MA 15, and MA 17. Areas proposed for vegetation management treatments are listed in Tables 1-1 thru 1- along with the proposed treatment.

Table 1-1. Lower Cowpasture Proposed Harvest Units

Proposed Harvest Units						
Proposed Harvest Area	Compartment/ Stand Number	Approximate Acres	Forest Type*	Stand Age – Base Year 2014	Site Index	Treatment**
Beards Mountain						
BM 1	958/14	23	85	95	65	SW
BM 1	958/14	23	85	95	65	SWR
BM 2	958/1	27	84	96	60	SW
BM 2	958/1	13	84	96	60	SWR
BM 3	982/16	39	59	98	60	SWR
BM 4	958/3	21	60	96	45	SWR
BM 5	958/12	13	53	90	70	FT
BM 5	958/12	26	53	90	70	SWR
BM 6	932/18	22	53	105	80	SWR
BM 7	932/5	25	84	115	75	SWR
BM 8	917/32	25	15	105	65	SWR
BM 9	917/35	14	53	105	70	SWR
BM 10	917/36	16	53	105	45	SWR
BM 11	917/19	16	84	105	69	SWR
BM 12	932/21	32	10	26	60	HR
SUBTOTAL		335				
Cliftondale						
CD 1	1369/4	10	53	100	70	SWR
CD 2	1369/26	7	53	100	70	SWR
CD 3	1369/20	18	45	105	50	SWR
CD 4	1369/29	7	53	100	70	SWR
CD 5	1369/22	20	59	30	60	CTSI
CD 6	1369/21	10	59	30	60	CTSI
CD 7	1369/25	18	3	9	70	HR
CD 8	1369/5	5	53	100	70	FT
SUBTOTAL		95				
Craft Road						
CR 1	1359/1	34	53	112	70	SWR
CR 3	1359/18	22	53	114	60	SWR
CR 4	1359/16	27	53	31	60	CTSI
SUBTOTAL		83				
Limekiln						
LK-01	981/28	14	53	109	80	SWR

Proposed Harvest Units						
Proposed Harvest Area	Compartment/ Stand Number	Approximate Acres	Forest Type*	Stand Age – Base Year 2014	Site Index	Treatment**
LK-03	982/45	24	60	109	65	SWR
LK-04	982/51	27	60	106	80	SW
LK-05	981/55	23	60	111	55	SWR
LK-06	981/30	22	60	44	80	CTSI
LK-07	981/5	33	10	44	85	CTSI
LK-08	954/1	39	45	98	55	SWR
LK-09	954/43	18	59	44	75	CTSI
LK-10	954/48	26	59	100	60	SWR
LK-11	954/12	39	54	80	70	SWR
LK-12	954/11	13	84	44	75	CTSI
LK-13	954/49	11	84	94	70	SWR
LK-14	954/50	49	42	42	80	CTSI
LK-15	957/7	51	56	48	70	CTSI
LK-16	957/17	17	10	48	70	CTSI
LK-17	957/15	14	85	95	80	SWR
LK-18	957/16	26	85	96	90	SWR
LK-19	957/19	34	84	83	65	SWR
LK-20	954/52	38	60	96	60	SWR
LK-21	955/26	12	84	84	75	SW
LK-25	956/13	18	84	103	80	SWR
LK-27	956/23	32	60	109	75	SWR
LK-28	934/16	32	60	76	65	SWR
LK-29	934/26	4	85	111	70	SWR
LK-30	933/10	17	84	85	80	SW
LK-30	933/10	15	84	85	80	SWR
LK-31	916/37	35	84	84	70	SWR
LK-32	933/11	25	53	97	75	SW
LK-33	933/9	25	85	98	75	SWR
LK-34	917/1, 933/1,12	83	85	87	70	TH
LK-35	916/38	12	84	84	85	SW
LK-36	891/8	14	85	95	65	SW
LK-37	891/9	23	85	85	85	SW
LK-38	934/23	7	50	43	100	CTSI
LK-39	934/23	12	50	43	100	CTSI
LK-40	956/14	27	3	26	60	HR
LK-41	954/39	21	3	25	60	HR
LK-42	982/3	29	53	31	70	CTSI
LK-43	916/1	23	3	31	70	HR
LK-44	957/11	19	53	33	70	CTSI
LK-45	916/15	17	3	25	60	HR
LK-46	916/31	25	3	29	70	HR
LK-47	957/8	40	53	33	60	CTSI
Subtotal		1085				
McGraw Hollow						
MH 01	1349/28	22	45	101	45	SWR
MH 03	1349/39	19	84	91	85	FT
MH 04	1349/21	4	84	38	85	CTSI
MH 06	1326&1349/11 &21	26	84	122	60	SWR

