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By U.S. Mail and Electronic Mail

Re: Draft Environmental Assessment Upper Warwoman Landscape Management Project

Dear Ed and Mike,

Thank you for the opportunity to participate in the ongoing development of the Upper Warwoman Landscape Management Project. The Upper Warwoman watershed is and historically has been of great interest to our organization due to the wild character of the area, and perhaps more importantly, the existing water quality issues that could be exacerbated by poor land management activities. We appreciate the District extending the comment deadline to provide stakeholders with adequate time and opportunity to thoroughly review this draft Environmental Assessment and provide more useful/substantive comments about this proposal.

The Upper Warwoman Landscape Management Project is an ambitious undertaking. It attempts to reverse the impacts of decades of altered disturbance regimes while simultaneously mitigating the impacts of a poorly-designed road network and addressing recreational demands. We have briefly summarized some of our major concerns below, and provide a more detailed response in Sections I-IX.

Overall, we support your proposal to include various types of vegetation management as a means of creating a diversity of early successional habitat in Upper Warwoman. Woodland restoration, pine-oak regeneration, prescribed burning, and wildlife opening daylighting all open a closed forest canopy, and create a diversity of early successional habitat (ESH) that is used by many wildlife species. We may disagree with the scale and appropriateness of some of these treatments in the proposed areas, but these disturbances should be included in calculations of ESH.

Prescribed fire: We are particularly concerned about the scale and appropriateness of the prescribed fire treatment proposed for the Upper Warwoman Watershed. In recent years the Forest Service has massively increased its prescribed burning program. Unlike many areas out West, our Southern Appalachian forests have high annual precipitation distributed throughout the year and high humidity, and the location, size, and frequency of any natural fire regime here remains uncertain. The project would add *6,008 acres of prescribed burn* units to the

2,681 acres already in the watershed. *This addition would increase the area of Forest Service-owned land (burned on a 3-5 or 5-10 year schedule) from 21% to 69%.*

Although the presence of fire-adapted species like table mountain pine justifies some use of fire in the watershed, *we believe biodiversity and habitat-related goals could be achieved with a more restricted burn program.* Any use of prescribed fire should mimic natural fire patterns on ecologically-appropriate sites, with details of how burns would be implemented clearly specified in the final Environmental Assessment. The Forest Service should commit to only setting fires on ridgetops and south-facing slopes, and allowing fires to naturally die out as they reach moister ravines and north slopes. These commitments make sense ecologically and will reduce the total area burned. With such a large acreage in prescribed burning, it is imperative that the final Environmental Assessment describes clear, measurable objectives for the burns with a detailed monitoring program in place to assess whether the treatment is achieving these objectives, and how you will adapt future management accordingly.

Vegetation Management: A total of 1,180 acres (785 acres commercial timber sales + 395 acres non-commercial timber sales) are proposed for woodland restoration treatment, oak-pine regeneration and intermediate thinning. The non-commercial woodland treatments are sited on more appropriate south- and west-facing slopes and ridgetops, often on dry, low productivity soils. However, some of the commercial woodland treatment stands in the Sandy Ford area occupy north-facing slopes and support white pines over 130 feet tall. These productive, often more moist (mesic) sites are *not appropriate woodland sites*. Consequently, woodland treatments in productive, moist sections of the Sandy Ford area (CS 46029, CS 46006, and CS 46007) should be dropped from the project.

Sixty-two per cent of the commercial logging is proposed on steep slopes over 35% (see attached Appendix 1, Table 1). *Ground-based commercial logging on steep slopes will facilitate soil erosion and exacerbate existing sedimentation issues, and should be avoided.* For this and other reasons, the especially steep and moist stands CS 44001 and CS 52009, should be dropped from the project.

Wildlife Opening Daylighting/Road Daylighting: Twelve existing wildlife openings are proposed for “daylighting” to create an outer edge of ESH, adding 70 acres of ESH. Road daylighting is also proposed along 11 miles of existing Forest System Roads, which involves thinning the canopy to 30-50 Basal Area within a 50-foot buffer along both sides of the road. Daylighting roads in particular will provide prime opportunities for the spread of non-native invasive plant species (NNIS) to new locations, further into the forest interior. *Daylighting should not be carried out unless the Forest Service commits to regular monitoring and eradication of NNIS in these areas for the duration of the treatment.*

Indeed, *all* the vegetation management, prescribed burning and daylighting treatments proposed in the draft Environmental Assessment (hereinafter called “EA”) will open the forest canopy and increase the likelihood of NNIS spreading. Invasive species represent one of the greatest threats to the ecological integrity of the Chattahoochee-Oconee National Forest (CONF), and widespread invasion of previously native dominated forest could overwhelm all the benefits provided by this project. What is sorely lacking in the EA is a monitoring and mitigation plan to

survey all vegetation management treatment areas and the prescribed burn units on a regular basis *after* the treatment, and between burns. Monitoring and eradication of NNIS prior to any disturbance activity is important, but it must continue throughout the duration of the treatment.

Watershed Condition Improvement: Warwoman Creek is an important tributary of the Chattooga Wild and Scenic River, and is listed as impaired due to sediment impacts. *Any forest management in this area must make protecting water quality and reducing the sediment load to Warwoman Creek and its tributaries, including the impaired Roach Mill Creek, the top priority.* We commend you for taking a big step forward and addressing the tough questions posed by the current road system and user access management. We support reducing the miles of road reconstruction from 11 miles in the Proposed Action (Alternative 2) to 2 miles (Alternative 3). We and our membership certainly appreciate having vehicle access to the macro regions of the Chattahoochee National Forest, but the current scope and scale of the existing road system is both financially and environmentally unsustainable.

Along these lines, it is good to see the agency offer some tangible solutions to address the ongoing problem with Tuckaluge Creek Road (FS-153). In addition to the proposed actions identified for FS-153, we feel the District should reconsider alternatives for better mitigating runoff on the existing road by some combination of the following: paving the existing Tuckaluge Creek Road as was done on nearby Sarah's Creek Road, adding small detention areas, and/or enhancing sediment control measures. *Additional road construction on Tuckaluge Spur Road should be avoided* because the road construction will create additional sedimentation impacts in the short-term, and comes with a steep price tag (\$750,000 for construction of the 1-mile extension + \$150,000 for reconstructing the existing 2.1-mile spur road).

Uninventoried Roadless Areas: Extending the Tuckaluge Spur Road will also further carve up the Windy Gap area which lies to the west of the Tuckaluge Creek Road and should have been included in the roadless inventory. *The Forest Service should avoid actions which make this area ineligible for the next roadless inventory to be completed in the upcoming Forest Plan revision.*

The agency's preferred alternative is the "Modified Proposed Action" (Alternative 3) which reflects scoping comments the Forest Service received from ForestWatch and other groups two years ago.¹ While some aspects of the "Modified Proposed Action" are improvements over the original "Proposed Action", we still have concerns – some of which are outlined below.

I. DEVELOPMENT OF ALTERNATIVES

"No action" (Alternative 1)

The National Environmental Policy Act (NEPA) requires consideration of a "no action" alternative in part to provide a baseline when assessing the impacts of other alternatives on the current and expected future condition of an area. (36 C.F.R. § 220.7(2)). That assessment becomes less valuable when the risks associated with the "no action" alternative (Alternative 1)

¹ Our February 2013 scoping comments are attached to this letter as Appendix 2 and are incorporated herein.

are overstated. The EA states that Alternative 1 would put the project area at risk of catastrophic wildfire, threaten water quality through acidification, and cause the ecosystem to further depart from LANDFIRE biophysical settings desired conditions. (EA at 81, 114). These statements exaggerate the risks associated with Alternative 1 and make the comparison of alternatives less accurate.

From 1970 to 1999, there were 3,249 wildfires (any fire that was not prescribed) on the Chattahoochee and Oconee National Forests. (Final Environmental Impact Statement for the 2004 Land and Resource Management Plan). No separate data were given for the two forests. The Oconee National Forest's topography, climate and history may make it more prone to fire, but is also one-sixth the size of the Chattahoochee National Forest. These wildfires burned a total of 42,845 acres, or an average of 1,428 acres per year. In the 30-year span, only 13 fires burned over 300 acres. Humans caused 76% of the fires, including 1,889 arson fires, and 142 fires were caused by lightning. There is no indication in the 2004 Land and Resource Management Plan ("Forest Plan") or the Environmental Impact Statement that there has ever been a catastrophic fire on the Chattahoochee or Oconee National Forest.

Indeed, the abundant precipitation distributed throughout the year, characteristic of the region, makes catastrophic wildfire unlikely on the Chattahoochee National Forest. The risk can never be said to be zero, but management intervention cannot reduce the risk to zero either. Hazardous fuel reduction is often cited as a justification for prescribed fire. However, the EA points out that not burning the forest has led to an accumulation of less flammable fuels and "mesophication" of the forest, not catastrophic wildfire. (EA at 4).

Contrary to the claim in the EA, Alternative 1 (no action) would not lead to any meaningful increase in stream acidity. (EA at 81, 82). While the species viewed as potentially taking over the watershed (white pine, red maple and evergreen heaths) do have acidic foliage, so do the species in potential decline (oaks and yellow pines). However, this point is moot, because the prescribed fires do not target riparian zones, the areas with by far the largest impact on stream acidity. "[P]rescribed burning has been limited in extent and intensity within streambanks. Backing fires into riparian areas under normal prescribed burning parameters generally can be used as a natural fireline and have low severity effect to soil and watershed conditions." (EA at 84). Regardless of which alternative is implemented, white pine and rhododendron will continue to line the streams and they will buffer the streams from upland changes. The loss of hemlocks due to hemlock woolly adelgid will likely have a much larger impact on stream chemistry because hemlocks have highly acidic foliage that drops directly into streams. Consequently, with no action, stream acidity will likely decline over the course of the project as hemlocks die and their litter inputs diminish.