Proposed Harvest Units						
Proposed Harvest Area	Compartment/ Stand Number	Approximate Acres	Forest Type*	Stand Age – Base Year 2014	Site Index	Treatment**
MH 07	1326/9	29	10	33	70	HR
MH 08	1326/34	33	84	122	65	SWR
MH 09	1326/14	31	84	114	80	FT
SUBTOTAL		164				
Pads Creek						
PC-1	925/15	9	56	95	80	FT
PC-2	925/8	41	56	95	80	FT
PC-4	925/1	25	53	90	60	FT
PC-5	925/19	20	53	90	60	FT
PC-6	925/3	3	3	30	60	HR
PC-7	925/6	17	3	54	90	HR
PC-7	966/9	4	3	37	60	HR
PC-9	926/17	29	3	45	70	HR
PC-10	926/15	12	3	40	60	HR
PC-11	965/2	2	3	43	70	HR
SUBTOTAL		162				
Sandy Springs						
SS 1	953/36	137	56	47	95	CTSI
SS 3	984/33	26	60	98	65	SWR
SS 4	984/9	17	59	97	60	SWR
SS 5	983/1	15	84	91	70	SWR
SS 6	1005/9	30	60	111	70	SWR
SS 7	1006/17	13	59	79	70	SWR
SS 8	1004/12	16	50	42	90	CTSI
SS 9	1004/9	17	50	42	80	CTSI
SS 10	1328/4	12	56	116	70	SWR
SUBTOTAL		283				
TOTAL		2,207				

* - Forest Type: **3**=White Pine; **10**=White Pine-Upland Hardwoods; **42**=Upland Hardwoods-White Pine; **45**=Chestnut Oak-Scarlet Oak-Yellow Pine; **50**=Yellow Poplar; **53**=White Oak-Red Oak-Hickory; **54**=White Oak; **56**=Yellow Poplar-White Oak-Northern Red Oak; **59**=Scarlet Oak; **60**=Chetsnut Oak-Scarlet Oak; **84**=Chestnut Oak-White Oak-Scarlet Oak; **85**=White Oak-Black Oak-Hickory.

** - Treatment – **CTSI**-Commercial Timber Stand Improvement; **FT**-Free Thinning; **HR**-Hardwood Restoration; **SW**-Shelterwood; **SWR**-Shelterwood with Reserves (aka Modified Shelterwood); **TH**-Thinning

Associated actions for vegetation management activities include construction of approximately 11 miles of temporary roads, pre-haul maintenance on FSRs, and construction of 94 landings. The miles of proposed temporary road are summarized by area in Table 4. Following completion of the proposed management activities all landings, temporary road surfaces, and skid trails would be closed and revegetated with a wildlife seed mixture following their use.

Chemically treat non-native invasive plant (NNIP) after harvesting, this treatment would utilize a directed foliar application of herbicides to control NNIP species soon after harvesting. Herbicides used will include glyphosate or triclopyr amine depending upon the species to be controlled. The herbicide would be applied by backpack sprayer to individual plants. The need for this treatment will be assessed on a case by case basis depending upon the severity of any

NNIP infestations one growing season after harvest. It is anticipated that most regeneration treatments and many shelterwood and hardwood restoration treated areas will require this follow-up chemical treatment.

Table 1-2. Proposed Temporary Roads by Area

Area	Approximate Miles
Beards Mountain	0.1
Cliftdale	0.5
Craft Road	0.1
Limekiln	8.3*
McGraw Hollow	1.0
Pads Creek	0.4
Sandy Springs	0.6
TOTAL	11.0

*Includes 1.4 miles of temporary road construction on decommissioned FSR 1919 (Salt Pond Ridge).

Table 1-3. Lower Cowpasture Proposed Timber Stand Improvement Areas

Proposed Timber Stand Improvement Areas				
Compartment/ Stand Number	Approximate Acres	Forest Type*	Stand Age – Base Year 2014	Site Index
Beards Mountain				
917/21	19	53	24	50
917/23	25	3	23	60
917/28	25	53	24	50
917/31	26	53	24	50
917/33	26	53	24	50
932/8	9	53	26	60
932/10	20	53	26	60
932/14	44	53	26	60
932/23	15	53	26	60
958/8	17	53	25	60
958/9	18	53	25	60
958/11	23	53	23	60
958/13	13	53	26	60
958/59	24	53	26	60
958/60	18	53	26	60
982/15	47	10	33	50
982/21	30	60	34	60
SUBTOTAL	399			
Limekiln				
916/23	18	52	29	60
916/24	9	56	29	70
916/25	30	50	30	70
916/27	16	3	30	70
916/28	20	53	29	70
916/32	15	56	28	70
916/33	28	53	28	70
934/15	24	53	21	70

Proposed Timber Stand Improvement Areas				
Compartment/ Stand Number	Approximate Acres	Forest Type*	Stand Age – Base Year 2014	Site Index
934/23	39	50	42	100
954/8	79	3	26	60
954/34	21	52	25	70
954/36	20	53	26	70
954/37	25	52	24	60
955/7	26	3	24	60
955/9	22	3	23	60
955/12	15	60	24	60
955/14	26	52	26	60
955/29	11	50	43	95
956/2	16	3	25	70
956/5	24	60	24	60
956/6	11	3	24	60
956/22	35	60	24	50
981/9	15	53	30	60
981/16	9	53	21	50
981/18	18	52	20	50
982/6	28	53	20	80
982/44	14	59	21	60
SUBTOTAL	614			
McGraw Hollow				
1326/10	40	53	32	60
1326/22	20	53	33	60
1349/18	19	53	18	70
1349/31	24	59	18	50
1350/19	24	53	17	70
SUBTOTAL	127			
Pads Creek				
926/12	35	53	17	70
926/16	16	53	18	70
926/61	21	53	18	80
SUBTOTAL	72			
Sandy Springs				
953/9	6	53	17	70
953/17	15	53	17	70
983/3	22	60	24	60
984/8	16	60	29	50
984/10	7	53	17	70
984/14	22	53	17	70
984/15	16	53	45	80
984/18	25	56	29	80
984/20	23	56	31	70
984/30	10	53	17	70
1005/1	20	53	31	70
1005/3	23	53	86	70
1006/2	36	53	44	80
1006/18	17	53	31	80
1006/20	19	52	30	60
1328/11	9	53	31	60

Proposed Timber Stand Improvement Areas				
Compartment/ Stand Number	Approximate Acres	Forest Type*	Stand Age – Base Year 2014	Site Index
SUBTOTAL	286			
TOTAL	1,498			