The EA claims ecological departure would increase under Alternative 1, because areas in existing burn units show less departure than unburned areas. (EA at 114). This reasoning is a clear non sequitur. The fact that existing burns reduced departure in the watershed does not provide any evidence about other courses of action. If the watershed is not burned, succession will continue. As trees age over the next century, natural mortality will produce canopy gaps, increase canopy openness, and reduce the ecological departure. Admittedly, substantial reductions in degree of departure will take time but patience is warranted, particularly when this

very point is made on the same page of the EA with reference to mesic communities. Trees in dry, upland communities are no less mortal than mesic, riparian trees. Under no action, natural mortality associated with forest aging would increase canopy openness and decrease departure across all communities.

When considering project alternatives, the role of natural disturbances in maintaining biodiversity and ecosystem health should be carefully considered. All of the diversity present on CONF once maintained itself without any management.

Benefits of modified proposed action (Alternative 3) over proposed action (Alternative 2)

The “Modified Proposed Action” (Alternative 3) contains significant improvements over the “Proposed Action” (Alternative 2). The removal of the Henry Page vegetation management treatments will help preserve water quality in the impaired Warwoman Creek. Removing those treatments also represents responsible use of tax payer money by saving on road construction.

Transitioning the Dan Gap and Finney Creek woodland treatments from commercial to non-commercial timber will similarly help reduce soil erosion and sedimentation of streams, maintain water quality, and keep an important biological resource (coarse woody debris) in the forest ecosystem. Coarse woody debris is vital for forest ecosystem health as it contributes to nutrient cycling and storage, soil forming processes and soil retention, retains moisture and enhances water infiltration, provides sites for litter accumulation and fungal growth, acts as nursery sites for plants, and acts as shelter and habitat for animals.² The removal of coarse woody debris in silvicultural treatments slows recovery of biodiversity and associated ecological processes within that forested ecosystem. Leaving the boles may be especially important in these stands since they have thin soils and will lose nutrients in the prescribed fires.

Management and natural range of variability

All of the biodiversity present today on the CONF sustained itself over the long term with only natural disturbances. For the Upper Warwoman watershed, abiotic conditions have been stable over the past few thousand years (though climate change threatens that stability), so the range of disturbances experienced by ecosystems in the past provides a valuable model for how to maintain biodiversity and ecosystem health today.

We support the goals implied in the EA of restoring biodiversity and ecosystem health. To achieve those goals, the Upper Warwoman watershed should be managed within the range of the natural range of variability (“NRV”). Disturbances outside of the natural range of variability are inherently dangerous to ecosystem health, because individual species are not adapted to them. As proposed, several of the treatments fall outside of the NRV. The oak-pine regeneration treatments remove more of the canopy than common natural disturbances do, and even naturally rare intense disturbances produce more scattered effects. The frequency of the prescribed burning exceeds natural burn frequency, but may be necessary on a temporary basis to

² Manning, AD, RB Cunningham, & DB Lindenmeyer. 2013. Bringing forward the benefits of coarse woody debris in ecosystem recovery under different levels of grazing and vegetation density. *Biological Conservation*. 157: 204-214.

undo the effects of past fire “suppression”. Whether individual burns fall within the NRV will depend on if they are ignited at only a few points on ridges and south-facing slopes, as lightning strike or any conceivable Native American fires would have been, or if they are lit more broadly.

The NRV varies by site, so treatments must be carefully matched to sites. For instance, if thinning or regeneration treatments combined with prescribed fire do not result in oak regeneration, the site is likely marginal or inappropriate for oaks. Rather than forcing the site towards oak forest by planting, the site should be allowed to naturally shift towards better suited species. Similarly, the location of woodland restoration treatments should reflect the location of abiotic conditions conducive to woodland development. The addition of the Sandy Ford woodland stands in Alternative 3 is advocated as improving the spatial distribution of woodland in the project. (EA at 120). However, the lack of woodland treatments in that area reflects the moister aspects and generally lower suitability of that part of the watershed for woodland. Conversely, the stipulation that mesic areas within woodland stands will be excluded from treatment is an excellent example of how treatments can be tailored to account for site conditions and NRV. (See EA at 119). “Mesic forests and riparian zones would not be affected by this proposal, since they would not be targeted for mechanical or prescribed fire treatments”. This important stipulation should be retained in the final EA and included in the Decision Notice.

II. PRESCRIBED BURNING

The EA proposes to prescribe fire on 69% of the Upper Warwoman watershed. (EA at 2, 8, 12). While prescribed fire has been used on the CONF for decades, use at that landscape scale represents a novel treatment. The draft EA reviews literature on historic fire in the Southern Appalachians, and justifies the use of prescribed fire as a management tool. (EA at 4, 5). However, the draft EA does not address this new use of fire at the landscape scale. The extent of fire proposed in this project seems to be based solely on the extent of oak-pine forest with no regard for historical precedent.

Multiple lines of evidence suggest oaks may currently be unusually abundant. American chestnut and oaks have ecological overlap, so the elimination of American chestnut by the chestnut blight created many opportunities for oaks. The industrial, landscape-scale logging of the late 1800’s and early 1900’s provided vast opportunities for oak regeneration, because high light levels are needed for most oak regeneration. Simultaneously, populations of major acorn predators like deer and turkey were at all-time lows. These conditions created opportunities for oaks to move into habitats that were historically marginal. Hence, oak forest may currently cover more of the landscape than it did historically and give a false impression of the prevalence of fire.³

Native American use of fire is also often cited in justification of widespread use of fire. However, recent reviews suggest Native American use of fire was not ubiquitous.^{2,4}

³ McEwan RW, JM Dyer, & N Pederson. 2011. Multiple interacting ecosystem drivers: towards an encompassing hypothesis of oak forest dynamics across eastern North America. *Ecography* 34: 244-256.

⁴ Munoz SE, DJ Mladenoff, S Schroeder, & JW Willaims. 2014. Defining the spatial patterns of historical land use associated with indigenous societies of eastern North America. *Journal of Biogeography* 41: 2195-2210.

Additionally, the project area lies within one of the wettest parts of the southeast. Annual precipitation averages for the Upper Warwoman watershed range from 65” at low elevations to 74” at high elevations.⁵

Over burning presents a potential danger to biodiversity within the watershed. Ubiquitous burning homogenizes the forest just as complete fire suppression does. Without refuges, fire-sensitive species will be lost from the forest. Invertebrates and vertebrates living in the leaf litter are particularly vulnerable. Macroinvertebrates are especially important for organic matter decomposition, and are the primary food source for salamanders and many other vertebrate species. Woodland salamanders are sensitive to changes in their environment, and have been proposed as indicators for monitoring biodiversity and ecological integrity. If burns are large, many of these species may have difficulty recolonizing.

These issues of extent and homogeneity can be addressed by carefully implementing prescribed fire in a way that mimics natural fire. If fires are set from only a few ignition points on ridges and south-facing slopes, fire patterns should mimic those that occur naturally. Limiting the number of ignition points is important for preventing unnaturally intense and widespread fires. Targeting ignitions on ridgelines and south-facing slopes focuses fire on naturally fire-prone areas. With those methods, fire would likely not penetrate mesic areas, which could be severely damaged by fire, because fire intensity on lower slopes would not be unusually intense. This method of burning would also create both temporal and spatial heterogeneity. Lower slopes would burn in some years and not in others - depending on weather and fuel conditions - thus producing heterogeneity in the fire return interval. That heterogeneity would allow different species adapted to the full continuum of fire return intervals to survive rather than only those adapted to frequent fire or no fire. Pockets within burn areas would also escape. Those areas would add heterogeneity in and of themselves and help sustain biodiversity by helping recolonization of adjacent areas.

We believe the Forest Service intends to implement many of these concepts in their prescribed burns. However, the EA provides few details on how burns will be implemented. Since the people who ultimately conduct some of the burns may not currently be involved and burns must be carefully planned and implemented in order to achieve the desired result, the *final Environmental Assessment and draft Decision should explicitly state details of how burns will be implemented.*

Details in the EA are limited to: fire will not be forced into mesic areas, and burns will occur on 3-5 or 5-10 year rotations. (EA at 121, 13, 14). The former provision is important for protecting forest health and maintaining biodiversity. The burn rotations are higher than those on comparable sites in the region and described in the national Landfire biophysical settings⁶. We believe the Forest Service intends to reduce fire frequency once some of the effects of the long-term absence of fire are undone, e.g. widespread red maple in the understory. Reducing fire frequency is essential for tree regeneration. Even fire-tolerant species like chestnut oak need

⁵ PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>, accessed March, 2015.

⁶ LANDFIRE. 2013. (2013, January – last update). Homepage of the LANDFIRE Project, U.S. Department of Agriculture, Forest Service; U.S. Department of Interior, Online. Available: <http://www.landfire.gov/index.php> [2013, February 8].

an extended period without fire to grow large enough to withstand subsequent fires. That reduction in frequency (as well as what the frequency will be reduced to), should be explicitly stated in the final Environmental Assessment and draft Decision, along with any additional details, such as dormant season burns always being used to reintroduce fire to an area.

We ask the district to explicitly state the following basic principles in the draft Decision and to follow them when executing the prescribed burns in the Upper Warwoman watershed:

- Limit ignitions to ridgelines and south- to west-facing slopes.
- Do not force fire into mesic areas such as north-facing slopes and riparian zones.
- Use as few ignition points as possible.
- Do not ignite isolated patches of unburned habitat within larger burned areas, even if they are on relatively dry sites.
- Reduce the frequency of fires once understory competition has been returned to pre-fire-suppression levels.
- Burn an area at least once with a dormant season burn prior to using growing season burns in a burn unit.