Table 1-4. Lower Cowpasture Proposed Wildlife Clearings

Proposed Wildlife Clearings					
Proposed Clearing	Compartment/ Stand Number	Approximate Acres	Forest Type*	Stand Age – Base Year 2014	Treatment**
Beards Mountain					
BMW-1	917/19, 37	2.7	53, 84	105	Construct
BMW-2	917/36	1.9	53	105	Construct
BMW-3	917/30, 33, 35, 39	2.2	53	105, 24, 105, 105	Construct
BMW-4	917/30, 932/4	3.1	38, 53	115	Construct
BMW-5	917/32, 931/11	3.4	15, 53	105	Construct
BMW-6	981/27, 958/14	1.9	85	95	Construct
BMW-7	981/27, 958/14	5.6	85	95	Construct
BMW-8	958/3, 16	1.1	48	96	Construct
BMW-9	958/1, 981/26, 982/48	3.9	84	95	Construct
BMW-10	982/16	3.9	59	98	Construct
BMW-11	917/32	3.0	15	105	Construct
SUBTOTAL		29.6			
Cliftondale					
CDW-1	1369/5	1.9	15	115	Construct
CDW-2	1369/25	.5	3	9	Construct
CDW-3	1369/4	.2	53	100	Construct
CDW-4	1369/5, 6	1.1	3, 15	27, 115	Construct
CDW-5	1369/4	.3	53	100	Construct
CDW-6	1369/20	4.7	45	105	Construct
CDW-7	1369/12, 22	1.1	53, 59	100	Construct
CDW-8	1369/101	.9	59, 60	30	Construct
CDW-9	1369/22, 101	.7	59	30	Construct
CDW-10	1369/21	3.4	59	30	Construct
CDW-11	1369/12	.5	53	100	Construct
SUBTOTAL		15.4			
Craft Road					
CRW-1	1359/18	6.2	53	114	Construct
CRW-2	1359/16	4.3	53	31	Construct
SUBTOTAL		10.7			
Limekiln					
LKW-1	891/4, 6, 9	7.9	53, 85	85	Construct
LKW-2	892/1, 28	3.1	59, 53	41, 1	Construct
LKW-3	891/8	1.5	85	0	Construct
LKW-4	916/ 9, 38	13.8	53, 84	84	Construct
LKW-5	916/29, 37	3.5	84, 60	84	Construct

Proposed Wildlife Clearings					
Proposed Clearing	Compartment/ Stand Number	Approximate Acres	Forest Type*	Stand Age – Base Year 2014	Treatment**
LKW-6	916/3, 8	5.1	15, 53	84, 118	Construct
LKW-7	933/9, 12	11.2	53, 85	87, 98	Construct
LKW-8	933/11	2.4	53	0	Construct
LKW-9	933/12	1.7	53	87	Construct
LKW-10	916/13, 16	7.1	53, 56	86, 114	Construct
LKW-11	916/12, 30	5.1	47	79, 87	Construct
LKW-12	933/08	2.8	47	87	Construct
LKW-13	933/3, 4, 8	6.8	47, 53	44, 85, 87	Construct
LKW-14	933/3, 10	6.6	47, 53, 84	85, 87	Construct
LKW-15	933/7, 8, 10, 934/1	2.3	15, 47	82, 85, 87, 107	Construct
LKW-16	924/16	3.0	60	76	Construct
LKW-17	933/2, 934/2	2.3	47, 53	44, 49	Construct
LKW-18	956/22	1.6	60	25	Construct
LKW-20	957/10,19	2.6	15, 84	83,98	Construct
LKW-21	957/19	3.8	84	83	Construct
LKW-22	954/52	2.1	60	96	Construct
LKW-23	954/5, 43	1.0	10, 45	44, 103	Construct
LKW-24	954/35, 981/5	1.6	53, 59	44	Construct
LKW-25	981/30	1.4	60	44	Construct
SUBTOTAL		102.8			
McGraw Hollow					
MHW-1	1326/10	8.3	53	32	Construct
MHW-2	1326/34	2.1	84	122	Construct
MHW-3	1326/9	2.7	10	33	Construct
MHW-4	1326/11	0.6	84	122	Construct
MHW-5	1326/11	1.8	84	122	Construct
MHW-6	1326/11 1349/20	1.1	84	123	Construct
MHW-7	1349/21, 39	2.3	84	38, 91	Construct
MHW-8	1326/11 1349/20	1.2	84	123	Construct
MHW-9	1349/39	5.0	84	91	Construct
MHW-10	1349/23	2.0	84	38	Construct
MHW-11	1349/26	4.3	56	38	Construct
MHW-12	1349/28	4.1	45	101	Construct
MHW-13	1336/14	2.6	84	114	Construct
MHW-14	1336/14	3.9	84	114	Construct
SUBTOTAL		42.0			
Pads Creek					
PCW-1	926/17	7.8	3	45	Construct
PCW-2	926/17	1.2	3	45	Construct
PCW-3	926/17	5.0	3	45	Construct
PCW-4	925/4, 6, 8	10.4	3, 56	44, 54, 95	Expand
PCW-5	926/23, 965/1	1.6	53	18, 86	Expand
PCW-6	925/1, 3, 1309/5	7.0	3, 53	30, 87, 90	Expand
PCW-7	925/1, 1309/5	1.1	53	87, 90	Expand

Proposed Wildlife Clearings					
Proposed Clearing	Compartment/ Stand Number	Approximate Acres	Forest Type*	Stand Age – Base Year 2014	Treatment**
PCW-8	966/1, 4, 5, 6, 51	3.5	48, 52, 60	37, 82, 87, 97	Expand
PCW-9	966/1	2.2	60	37	Expand
SUBTOTAL		37.9			
Sandy Springs					
SSW-1	959/36	4.0	56	47	Construct
SSW-2	984/8, 21, 33	5.9	53, 60	29, 98, 98	Construct
SSW-3	984/9	3.1	59	97	Construct
SSW-4	1005/1	5.8	53	31	Construct
SSW-5	983/1,2	2.3	84, 41	91	Expand
SSW-6	983/1	0.8	84	91	Construct
SSW-7	1005/3, 6	18.3	52, 53	43, 86	Construct
SSW-8	1005/6	1.8	53	43	Expand
SSW-9	1005/9	1.7	60	111	Construct
SSW-10	1005/9	2.1	60	111	Construct
SSW-11	1005/12, 14	8.2	53	86, 111	Expand
SSW-12	1006/16	1.5	59	89	Expand
SSW-13	1006/17	2.1	53, 59	64, 79	Construct
SSW-14	1004/12	3.3	50, 53	42	Construct
SSW-15	1006/2	1.4	53	44	Construct
SSW-16	1004/8, 9	1.6	50, 53	42, 99	Construct
SSW-17	1328/38	2.2	53	39	Construct
SSW-18	1328/4, 6	2.1	53, 56	39, 116	Expand
SSW-19	1328/4	.9	56	116	Expand
SSW-20	1328/5	1.8	60	116	Expand
SSW-21	1328/5, 6	1.2	53, 60	39, 116	Expand
SSW-22	1328/5, 6	2.9	53, 60	39, 116	Expand
SSW-23	1328/5, 6	4.7	60, 53	39, 116	Expand
SUBTOTAL		83.8			
TOTAL		322.2			

* - Forest Type: **3**=White Pine; **10**=White Pine-Upland Hardwoods; **15**=Pitch Pine-Oak; **41**=Cove Hardwood -White Pine-Hemlock; **45**=Chestnut Oak-Scarlet Oak-Yellow Pine; **47**=White Oak-Black Oak-Yellow Pine; **48**=Northern Red Oak-Hickory-Yellow Pine; **50**=Yellow Poplar; **52**= Chestnut Oak; **53**= White Oak-Red Oak-Hickory; **56**=Yellow Poplar-White Oak-Northern Red Oak; **59**=Scarlet Oak; **60**=Chestnut Oak-Scarlet Oak; **84**=Chestnut Oak-White Oak-Scarlet Oak; **85**=White Oak-Black Oak-Hickory.