Fire lines

As usual, we hope the district will adhere to standards for fire lines. (CONF Forest Plan, FW-194-196). Any new burn lines and/or dozer lines should be seeded with appropriate native grasses, using straw cover and hay bales to control erosion, especially on steep slopes or highly erodible soils.⁷ We would also like to see the district utilize hand burn lines on steep slopes to minimize damage and erosion caused by heavy equipment. The appropriate quantity and spacing of water bars and dips should be installed to further reduce erosion on burn lines.

It is evident that fire lines are attractive for OHV/ATV users. We urge that fire lines be thoroughly blocked and bermed after the burn areas are treated, making them impassable to illegal motor vehicle traffic such as OHVs/ATVs. The customary single berm often used after burns is usually insufficient and too low to successfully deter illegal motorized access to these areas, post-burn.

Emissions

Large-scale burning also raises emission issues that have been poorly documented in the Southern Appalachians. Some Georgia ForestWatch members are concerned about particulate (PM_{2.5}) and burn emissions in areas that have recently been treated with herbicide. For the sake of individuals whose lives are dramatically impacted by particulate emissions, such as those with respiratory problems, we suggest the Forest Service collect baseline emission data with portable smoke monitors as the agency and its DOI partners are doing in the western USA (<https://www.airsis.com/usfs/default.asp>). We haven't found any conclusive field research on pesticide emissions during prescribed fires and request that the agency take precautionary

⁷ Recently in the Brawley Mountain project on the Blue Ridge District, we have seen logging roads and skid trails which still have not revegetated several years after construction. The Chattooga River District must ensure the same does not occur here.

measures, e.g. ensure that herbicide application does not overlap locations where prescribed burns are planned (at least until the herbicide has had sufficient time to degrade).

III. VEGETATION MANAGEMENT

Woodland

The EA provides no justification for woodland treatments. The document cites several studies in support of prescribed burning, but the need for woodland restoration appears merely assumed. The closest statement to a justification is: “stand with open structural conditions have evolved into crowded closed-canopied forests.” (EA at 4). However, no evidence is presented that these communities were as open as woodlands, nor is it clear how it has been determined that they were more open in the past. Furthermore, the ecosystem classification system used in developing this project describes all the major ecological zones present in the Upper Warwoman watershed as “forest”, except pine-oak heath. (EA Appendix D – Ecozone Analysis at 27, 29). Attempting to create woodland conditions on inappropriate sites does not conform to the Forest Service’s definition of restoration.⁸

Lacking sufficient evidence for extensive woodlands in the Upper Warwoman watershed, woodland restoration should only be conducted on a carefully selected subset of sites that have unusual abiotic conditions. As evidenced by the ubiquity of forest on the Chattahoochee National Forest, without disturbance communities in this region develop into forest. Disturbance, typically in the form of fire, can shift some sites to woodland. Whether a community remains as forest or woodland then depends on the balance between disturbance and productivity. Highly-productive sites or sites with long periods between disturbances can grow enough between disturbances to resist them. At low productivity sites or sites with frequent disturbance, seedlings and saplings cannot grow enough between disturbances to survive them. Hence, sites suitable for woodland have high disturbance frequency and low productivity, and are typified by thin soils, southern to western exposures, and upper slope or ridgetop topographic position.

The stands selected for the woodland treatment in Alternative 2 indicate great care was taken in locating stands with ecological conditions appropriate for woodland restoration. These stands, all located on the broad southern slope of Rabun Bald, are situated on major ridgelines or south-southeast facing spur ridges. The stands are on thin soils, and most support table mountain pine, which suggests relatively high fire frequency. LiDAR data shows all of the stands to have moderately low to very low canopy height, suggesting low productivity. Those harsh abiotic conditions and presence of fire-adapted species suggest these stands will benefit from the woodland restoration treatment. The EA also states that woodland treatments will avoid mesic

⁸ The Forest Service defines restoration as “The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. Ecological restoration focuses on reestablishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystems sustainability, resilience, and health under current and future conditions.” Forest Service Manual (FSM) Ch. 2020.5, Ecological Restoration and Resilience, I.D. No. 2020-2011-1, (2011-2013); *see also* 36 C.F.R. §219.19 (new NFMA regulations).

areas within stands. (EA at 116). That provision further increases the likelihood that these treatments will be beneficial to the stands.

Conversely, the woodland stands added in Alternative 3, in the Sandy Ford area, vary much more in productivity, and are generally less suitable for woodland restoration. Even though this area is lower elevation, PRISM models indicate annual precipitation averages over 65".⁵ The Sandy Ford area also generally faces north, which favors moisture retention. Even fire-prone landscape positions, like ridgetops, will burn less frequently than on the southern slopes of Rabun Bald, because fires cannot spread as easily when mesic areas are frequently interspersed. Fire-adapted species like pitch pine do occur in this area, but these species are not obligate woodland species. They can regenerate in closed-canopy forest when wind or other disturbances produce temporary canopy gaps. Hence, more evidence is needed to identify woodland sites than the mere presence of fire-adapted species.

Stand 46029 is the most problematic of the woodland treatments. Almost the entire stand faces north, and deep moist ravines dissect the stand. Rhododendron extends far up the slopes, and even the upper slopes are moderately productive. In lower parts of the stand, LiDAR indicates white pine exceeds 130' in height. Nothing about the stand suggests it was a former woodland. If mesic areas are excluded from woodland treatment, as stated in the EA, then nearly this entire stand will be excluded. (EA at 116). *CS 46029 should be dropped from the woodland treatments.*

Stands CS 46006 and CS 46007 have some area that may be suitable for woodland, but the stands as a whole are not suitable. The ridgeline that runs through the stands varies from low to moderate productivity, and is dominated by drought-tolerant species including pitch pine, scarlet oak, and southern red oak. However, that ridgeline makes up only a minority of the stands. Moist slopes and ravines with fairly high productivity make up the bulk of the stands. As a whole, these stands are not suitable for woodland.

The woodland treatment for the southernmost Sandy Ford stand (CS 46028) extends out of the burn unit and across a road onto a north-facing slope. We assume that mismatch between the burn and woodland treatment boundaries represents a cartographic error. The woodland treatment boundary should coincide with the burn boundary and the north facing slope should be excluded from treatment. Assuming that change is made, stands CS 46028 and CS 46018 are the best choices for woodland restoration in the Sandy Ford area. Both stands have few areas of high productivity (though note the southwest corner of CS 46018), and face south and west. If woodlands were historically scarce, the productivity of these areas would likely still be too high for woodland, but they come closer than other stands in the Sandy Ford area.

The other woodland treatment that needs boundaries adjusted is Dan Gap (CS 36022). *ForestWatch's field visit revealed the northeast-facing slopes within this stand support a chestnut oak dominated old-growth forest.* The one tree that fell across the road, which based on bark and crown characteristics appeared representative of the stand, had 265+ rings about 20 feet above the base. The basal area of old oaks in this stand frequently matches or exceeds the target basal area for woodland treatment, and the low branches that are present are ascending or vertical. *Hence, the structure of trees in the stand that predate modern fire management*

suggests this stand was forest rather than woodland. The woodland treatment boundary should be re-drawn at the ridgeline. On the opposite side of the ridge, pine beetle has thinned a dry forest dominated by pitch and table mountain pine. These southwest-facing slopes are an excellent choice for woodland restoration.

Commercial timber sales

The commercial timber sales threaten to counteract benefits provided by some other parts of the project, and include treatments that are inappropriate for the sites and for the region. According to the LiDAR data used in the ecological departure analysis, steep (>35%) and very steep (>50%) slopes are common within the commercial timber sale units and logging on them threatens soil and stream health. At least 30% of each commercial sale unit is on steep slopes, and over a quarter of the total commercial sale area is on very steep slopes. In 12 stands, more than half of the area is on steep slopes. (See attached Appendix 1 - Table 1). Consequently, sustained steep slopes cannot be avoided in these stands rendering them inappropriate for ground-based commercial timber sales. As discussed further below, the final Environmental Assessment must forthrightly recognize that much of the proposed timber sale is impermissible, impractical, or risky for soil and water resources, and explain whether, how, or which portions of the proposal remain viable in light of this situation.

We believe the trees retained in the intermediate oak-pine thinning and oak-pine regeneration treatments are not slated for later harvest; however, the EA does not make clear the fate of these trees. Since other treatments, such as seed-tree harvests, commonly remove retained trees once regeneration is established, the final Environmental Assessment and draft Decision should clearly state that any trees retained will not be cut at a later date.

Treatments are also poorly matched to local biological conditions. We have no problem with retaining oaks and yellow pines in these treatments, but white pine and mesic hardwoods are inappropriately targeted in the oak-pine intermediate thinning and oak-pine regeneration treatments. White pine and mesic hardwoods are, not surprisingly, well adapted to riparian corridors and other mesic habitats. The EA makes no provision for retaining these species in such habitats. (EA at 9, 10, 116, 117). Removing these species from mesic habitats would not sustain oak-pine forest, but would instead expand that community type, already the most abundant in the project area. *Thus in mesic areas, the aims of intermediate oak-pine thinning and oak-pine regeneration treatments contradict the overall project goal of promoting biodiversity.* Additionally, if fire is not forced into these mesic areas, as the EA appropriately states it will not be, then these treatments will not be successful in mesic areas. (EA at 121). Faster-growing species will simply out-compete any oak seedlings or saplings. Mesic areas should be excluded from the intermediate oak-pine thinning and oak-pine regeneration treatments.