Table 1-5. Other Vegetation/Wildlife Habitat Improvements

Other Vegetation Wildlife Habitat Improvements		
Proposed Activity	Compartment/Stand Number	Approximate Units
Beards Mountain		
Waterhole Development	932/2	1
Waterhole Development	932/5	3
SUBTOTAL		4
Limekiln		
Waterhole Development	916/37	1
Waterhole Development	937/11	3

Other Vegetation Wildlife Habitat Improvements		
Proposed Activity	Compartment/Stand Number	Approximate Units
Waterhole Development	933/12	1
Waterhole Development	954/1	1
Waterhole Development	954/12	1
Waterhole Development	954/50	2
Waterhole Development	954/52	2
Waterhole Development	956/13	1
Waterhole Development	981/7	1
Waterhole Development	981/19	2
Waterhole Development	982//1	2
SUBTOTAL		17
Sandy Springs		
Waterhole Development	1004/9	3
SUBTOTAL		3
TOTAL		24

Areas Under Consideration For Prescribed Burns

This area is part of the larger Appalachian Fire Learning Network and includes the Warm Springs Mountain Restoration area. There is an opportunity to expand the restoration area across this landscape in partnership with The Nature Conservancy (TNC) and Douthat State Park. Thirteen (13) potential burn units totaling approximately 12,907 have been identified as proposed burn units and are summarized in Table 1-6. Most of the burn units will use existing roads, trails, and burn boundaries as burn boundaries. In addition, there is a need to construct approximately 11.8 miles of new dozer line. Areas are located in Management Area (MA) 7, MA 9, MA 13, and MA 15.

Table 1-6. Lower Cowpasture Proposed Burn Units

	Proposed Burn Unit	Approximate Acres
1	Pine Spur Ridge	2,142
2	White Rocks Tower	1,223
3	Slicky Slide	472
4	Coffee Pot	361
5	Cigar Ridge	568
6	Brown Hollow	629
7	Mill Mountain	546
8	Big Hollow	443
9	McGraw	599
10	Orebank*	1,969
11	North Short Mountain*	2,258
12	Short Mountain*	1,576
13	Walton Tract Fields	161
Total		12,907

*Existing prescribed burn unit.

**Units could encompass Douthat State Park lands.

Areas Under Consideration for Aquatic Passage/Watershed Improvements

The connectivity of rivers, streams, and wetland habitats has been a critical issue in the protection, restoration, and resilience of aquatic ecosystems and the many organisms that rely on movement/migration throughout the system to fulfill essential stages in their life history, as well as respond to changing environmental conditions. Common barriers to aquatic passage include the obvious dam or natural waterfall, however, the maintenance of extensive road systems and the series of culverts where they intersect with aquatic habitats, present a less obvious and more widespread ecosystem health issue.

- Replace approximately fifteen (15) impassible culverts with passible aquatic structures. We will utilize Crossing Assessment Decision Support System (CADSS) model to assist us with prioritization of road-stream crossing replacements.
- Remove three culverts on Slicky Slide road.
- Stabilize Simpson Creek slope failure by diverting water from the I-64 culvert outflow to the base of the slope via a flexible pipe extension. An outlet control protection measure would be utilized at the base of the pipe extension. The failed slopes would be cut back to facilitate revegetation of exposed slopes.
- The following slope-dependent riparian corridor widths will be adopted and used in the project area. The slope-dependent riparian corridor widths are measured in on-the-ground surface feet perpendicular from the edge of the channel or bank (stream, water body, etc.) and extend out from each side of a stream. For ponds, lakes, sloughs, and wetlands (including seeps or springs associated with wetlands) the measurement would start at the ordinary high water mark and go around the perimeter. For braided streams, the outermost braid will be used as the water's edge. An interrupted stream (a watercourse that goes underground and then reappears) will be treated as if the stream were above ground. The riparian corridor includes human-created reservoirs, wildlife ponds, wetlands, and waterholes connected to or associated with natural water features. In addition, those areas not associated with natural water features, but support riparian flora or fauna, will have a riparian corridor designation.