As described in the “prescribed burning” section, multiple lines of evidence suggest current oak populations may be unusually high. Hence, oaks are likely currently over-represented in mesic and sub-mesic forest overstories. Vegetation management on mesic and sub-mesic sites should seek to regenerate a mix of species rather than just oak and yellow pine. Consequently, trees other than just oaks and yellow pines should be retained in the overstory.

The treatments also ignore local growing conditions for white pine. In Georgia, white pine reaches its greatest abundance in the Chattooga River watershed. That abundance reflects not only the disturbance history of the area, but also the species' superior competitive ability in the area. *The tallest white pines in Georgia grow in the Chattooga River watershed, and they are within 6 feet of the tallest known white pine in the world*⁹. LiDAR height data confirms white pine reaches exceptional heights in the Upper Warwoman watershed. That unusually high competitive ability and height growth rate means that white pine will reach sizes impervious to fire faster than normal. When oaks regenerate in between fires, they will need to be taller for white pine not to catch up to and surpass them. This competitive balance narrows the range of sites where silvicultural practices will be successful in regenerating oak, and white pine should be an accepted component of many oak stands. White pine seeds provide food for many songbirds and small mammals, and the trees provide habitat for numerous wildlife species, including the black bear. Thus, some white pines should be retained in the intermediate thinning and oak-pine regeneration treatments, especially those on more mesic sites.

At a much broader scale, the oak-pine regeneration treatments are not suitable for the ecological conditions in the project area. Temperate deciduous forests of eastern North America are adapted to fine scale gap disturbances¹⁰. Wind often removes single or small groups of trees from the canopy creating small gaps with higher light levels. Larger disturbances are rare. The proposed oak-pine regeneration treatments would remove most of the canopy, exposing the communities to a disturbance they have not adapted to deal with. Consequently, the oak-pine regeneration treatments pose a threat to forest health. Canopy manipulations should leave a closed canopy with gaps.

Lack of advance regeneration would also render the oak-pine regeneration treatments ineffective. Opening up the canopy so much would produce conditions that would favor true early successional species like tuliptree (*Liriodendron tulipifera*) and Virginia pine. Nearby clearcuts on ridge-tops have regenerated in dense stands of white pine. This treatment would be more effective in yellow pine stands that have already had some burning. The EA also indicates the oak-pine regeneration treatment is unnecessary. Intermediate pine-oak thinning is proposed to regenerate oak on the same kinds of sites. The oak-regeneration treatment poses risks to forest health with no reward.

While the EA proposes two different treatments to accomplish one goal on the same kind of sites, it also proposes that two very different stand conditions receive only a single treatment. CS 46022, CS 46023, and CS 52009 all contain both mature mixed hardwood conifer and dense pine sapling/pole stands. The EA makes no mention of excluding parts of the stands from the proposed intermediate oak-pine thinning and oak-pine regeneration treatments. That such contrasting stands would be treated the same way seems inconsistent with basic tenants of silviculture, and indicates a lack of analysis and documentation in planning treatments for these stands. Stands boundaries should be redrawn, and an appropriate treatment applied to each type of stand.

⁹ Nativetreesociety.org

¹⁰ Runkle JR. 1981. Gap regeneration in some old-growth forests of the eastern United States. *Ecology* 62: 1041-1051.

Stand specific comments

The Tuckaluge Spur intermediate oak-pine thinning stand (CS 44001) is a good example of many of the shortcomings of the commercial timber sales. 65% of the stand lies on slopes greater than 35%, and 30% of the stand lies on slopes greater than 50%. (See attached Appendix 1 - Table 1, Figure 1). Those steep slopes create great potential for erosion into Tuckaluge Creek, which lies just below the stand. The stand as a whole faces northeast, and several perennial streams cut across the area. Across most of Chattahoochee National Forest, such moist, mid-elevation terrain would be expected to support abundant tuliptree and some basswood and buckeye. ForestWatch's field inspection of this stand found tuliptree to be rare (excluding recent colonization associated with road construction) and no basswoods or buckeyes. Instead, white pine dominates the ravines and moist aspect slopes. That composition speaks to the unusually soil conditions found in the Chattooga River watershed that offer white pine a competitive advantage. The presence of white pines over 150 feet tall in the stand (not old remnant trees but vigorous trees dating from the industrial logging period) also illustrates the excellent growing conditions for white pine in the stand. The stand's moist aspect also means that fire, if not forced, will burn little of the stand. Consequently, vast quantities of herbicide would have to be applied for oak regeneration to be competitive. Taken together, this stand is a poor choice for targeted oak regeneration and should be dropped from the project.

Additionally, the proposed treatment seems inconsistent with the forest plan's 9.H restoration prescription for this area. As the forest plan directs, "The purpose of this prescription is the restoration of historical plant associations and their ecological dynamics to ecologically appropriate locations." (CONF Plan at 3-168). Although this stand technically is proposed for thinning, heavy commercial logging of the large white pines there seems to be the primary goal of the proposed timber harvest. Therefore, we question whether the proposed continuous 315 acres of logging in CS 44001 impermissibly exceed, or exceed the intent of, the 40-acre limit on the size of any one timber harvest unit and/or the "infrequent restorative harvest patches of approximately 40 acres" contemplated by prescription 9.H. (CONF Plan at 2-25 (Standard FW-086); CONF Plan at 3-168; 36 C.F.R. § 219.27(d)(2) (1999) (NFMA regulations under which CONF plan was revised)).

Buck Branch stand CS 52009 is also particularly problematic. Our field visits revealed that riparian corridors and mesic habitats occupy most of this north-facing and highly dissected stand. The riparian corridor hosts sycamore, tuliptree, and mature hemlocks, and a dense rhododendron layer extends up the slopes. Hence, most of the stand should be managed for acidic cove forest rather than dry-mesic oak. Mesic species should not be preferentially removed from this stand. Competition from tall shrubs and fast-growing mesic species will produce too many stems to herbicide, and they will out-compete oak regeneration in the mesic areas. This stand is also one of the steepest in the project; slopes greater than 35% occupy 74% of the stand and slopes greater than 50% occupy 39%. (Attached Appendix 1 - Table 1, Figure 2). Logging in this stand is likely to do little for oak-pine regeneration, but would damage soils and water quality.

Old-growth

Any action in regard to existing or future old-growth must be taken in conformance with the Southern Region's "Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forests in the Southern Region," June 1997. The Guidance calls upon the Forest Service to identify areas of existing old-growth and allocate areas for future old-growth when developing and implementing land management plans and projects. (*Id.* at 7-27). Old-growth is a rare condition on the CONF and throughout the Southern Appalachians and, efforts should be made to both protect and restore it to more closely resemble the natural range of variability.

The ecological departure analysis indicates ecological zones in the Upper Warwoman watershed consistently deviate from desired conditions in the lack of early succession and old-growth stages. Multiple treatments are proposed to address the lack of ESH, but a comparable effort to ensure old-growth forest is lacking. (EA at 125-128). Additionally, treatments that conflict with old-growth, such as oak-pine regeneration, occur in late successional forest. Hence, while those treatments address ecological departure in one direction they perpetuate it in another direction. To decrease ecological departure, oak-pine regeneration treatments should not be used in relatively old stands, and some stands in all community types should be allocated to old-growth. Currently, only dry to sub-mesic oak and pine stands are planned for allocation to old-growth. The EA mentions no provisions for increasing old-growth in acidic cove forest or rich cove forest. (EA at 131). The oldest and least disturbed of these stands (i.e. those closest to reaching old-growth conditions) should be allocated to old-growth.

Forest plan guidance directs prioritization of old-growth allocation based on known existing old-growth patches. Carlson (1995) is the best available reference for the area, and we were glad to see its use.¹¹ Unfortunately, that study did not have the resources to comprehensively survey Upper Warwoman for old-growth, so additional patches may exist. At a minimum, all stands proposed for mechanical vegetation management should be surveyed for existing old-growth. As mentioned in the "woodland" section above, Georgia ForestWatch's field validation identified part of the Dan Gap woodland treatment (CS 36022) as existing old-growth. The portion of this stand on the northeast side of the ridge should be removed from the woodland treatment and added to the old-growth allocation.

Herbicide use:

Several management prescriptions in this EA are dependent upon the use of herbicide (glyphosate or triclopyr) to manage undesirable or competing vegetation. Because we believe that concerns about persistence of chemicals in the environment is a valid general concern, we would like more information on the herbicide application treatments (manner, timing and frequency of application), as well as plot monitoring to determine efficacy of treatment.

¹¹ Carlson PJ. 1995. An assessment of the old-growth forest resource on national forest system lands in the Chattooga River watershed. Chattooga Ecosystem Demonstration Management Project, USDA Forest Service, Franklin, North Carolina.

As always, if herbicide is used on public land, we expect it to be used judiciously and according to manufacturer's recommendations and Environmental Protection Agency guidelines. This will help to avoid unnecessary risks to contractors, members of the public, and the environment in general.

As mentioned in previous correspondence regarding herbicide use, the district should require the contractor or his/her employees to properly post the spray areas at all access points and require a minimum posting time 24 hours longer than the no re-entry periods specified on the chemical labels. We believe that providing the public with signage will allow them to make informed decisions about entering areas of the forest that have been subject to herbicide treatment.

Additionally, it is important to remember that foliar applications of auxin-type herbicides (such as triclopyr) are generally most effective early in the season, while enzyme-inhibiting herbicides (imazapyr and others) are most effective in the late summer or fall. We question any use of glyphosate since it has been recently identified by the WHO's International Agency for Research on Cancer as "probably carcinogenic in humans (category 2A). If it is used, glyphosate is most effective in late summer or fall--after blooming, but prior to change in leaf color.¹² Strategically timing treatments can drastically reduce the probability of treatment failure or marginal control of woody competition. Missing critical treatment windows drives up the cost/acre and increases the potential for environmental risk; both should be frowned upon by the district.

IV. WILDLIFE OPENING DAYLIGHTING / EARLY SUCCESSIONAL HABITAT

Early successional habitat (ESH) in the Southern Appalachians in general has declined since the 1930's. The Forest Service proposes that ESH should constitute 6-10% of the total land area (1,500 acres private + 12,500 acres National Forest) in the watershed. (EA at 24). LiDAR analysis of the Upper Warwoman watershed identified a general shortage of early S-class, with ESH representing approximately 1% of the watershed. However, the analysis also identified 1,072 acres of open canopy within the watershed, with 62% occurring in existing prescribed fire units. Across the watershed, open canopy conditions were six times more abundant within the prescribed fire units, as compared to all other areas. These open canopy conditions fall within the definition of woodlands (desirable ESH). (EA at 126). The EA proposes to include vegetation management (woodland restoration and pine-oak regeneration), prescribed burning and wildlife opening daylighting to meet this aspect of the Project's Purpose and Need. *Georgia ForestWatch supports this decision as all of these activities provide different types/levels of disturbance, ultimately creating a variety of habitats for wildlife. Using various techniques to create openings or ESH in patches of various sizes is a major improvement over the past focus on creating ESH through large commercial timber cuts.*

¹²Ferrell, J., K. Langeland, & B. Sellers. 2010. Herbicide Application Techniques for Woody Plant Control. SS-AGR-260. University of Florida IFAS Extension.

Overall, the direct and indirect effects anticipated from Alternative 2 would include providing an additional 221 acres of Early Successional Forest (ESF) and approximately 3,113 acres of ESH to the existing 70 acres of wildlife opening maintenance. (EA at 127). This Proposed Action *would increase the acreage of ESH in the Upper Warwoman watershed (on federal land) to approximately 27%*. Alternative 3 would increase ESH slightly over Alternative 2, but also expand the distribution of ESH by creating woodlands in the southeastern portion of the watershed.

The Forest Service proposes to increase ESH by 70 acres by daylighting 200-foot buffers (edge habitat) around 12 of the 37 existing wildlife openings. *The buffer will result in a nearly seven-fold increase in the “post treatment total size” of these openings.* (EA at 15). Currently, these average 1-acre wildlife openings are directly adjacent to closed canopy forest. Changes in microenvironments caused by creation of forest edges can lead to shifts in species composition. Although edge creation can lead to an increase in total species diversity, this increase may be due to the presence of many invasive plant species with low conservation value.¹³ *The final EA should include monitoring and eradication plans for NNIS before thinning these edges, with continued monitoring and eradication after thinning.*

Expansion of some of these openings contravenes the desired conditions in the Forest Plan. Wildlife openings numbered 0-5 appear to be located within Forest Management Prescription 9.A.3 which allows “existing old fields and openings for wildlife [to] be present and maintained, but [prohibits] expansion of openings.” (Forest Plan, 3-155). The National Forest Management Act requires projects to be consistent with the Forest Plans. (See 16 U.S.C. § 1604(i)). In addition, the proposed expansion of wildlife openings within the Windy Gap area by creating an ESH buffer around them should be abandoned, because, as discussed further below, Windy Gap should be identified as a roadless area and managed consistent with the standards of the Roadless Rule, which prohibits the expansion of wildlife openings, though existing wildlife openings may be maintained.

The EA proposes road daylighting along 11 miles of existing Forest System roads to improve the amount of daylight to the road surface and aid in drying these roads during wet periods. The road daylighting is also intended to improve the floral diversity and enhance pollinator habitat. (EA at 17). The forest canopy will be thinned to 30-50 Basal Area within a 50-foot buffer area along both sides of the road, adding 133 acres of ESH. This acreage does not appear to be included in the estimates of ESH or ESF. It is also not clear whether this will be maintained as ESH or ESF (the latter would allow the open canopy to fill in).

Despite potential benefits to native herbaceous and woody shrub plant communities and their pollinator associates, daylighting roads provides prime opportunities for NNIS to spread into new areas, including forest interiors. As the district is aware, invasion by NNIS is often highest near roadsides, trail heads, and parking lots due to higher light levels and soil disturbance that is common in these areas. High-use areas have the greatest potential for anthropogenic dissemination of NNIS via tire treads from vehicles and bikes, shoes, horse defecation, etc.

¹³ Hobbs, R.J. & L.F. Huenneke. 1992. Disturbance, diversity, and invasion: implications for conservation. *Conservation Biology* 6: 324-337.

Non-Native Invasive Species:

Non-native invasive species are a leading threat to biodiversity conservation, second only to habitat loss and fragmentation. According to the EA, “Invasive plants can impact forest health, resistance and resiliency in the Southern Appalachian region. Invasive species are competitive and can limit natural tree regeneration and outgrow native species.” EA at 184. Establishment and range expansion of NNIS are facilitated by disturbances, particularly anthropogenic disturbances, including fire, soil disturbance, logging and other forest-related management techniques. These disturbances often increase light levels, reduce competition for soil resources by native species, and/or increase seedling germination and establishment through changes in the soil microenvironment.

The EA acknowledges the presence of various NNIS along road corridors, wildlife openings, campgrounds, and other disturbed areas in the Upper Warwoman project area. It also identifies precautions that will be taken during road reconstruction/construction, and ground-disturbing activities such as temporary roads, log landings, and fire lines (Table 2.4, & p. 185). These precautions include treating existing populations of high priority NNIS prior to activities in the area. However, it is unclear whether continued monitoring and mitigation activities would occur after all these ground-disturbing activities are completed.

In addition, as a measure of responsible land stewardship, the District should perform a comprehensive NNIS inventory, both pre- and post-treatment, in all the proposed treatment areas (vegetation management, daylighting and prescribed burn) to ensure that NNIS are not inadvertently spread into areas of the forest that are currently free of NNIS infestations,

The best protection a forest has against the invasion by NNIS is its closed canopy. The low light levels found in forest interiors prevent most NNIS from establishing. The closed canopy surrounding small-scale disturbances like tree fall gaps, helps protect against invasion by exotic species. Additionally the transient nature of such small high light (gap) environments minimizes any establishment of NNIS.

All the vegetation management, prescribed burn and ESH treatments proposed in the EA will open the forest canopy and increase the likelihood of NNIS spreading. Non-native invasive plant species of concern include princess tree, Japanese honeysuckle, Chinese privet, and the other NNIS identified in Table 3.15 of the EA. Of the three alternatives, Alternative 1 (No Action) is the only alternative that is expected to have no direct or indirect effects on the spread of NNIS, and no impact to habitats since no additional activities would occur. The EA acknowledges that all activities associated with the proposed actions in Alternatives 2 and 3 would have direct and indirect effects on the risk of introduction and spread of NNIS, and potentially increase the density of invasive plants and occupied habitat. (EA at 185, 187).

The Forest Service recognizes that the most effective strategy against invasive species is to prevent them from being introduced and established (<http://www.fs.fed.us/invasivespecies/prevention/index.shtml>), identifying prevention of the introduction and establishment of noxious weed infestations as an agency objective (USDA – Forest Service Guide to Noxious Weed Prevention Practices, 2001). The first goal listed in the

Forest Service Guide is to incorporate weed prevention and control into project layout, design, alternative evaluation, and project decisions.

But what is sorely lacking in the EA is a continued monitoring and mitigation plan to survey these vegetation management, prescribed burn, and daylighting treatment areas on a regular basis *after* the treatment, and between burns. This is particularly critical given that the project would add 6,008 acres of prescribed burn units to the 2,681 acres already in the watershed. Prescribed fire is being used in the Upper Warwoman Landscape Management Project to open the canopy and expose mineral soil to promote regeneration/restoration of native oak/yellow pine forest types. Unfortunately, some of the worst NNIS in the region require similar conditions for establishment, and prescribed fire will likely facilitate their spread in some of the remote, previously-closed canopy forests in Upper Warwoman.

Princess tree (*Paulownia tomentosa*) is an aggressive invasive species that is highly shade intolerant and requires large-scale disturbances such as fire, landslides, or other land scarification for optimal establishment. Establishment of princess tree after fires has been reported in the fire-dependent table mountain pine-pitch pine forests of the southern Appalachians.^{14,15,16} Princess tree is a prolific seed producer and its small, wind-dispersed seeds can travel great distances and germinate almost exclusively on open sites with exposed mineral soil.¹⁷ Its ability to sprout from adventitious buds after partial to complete top-kill likely allows it to persist after fire.



Princess tree in postfire habitat in Linville Gorge Wilderness Area, North Carolina. Photo by Dane Kuppinger¹⁷.

Thus, prescribed fire used to enhance regeneration and maintenance of native, fire-adapted forest species may also create conditions suitable for princess tree regeneration. Indeed, its rapid growth after fire makes it a highly successful competitor, with seedlings growing up to 14 feet tall four years after a fire in the Linville Gorge Wilderness Area.⁵ Princess tree had not been detected in the 12,002-acre Wilderness Area prior to the 2000 wildfire, but seedlings had rapidly increased in number and height by postfire year 4.

Paulownia tomentosa is already found in Upper Warwoman along roadsides, wildlife openings, and other disturbed sites. The large increase in prescribed burning proposed in the draft EA will likely facilitate its establishment in these prescribed burn areas, along with other fire-adapted NNIS. The final EA needs to address this issue and adopt an early detection, rapid

¹⁴ Dumas, S., H.S. Neufeld, & M. Fisk. 2007. Fires in a thermic oak-pine forest in Linville Gorge Wilderness Area, North Carolina: importance of the shrub layer to ecosystem response. *Castanea* 68(1): 92-104.