Minimum Riparian Conservation Zone (In Feet) On Each Side of Stream

	Slope Class		
	0-10% Core Area	11-45% Core Area Plus Extended Area†	45%+ Core Area Plus Extended Area†
Perennial*	100	125	150
Intermittent	50	75	100
Channeled ephemeral	25	25	25

*Perennial streams, lakes, ponds, wetlands, seeps, and springs

†The Extended Area is the outer 25 feet (on 11-45 % slopes) and 50 feet (on 45 % + slopes).

Non-native Invasive Species

Priority treatment areas for NNIP are locations with threatened, endangered or sensitive plant species; Special Biological Areas/rare communities; Research Natural Areas; hot spots of NNIP

infestation; infestations of new NNIP species; areas disturbed by fire, insect, disease or storm damage; Designated Wilderness; recommended Wilderness Study Areas; roadsides and parking areas; trails and trailheads; riparian areas; wildlife openings; and other disturbed areas.

Targeted species for NNIS treatment include autumn olive, Japanese stiltgrass, lespedeza spp., broadleaf plantain, Ailanthus, common barberry, multiflora rose, and garlic mustard.

- Chemically treat non-native invasive plants (NNIP) on approximately 280 acres. This treatment would utilize a directed foliar application of herbicides to control NNIP species as needed on approximately 55 miles of open and seasonally open National Forest System roads (FSR) and in the Mares Run and Walton Tract areas. The herbicide would be applied to individual plants. Herbicides used will include glyphosate or triclopyr amine depending upon the species to be controlled.

Transportation

Proposed transportation management projects include:

- Close approximately 19 unauthorized roads.
- Reconstruct FSR 194 (Limekiln) in entrenched section.

Recreation/Wilderness

Construct approximately 17 miles of National Forest System trails in the Pads Creek and Rich Hole areas. Trails would be constructed to the minimum standard necessary for protection of soil, water, vegetation, visual quality, user safety, and long-term maintenance.

Construct/improve connector trail segments that connect with Douthat State Park.

American Chestnut

Establish a minimum of one (1) chestnut progeny site in cooperation with The American Chestnut Foundation.

Plant chestnut seedlings on approximately 15 acres after proposed timber harvest has occurred.

Archeological Resources

- Stabilize Wilson Creek dam.

Proposed Site Specific Plan Amendments

Amending the 1993 Revised Land and Resource Management Plan (Plan) with non significant amendments specific to the Lower Cowpasture project area.

Amend the 1993 Revised Land and Resource Management Plan (Plan) for the George Washington National Forest with site specific amendments. If a new Plan is approved before the decision is made for this project, these actions should already be incorporated into the new Plan.

- Special Biological Areas are considered Special Interest Areas-Biologic and are allocated to Management Area 4 in the 1993 Plan with management direction developed specifically for these types of areas. Twelve (12) biological areas totaling approximately 4,905 acres were identified during the recent plan revision process are not currently within MA 4 areas so the 1993 Plan would need to be amended to change these land allocations. Table 1-7 summarizes the Special Biological identified during plan revision efforts.

Table 1-7. Lower Cowpasture Special Biological Areas

	Special Biological Area	Acreage	1993 Forest Plan Management Area*	Proposed Management Area
1	Beards Mountain	150	9	4
2	Chestnut Ridge Seep	80	15	4
3	Copeland Barren	160	14	4
4	Forest Road 462 Barren	74	14	4
5	Limekiln Hollow	48	17	4
6	McGraw Hollow	85	7, 15	4
7	Mill Mountain Pond	31	9	4
8	Nimrod Hall Ridge	202	7, 13	4
9	Northeast Beards Mountain	854	9, 10, 13, 15	4
10	Rough Mountain	2,950	8	8
11	South Fork Pads Creek Barren	125	14	4
12	Warm Springs Mountain	146	14	4
Total		4,905		

* 4 - Special Interest Areas; 7 - Scenic Corridors and the Highland Scenic Tour; 9 - Remote Highlands; 10 - Scenic Rivers & Recreational Rivers; 13 - Dispersed Recreation Areas; 14 - Remote Habitat for Wildlife; 15 - Mosaics of Wildlife Habitat; 17 - Timber Production