¹⁵ Kuppinger, D.M. 2008. Post-fire vegetation dynamics and the invasion of *Paulownia tomentosa* in the southern Appalachians. Chapel Hill, NC, University of North Carolina at Chapel Hill. 210 pp. Dissertation.

¹⁶ Williams, C.E. 1998. History and status of table mountain pine-pitch pine forests of the southern Appalachian Mountains. (USA). *Natural Areas Journal*. 18(1): 81-90.

¹⁷ Innes, R.J. 2009. *Paulownia tomentosa*. In: Fire Effects Information System, [Online]. USDA, <http://www.fs.fed.us/database/feis/>.

response approach to fight these invasive threats not only in the prescribed burn treatment areas, but in all the proposed vegetation management treatment areas. A detailed *post-treatment* monitoring and mitigation plan for NNIS should be included for all of the areas. *This large increase in prescribed burning, as well as other proposed vegetation management, should not occur if the Forest Service does not have the resources and commitment to conduct regular monitoring and eradication of NNIS.*

The final Environmental Assessment should: commit to NNIS monitoring and eradication; disclose the source(s) of funding or other resources necessary for NNIS monitoring and eradication, the degree to which those funds and resources are assured, and any other uncertainties in whether NNIS in this project area can be monitored and treated; disclose the degree of success or lack thereof in eradicating or controlling NNIS in prior, similar projects on this Forest and the additional steps that will be taken if initial NNIS treatments are not successful; and commit that the project's vegetation management, daylighting and prescribed burning activities will not be implemented unless it is certain that any associated NNIS treatments can be carried out, too. An NNIS mitigation plan is an essential part of this project, and NEPA requires the frank disclosure of the realistic likelihood of mitigation measures being successfully implemented and back-up plans in the event of poor results.¹⁸

V. FISHERIES ENHANCEMENT

We are pleased to see the focus on fish passage and the modification of culverts to allow that movement. The broader aim to restore fish habitat to historical conditions is also commendable, but we believe the “chop and drop” treatment is unnecessary to achieve that goal. Hemlock woolly adelgid ensures streams will receive a glut of coarse woody debris over the next few years. If coarse woody debris absolutely cannot wait a few years, we suggest only hemlocks be used for the chop and drop. Using any other species would diminish the supply of coarse woody debris to streams over the coming decades.

VI. MONITORING AND EVALUATION:

The Forest Plan “represents an adaptive management approach for the Chattahoochee-Oconee National Forests” and “[m]onitoring (and constant evaluation) is the heart of adaptive management (Forest Plan p.1-1 to 1-2). Monitoring, evaluation and adaptive management are particularly critical to the success of restoration projects. See FSM at § 2020.5 (“Adaptive management, monitoring, and evaluation are essential to ecological restoration.”). By definition, adaptive management requires “clearly identified outcomes and monitoring to determine if

¹⁸ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989) (incomplete discussion of mitigation measures violates NEPA); *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1151 (9th Cir. 1998), *overruled on other grounds by Lands Council v. McNair*, 537 F.3d 981 (9th Cir. 2008) (“Without analytical data to support the proposed mitigation measures, we are not persuaded that they amount to anything more than a ‘mere listing’ of good management practices.”); *National Audubon Soc’y v. Hoffman*, 132 F.3d 7, 30 (2nd Cir. 1997) (Without “substantial evidence to support the efficacy” of the mitigation measure at issue in that case, including monitoring to determine how effective it was, and detailed alternatives in the event that it failed, the Forest Service’s consideration of the proposed action was inadequate and violated NEPA).

management actions are meeting desired outcomes and if not, to facilitate management changes....” (*Id.*) The environmental analysis for this project should: (1) clearly define the reference condition, the existing condition and the desired condition for the proposed restoration and regeneration treatments; (2) set specific, measurable objectives for the vegetation structure and composition that the treatments will achieve; (3) commit to project-level monitoring that can and will measure whether and to what extent those objectives have been met; and (4) commit to evaluating the monitoring results, including considering the need to adjust later phases of this project and/or future projects.

The prescribed burning monitoring is particularly insufficient. The monitoring seeks primarily to identify benefits of prescribed fire, and even then only recognizes benefits of relatively high severity fires. The monitoring determines if the fires opened the canopy enough to create early successional habitat and restore woodland. (Draft EA Appendix I – Monitoring Plan). This monitoring implies that lower intensity fires that did not open the canopy would be deemed a failure. However, such lower intensity fires better match historical fire patterns, and can return understory competition to historical levels, one of the most important benefits of reintroducing fire. The monitoring also glosses over potential harm by fires. No monitoring is planned specifically to determine if oak and pine saplings are killed by the fires or if fires are damaging mesic areas. (Draft EA Appendix I – Monitoring Plan). A monitoring plan that can suggest only that more fire is needed and that ignores potential harm is a recipe for future damaging fires. The prescribed burning monitoring plan needs to be amended to recognize the benefits of lower intensity fires and to identify any damage caused by burns.

Even more deficient is the monitoring of the effectiveness of silvicultural treatments. There is none. (Draft EA Appendix I – Monitoring Plan). The element claimed to be essential for regenerating oaks, fire, has been absent from these forests for decades, and these treatments attempt to regenerate oaks in the presence of other highly competitive species, such as white pine. Success is far from certain, so monitoring seems only prudent. Adaptive management, as required by the Forest Plan, is impossible without monitoring.

VII. ROADLESS AREAS

As we stated in our scoping comments, we continue to believe that the Windy Gap area was improperly excluded from the CONF’s roadless inventory and should be managed consistent with the provisions of the 2001 Roadless Rule. At a minimum, the Forest Service must analyze the project’s impacts on roadless characteristics and should preserve the area for consideration and inclusion in the next inventory to be completed as part of the next Forest Plan revision. An alternative that avoids commercial logging and road construction in Windy Gap, in order to avoid impacts to the roadless or remote characteristics of an area with significant public interest and concern, is a reasonable alternative which, under NEPA, must be considered. (*See Alaska Wilderness Recreation and Tourism Association v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995) (failure to consider a “viable but unexamined alternative” renders an EA inadequate)).

1) The Windy Gap Area Should be Managed Consistent with the 2001 Roadless Rule

The Windy Gap area was originally part of the Rabun Bald roadless area that was studied in the RARE II process. When the CONF updated its roadless inventory for the revised forest plan adopted in 2004, the eastern section of Rabun Bald (the Sarah's Creek area) was divided from the western section (Windy Gap area),¹⁹ with the former being inventoried as a roadless area and the latter being rejected from the inventory. We argued then, and now, that the exclusion of Windy Gap from the roadless inventory was a legal error.

The Forest Service Handbook which governed the CONF roadless inventory set forth basic criteria for roadless areas in the east.²⁰ The key criteria were the size, road density, and naturalness. Roadless areas were to contain 5,000 acres or more, or be manageable in their natural condition. (FSH 1909.12, Ch. 7.11 (1992)). Roadless areas in the east could contain no more than 1/2 mile of improved Forest Service roads per 1,000 acres. (FSH 1909.12, Ch. 7.11; Ch. 7.11b (1992)). "Improved roads" were "roads maintained for travel by standard passenger-type vehicles. . . ." (FSH 1909.12, Ch. 7.11(3) (1992)). Roadless areas in the east were also required to have a natural appearance, such as having no more than 15% of the area in non-native, planted vegetation and having no more than 20% of the area logged with the last 10 years. For a full discussion of the application of those criteria to the Windy Gap area see our scoping comments (attached Appendix 2, pages 17-21). In short, the Windy Gap area met the criteria of the 2001 Roadless Rule at the time of the last inventory and continues to meet those criteria today.

Accordingly, the CONF should manage the Windy Gap area consistent with the provisions of the 2001 Roadless Rule. The Roadless Rule prohibits the cutting, sale or removal of timber in roadless areas with limited exceptions. (66 Fed. Reg. 3244, 3273 (Jan. 12, 2001)). *To be consistent with the Rule, and to avoid adverse impacts to the roadless characteristics of the area, the commercial logging units –Tuckaluge Spur unit and Finney Creek # 2 unit – should be dropped from the project under both the proposed action and modified proposed action.* Regarding the non-commercial Finney Creek unit # 1, as described in the modified proposed action, the unit is intended to "restore upland sites to their historic composition" and will utilize cut and leave harvest techniques. (EA at 6, 26). We question whether this treatment meets the Roadless Rule's limited exception for "cutting . . . of generally small diameter timber" to "restore the characteristics of ecosystem composition and structure," (66 Fed. Reg. at 3273), but in this instance we do not object to this non-commercial treatment here.

Most importantly, the Rule prohibits road construction and reconstruction in roadless areas. (*Id.* at 3272). To comply with the Rule, *the Tuckaluge Spur Road reconstruction and 1-mile extension should also be dropped from the project.*

Finally, the Roadless Rule prohibits the expansion of wildlife openings though it does allow existing wildlife openings to be maintained. The proposed expansion of wildlife openings within the Windy Gap area by creating an ESH buffer around them should be abandoned or the

¹⁹ We provided an updated, digitized map of the Windy Gap area as it existed in the 1990s with our scoping comments (attached). We generally refer to the Windy Gap area as it is represented on that map.

²⁰ The CONF roadless inventory was completed according to the 1992 edition of the Forest Service Handbook. As articulated elsewhere in these comments, Windy GAP qualifies as a roadless area pursuant to the 1992 Forest Service Handbook and the now controlling 2012 version.

expansion should be accomplished with non-commercial means, which the EA states is an option, in order to reduce ground-disturbance and disruption of roadless characteristics, rather than through a commercial timber sale.

If an area meets roadless criteria, it should be protected and managed as a roadless area. Logging, road construction/reconstruction, and expansion of wildlife openings in the Windy Gap area would contravene the purpose behind the 2001 Roadless Rule and the efforts to protect roadless areas in Georgia and nationwide. Those aspects of the project which cannot comply with the Roadless Rule should be dropped.

2) The Forest Service Must Assess this Project's Impact on Windy Gap's Roadless Characteristics

The Forest Service must consider and disclose the effects of logging and road construction/reconstruction on roadless areas' characteristics, even those areas excluded from official roadless inventories such as Windy Gap. The failure to do so in this instance renders the EA inadequate.

“There are at least two separate reasons why logging in roadless areas is environmentally significant, so that its environmental consequences must be considered. First, roadless areas have certain attributes that must be analyzed. Those attributes, such as water resources, soils, wildlife habitat, and recreation opportunities, possess independent environmental significance. Second, roadless areas are significant because of their potential for designation as wilderness areas under the Wilderness Act of 1964.” (*Lands Council v. Martin*, 529 F.3d 1219, 1230 (9th Cir. 2008) (attached); *see* Special Areas, Roadless Area Conservation, 66 Fed. Reg. 3244,3245 (Jan. 12, 2001) (discussing characteristics values of roadless areas)). In *Lands Council*, the Forest Service argued that its analysis of the impacts of logging and road building in two substantial but uninventoried roadless areas was adequate because “each roadless area here is uninventoried and contains less than 5,000 acres.” (*Id.*) The court disagreed, finding that whether an area was officially inventoried or uninventoried, and whether it contained less than 5,000 acres, did “not provide a meaningful legal distinction” for purposes of complying with NEPA. (*Id.* at 1231). NEPA requires the Forest Service to assess and discuss the effects of its proposed action on the roadless character of uninventoried areas.

Here, the Windy Gap area consists of approximately 7,500 acres of roadless and potential wilderness area and is adjacent to the designated Sarah's Creek roadless area, forming an even larger, approximately 14,322 acre “roadless expanse”. (*Lands Council*, 529 F.3d at 1231). At a minimum, the following proposed actions may impact the Windy Gap area's roadless characteristics: improving the Tuckaluge Spur Road and extending it by a mile, commercially harvesting timber in the 315-acre Tuckaluge Spur unit (stand 44/001) and Finney Creek unit 2 (stand 36/003), commercially or non-commercially harvesting timber in Finney Creek unit 1 (stands 42/020, 43/015), and expanding wildlife openings. Instead of assessing the impact of these actions on the area's roadless characteristics, the Forest Service rejects its obligation to do so, stating only that “[t]his area is not recognized in the Forest Plan as the ‘Windy Gap uninventoried roadless area.’” (EA at 25). That analysis is insufficient – “the Forest Service [is]

required to discuss the effects of the proposed logging on the roadless character” of the Windy Gap area in the EA. (*Id.* at 1231).

If the assessment of the proposed actions’ impacts on the Windy Gap area’s roadless characteristics reveals that those impacts are significant, the Forest Service will be required to prepare a full Environmental Impact Statement. (42 U.S.C. § 4332(C); *see* 40 C.F.R. §§ 1502.3, 1502.4). As explained below, the area currently qualifies for inclusion in the next potential wilderness inventory to be completed with the CONF Forest Plan revision. Arguably, any action which may prevent the Windy Gap area from being inventoried and its future protection and management considered accordingly is a significant impact requiring an EIS. The best approach to assessing impacts to the Windy Gap roadless area is simply to avoid them.

3) Windy Gap’s Wilderness Eligibility Should be Maintained

At a minimum, no action should be implemented as part of this project which might preclude the Windy Gap area from being inventoried and its future protection and management considered accordingly. Its eligibility for the inventory will be evaluated during the next Forest Plan revision according to new directives found at Forest Service Handbook (FSH) 1909.12, Ch. 70 (2015) – hereinafter referred to as “Ch”. As an initial step, the directives require the Forest Service to complete an inventory of “all lands that may be suitable for inclusion in the NWPS [National Wilderness Preservation System].” (Ch. 71.1). Recognizing that the controversies surrounding previous roadless inventories (including the inventory which excluded Windy Gap) were caused by the subjective use of narrow criteria, the new directives restrain the agency’s inventory consideration to three objective factors: size, roads improvements, and other improvements. (Ch. 71.2). The Windy Gap area currently meets the requirements for all three factors, qualifying for inclusion in the inventory.

a. Size

Areas included in the inventory must have “at least five thousand acres of land or [be] of sufficient size as to make practicable its preservation and use in an unimpaired condition.” (Ch. 71.21 (quoting 16 U.S.C. § 1131c)). At approximately 7,500 acres, the current configuration of the Windy Gap area easily meets this threshold. Combined with the adjacent Sarah’s Creek roadless area, the area has the potential to be evaluated for Wilderness as a combined 14,000+ acre block.

b. Roads Improvements

Unlike past roadless inventories which assessed areas based on road density, the new directives instruct that certain roads may be included in potential wilderness areas, while other roads may not. Areas that include maintenance level 3, 4, and 5 roads are to be excluded from the inventory with few exceptions. (Ch. 71.22a). However potential wilderness areas may *include*:

- Maintenance level 1 roads;

- Decommissioned, unauthorized or temporary, or forest roads that are identified for decommissioning in a previous decision document, or identified as likely unneeded in a travel management plan (36 CFR 212.51) or a travel analysis;
- Areas with forest roads that will be reclassified to maintenance level 1 through a previous decision document, or as identified in a travel management plan (36 CFR 212.51) or a travel analysis;
- In eastern national forests, maintenance level 2 roads “that are identified as closed to motor vehicles yearlong in a previous decision document.”

(Ch. 71.22a).

Currently, the only maintenance level 3 roads in the Windy Gap area appear to be a small portion of Finney Creek Road (FSR 152), and a section of the Walnut Fork Road (FSR 155). (EA at 206-207). The Windy Gap Road (FSR 155F), which is currently a maintenance level 2 road with seasonal access, is identified for closure (ML 1) as part of this project so it should not serve to exclude any portion of the area from the inventory. (EA at 207). According to the CONF’s Motor Vehicle Use Map, as well as this project’s EA, the Wild Hog Ridge and Milksick Cove Roads are ML 2 roads that are closed yearlong to the public – those roads should not serve as disqualifying features either. (EA at 207). Finally, the Martin Creek Road is a closed, ML 1 road that also cannot serve to disqualify any portion of the area. (EA at 203).

The most problematic road for purposes of the inventory is the 2.1 mile Tuckaluge Spur Road (FSR 153A) which cuts into the southeastern portion of the Windy Gap area. The Forest Service has provided conflicting data about this road’s maintenance status. The agency’s Motor Vehicle Use Map and this project’s EA describe the road as an ML 2 road with seasonal public access. (EA at 207). However, the Forest’s Travel Analysis Process Report spreadsheet describes the road as an ML 2 road that is “closed year-round” with only administrative access.

Regardless of their classification on paper, it is the on-the-ground condition of ML 2 roads that determines whether they are included or excluded in the inventory. (*See* Ch. 71.22a(2)(discussing excluding roads “maintained” at actual levels, in terms of regular and continued use)). The Tuckaluge Spur Road appears to see little maintenance and is gated year-round except for a few weeks during big game hunts on the Warwoman WMA. The project’s Roads Analysis Process (RAP) Report notes that there is “heavy vegetation” encroaching on the road – another symptom of a lack of maintenance and use. (RAP at 4). However, we noticed during a visit in March 2015 that the upper side of the road had been recently bush-hogged; the District does so every few years on gated roads. The Forest Service should further clarify the status of this road, but for now we assume that it is an ML 2 road closed to the public yearlong and does not serve to disqualify any portion of the area from inclusion in the inventory.

c. “Other Improvements”

The final inventory criterion is “other improvements.” (Ch. 71.22b). The two most applicable to the Windy Gap area are vegetation treatments and timber harvests. (*Id.*) Whether “improvements” serve as disqualifying features turns on whether they are “substantially noticeable.” (*Id.*) In other words, the question is not whether vegetation treatments and timber

harvests have occurred, but whether when viewed in light of the impact to the area *as a whole*, they are substantially noticeable. (*See id.*) Additionally, vegetation treatments and timber harvests in eastern national forests must be viewed in light of the “potential need to provide for passive or active restoration of wilderness character in previously modified areas, consistent with the intent of the Eastern Wilderness Act.” (*Id.*) The LiDAR Analysis produced with the agency’s EA notes that “there has been no commercial logging in the Forest Service portion of the watershed for 20 years” though there appears to have been some non-commercial treatment in the Becky Branch area during that time. (Draft EA Appendix B - LiDAR Analysis at 4). Those treatments however are not “substantially noticeable” and we are unaware of any other substantially noticeable “improvement” in Windy Gap which may disqualify any portion of the area; LiDAR indicates improvement in only the Becky Branch area..