- Recommended Wilderness Study Areas are allocated to Management Area 8 in the 1993 Plan with management direction developed specifically for these areas. The new Plan is expected to identify two Recommended Wilderness Study areas within the Lower Cowpasture project area, the Rough Mountain Addition (approximately 1,030 acres) and the Rich Hole Addition (approximately 4,630 acres). These areas identified during the recent plan revision process are not currently within MA 8 areas so the 1993 Plan would need to be amended to change the land allocation.

	Recommended Wilderness Study Area	Acreage	1993 Forest Plan Management Area*	Proposed Management Area
1	Rich Hole Addition	4,630	9, 14	8
2	Rough Mountain Addition	1,028	7, 14	8
Total		5,658		

* 7 - Scenic Corridors and the Highland Scenic Tour; 9 - Remote Highlands; 14 - Remote Habitat for Wildlife

Recommended wilderness study areas are administered for retention of the wilderness attributes that led to their recommendation for inclusion in the National Forest Wilderness Preservation System.

- Due to anticipated changes in classification of suitable habitat in the new Plan, the Lower Cowpasture project proposes harvesting approximately 189 acres currently classed as unsuitable habitat. If the new Plan is not yet in effect at the time the decision for this project is made, the analysis and project decision will also include an amendment to the 1993 Plan to allow up to 189 acres of land classed as unsuitable to be harvested to advance progress toward successional conditions indicated by the ecosystem and species diversity analysis conducted during the recent plan revision process.
- The new Plan is expected to allow regeneration harvest units up to 40 acres in size. The 1993 Plan allows a maximum regeneration size of 25 acres in MA 15. The Lower Cowpasture project proposes harvesting thirteen (13) regeneration harvest units over 25 acres in size. If the new Plan is not yet in effect at the time the decision for this project is made, the analysis and project decision will also include an amendment to the 1993 Plan to allow regeneration harvest units up to 40 acres in MA 15 for the Lower Cowpasture project. This will advance progress toward successional conditions indicated by the ecosystem and species diversity analysis conducted during the recent plan revision process.
- The new Plan is expected to have direction for the utilization of small diameter woody biomass (logging slash, smaller diameter trees, tops, limbs) under certain conditions, whereas the 1993 Plan does not. If the new Plan is not yet in effect at the time the decision for this project is made, the analysis and project decision will also include an amendment to the 1993 Plan to allow removal of small diameter woody biomass on up to 541 acres in the Lower Cowpasture project area.

DEFINITIONS

The following terms can mean different things to different people but they represent concepts that have become increasingly important as we learn more about the forest, climate change, habitat needs, and the effects of past management practices. To facilitate a common understanding, here are the definitions from Forest Service Handbook 2020.5.

Adaptive management. A system of management practices based on clearly identified outcomes and monitoring to determine if management actions are meeting desired outcomes, and if not, to facilitate management changes that will best ensure that outcomes are met or reevaluated. Adaptive management stems from the recognition that knowledge about natural resource systems is sometimes uncertain.

Composition. The biological elements within the different levels of biological organizations, from genes and species to communities and ecosystems.

Structure. The organization and physical arrangement of biological elements such as snags and down woody debris, vertical and horizontal distribution of vegetation, stream habitat complexity, landscape pattern, and connectivity.

Function. Ecological processes, such as energy flow; nutrient cycling and retention; soil development and retention; predation and herbivory; and natural disturbances such as wind, fire, and floods that sustain composition and structure.

Resilience. The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to adapt to stress and change.

Restoration. The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. Ecological restoration focuses on establishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions.

Sustainability. Meeting needs of the present generation without compromising the ability of future generations to meet their needs. Sustainability is composed of desirable social, economic, and ecological conditions or trends interacting at varying spatial and temporal scales, embodying the principles of multiple-use and sustained-yield.