Additionally, we note that some of the “improvements” planned as part of the Upper Warwoman project should not serve to disqualify any portion of the area from the inventory even if implemented. Consistent with the directives, treatments in eastern national forests which seek to *restore* areas should not be considered “substantially noticeable” because they are justified as returning the land to a more natural condition. (*See id.*) Rephrased, it is unlikely that restoration treatments that are “substantially noticeable” are actually restorative. Because Finney Creek units # 1 & 2 intend to “*restore* upland sites to their historic condition” they should not be considered “substantially noticeable” for purposes of the inventory. (EA at 6 (emphasis added)). Under the modified proposed action, Finney Creek unit #1 should be particularly unnoticeable because it will be treated with non-commercial techniques, avoiding the need for extensive road reconstruction and use of ground-based logging equipment. Similarly, wildlife openings which average 1.1 acres (exclusive of the proposed buffer) cannot be said to be “substantially noticeable” when viewing the entire 7,500 acre Windy Gap area as a whole. None of these “improvements” should disqualify portions of the Windy Gap area from inclusion in the inventory.

However, two aspects of both the proposed action and modified proposed action will likely serve to disqualify portions of the area if implemented. Improving the Tuckaluge Spur Road to a maintenance level 3 road will almost certainly disqualify that portion of the area between the Tuckaluge Spur and Tuckaluge Creek Roads from inclusion in the inventory. Similarly, the 315-acre Tuckaluge Spur unit may serve to disqualify a portion of the area. In contrast to the restorative purpose of the Finney Creek treatments, the Tuckaluge Spur unit is intended as an “intermediate” treatment to regenerate oaks and pines, largely targeted at removing commercially valuable white pine. It seems likely that this will be considered a “substantially noticeable” “other improvement” disqualifying a portion of the area.

As explained above, the Windy Gap area never has been examined fully and properly for its roadless qualifications. Instead of foreclosing that assessment, the Forest Service should maintain the area’s status quo to allow the area to be fully evaluated for potential wilderness designation. To preserve that evaluation the Tuckaluge Spur unit and reconstruction/extension of Tuckaluge Spur Road should be dropped from the project. At the very least, NEPA requires the EA to recognize, disclose and fully consider that these actions would probably ruin portions of the area for potential for wilderness designation.

VIII. TRAVEL ANALYSIS

We commend the District for completing and releasing a Roads Analysis Process report as required by FSM 7712 as well as for providing a draft version of the forest-wide Transportation Analysis Process Report (TAP Report). Those documents provide helpful information about the agency's transportation system and, while we have concerns about the level of analysis included in the RAP specifically, we agree with many of its conclusions. *The collective data presented in the TAP, RAP, and EA illustrate that rerouting the Tuckaluge Creek Road is not a viable solution to reducing that road's sediment impacts.* The Forest Service should reassess the potential for controlling sediment from Tuckaluge Creek Road by spot paving and installing adequate mitigation measures. These are reasonable, viable alternatives which, under NEPA, must be fully considered. 42 U.S.C. § 4332(2)(E) (study, develop, and describe appropriate alternatives in any proposal involving unresolved conflicts over uses of resources); 40 C.F.R. § 1500.2(e) (use NEPA process to identify and assess reasonable alternatives to proposed actions that will avoid or minimize adverse effects to the environment).

There are two types of travel analysis: "Travel analysis for purposes of identification of the minimum road system [and] travel analysis for purposes of designation of roads, trails, and areas for motor vehicle use." (FSM 7712). Both types are necessary and can be completed simultaneously. This project specifically triggers the latter requirement because the project contemplates adding roads to the forest transportation system. But the latter must be informed by the former which identifies the "minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands." (36 C.F.R. § 212.5(b)(1)).

Travel analysis is meant to "ensure that construction of new roads serves a documented need." (FSM 7712.4). This is completed in part by providing "supporting rationale" for "additions or deletions of routes from the system." (FSM 7712.3). Assessment of the need for certain routes takes into consideration the benefits and ecological risks of each road and the agency's "maintenance and administrative obligations and capability in the context of future budgets and staffing. Administrative units and ranger districts should avoid adding routes to the forest transportation system unless there is adequate provision for their maintenance." (FSM 7715.03; see 36 C.F.R. § 212.55 (when designating roads the responsible official shall consider "the need for maintenance and administration of roads")). Ultimately, "[c]onstruction and maintenance work on forest transportation facilities . . . shall be directed to what is necessary and economically justified for protection, administration, development, and multiple-use management of the federally owned lands and resources served." (36 C.F.R. § 212.4(a)).

The project RAP provides a minimal level of information that is only generally related to specific roads. The RAP fails to individually weigh the risks and benefits of each road, document the need for certain roads, and importantly, does not address the economic feasibility of constructing new roads in the watershed or adequately maintaining existing ones. The RAP does suggest specific changes to the forest transportation system but the rationale for those changes is often unclear. At most, we know that the suggestions are "based on the existing road

matrix, analysis questions and answers, existing and desired conditions, and key issues.” (RAP at 5).

The District ostensibly followed the process laid out in “Roads Analysis: Informing Decisions About Managing the National Forest Transportation System” (FS-643) to implement the RAP. (RAP at 1). The objective of that process is to find a “balance between the benefits of access to the national forests and the cost of road-associated effects to ecosystem values” while “bring[ing] the road system into balance with projected budgets.” (FS-643 at iii, 31). The cover page of the “Roads Analysis” document is illustrative of the balance sought; it is a scale with road “uses and benefits” on one side and “environmental damage” on the other. The scale is calibrated according to the “cost to maintain and mitigate” roads and the environmental “values at risk.” If a road’s “uses and benefits” outweigh the risks, the scale tips towards “retain[ing] or upgrad[ing]” the road. If the road’s “environmental damage” outweighs the road’s benefits, the scale tips towards “remov[ing]” the road. While the RAP generally assesses the needs and risks of the road system in the analysis area as a whole, the process of setting *individual* roads on the scale is absent.

Synthesizing information from the TAP, RAP, and EA however, reveals that the RAP’s assessment (which is adopted in the EA) of solutions to address sediment impacts from Tuckaluge Creek Road is inadequate. We appreciate that the RAP acknowledges that “runoff from [the Tuckaluge Creek Road] contributes to sediment loading in the creek,” that it is “entrenched in several places, forcing water down the road and creating ruts and erosion problems” and that the “road surface and drainage need improving”, but the RAP fails to sufficiently evaluate proposed solutions to these problems. (RAP at 3). Any solution posed in a RAP must be subject to the same balancing of risks and benefits the RAP seeks to perform. In other words, posing solutions to road management problems in a RAP that are equally or more problematic than existing conditions does not solve an existing problem – it only moves it, and makes the RAP process meaningless. Here, to stem sedimentation impacts from Tuckaluge Creek Road, the RAP only proposes decommissioning a portion of the road and constructing a new road “off of Tuckaluge Spur [to] maintain public access through this area.” (RAP at 3). An adequate assessment in the RAP would reveal that this proposal is not economically viable or environmentally superior to current conditions, and that better, cheaper solutions are available.

Actions recommended in a RAP must further the goal of “bring[ing] the road system into balance with projected budgets.” (FS-643 at 31). Appendix G to the project EA reveals that rerouting the Tuckaluge Creek Road by constructing a new road off Tuckaluge Spur Road will have an upfront cost of approximately \$750,000, with an additional \$150,000 to reconstruct the existing 2.1 miles of road. (Draft EA Appendix G – Timber Economic Analysis Assumptions). The annual road maintenance budget for the entire Chattahoochee-Oconee National Forest is only \$578,000. (TAP at 7). Of that total, the Chattooga River Ranger District only receives approximately 30%, or \$175,579. (TAP spreadsheet). To be sufficient, the RAP must have assessed whether the solution - constructing a new mile of road at an expense of \$750,000 and to reconstructing the existing 2 miles of road for \$150,000 to “maintain public access” (RAP at 3) and facilitate a timber sale which will generate a significant financial loss to taxpayers (Draft EA Appendix G – Timber Economic Analysis Assumptions) – “brings the road system into balance with projected budgets.” (FSR-643 at 31). The agency’s own data reveals that it does not.

It seems likely that the funding for the road construction never could be obtained. In considering the road construction alternative, the final EA should disclose the realistic likelihood of obtaining funding for it and explain the District's plan for controlling erosion and sedimentation from the road while seeking funding or in the event funding is never obtained. It would not be acceptable for the District to choose the road construction alternative, never be able to implement it, and in the meantime continue to do little or nothing to maintain or improve existing sediment control measures, resulting in no improvement in actual conditions.

Even if funding was available to construct the proposed reroute, actions recommended in a RAP as an environmental improvement must be justified based on on-the-ground conditions. As explained further below, the agency's proposed reroute will result in a net *increase* of sediment input to local streams. While this increase is acknowledged (albeit indirectly) in the project EA, it is impermissibly ignored in the RAP.

The shortcomings of the RAP are highlighted when compared to better, cheaper solutions to solving sedimentation problems from Tuckaluge Creek Road considered in the TAP. The TAP spreadsheet notes that relocating the Tuckaluge Creek Road, as proposed in the RAP, "is ideal" but also that "paving sections would resolve problem areas." (TAP spreadsheet). This solution is ignored in the RAP and dismissed in the EA because the Forest Service claims that the existing road corridor would have to be widened before paving. (EA at 25). The RAP, however, reveals that road widening is not necessarily a prerequisite for paving the road to meet the Forest Service's stated purpose for the road – to provide general public access – but rather that widening is desired to enable "access for [future] high production logging" with tractor-trailers. (RAP at 5).

Regardless, dismissing paving as an option out-of-hand in the EA, and failing to assess it as a potential solution in the RAP is inadequate. Where the agency's proposed reroute will result in a net increase in sedimentation, paving and implementation of appropriate sediment control structures will result in a decrease in sedimentation at cheaper cost. In light of other potential solutions, the RAP and EA must assess whether the proposed Tuckaluge Creek Road reroute is "necessary and economically justified." (36 C.F.R. § 212.4(a)). The RAP and EA also fail to assess how increased traffic due to the reroute on a steep section of Tuckaluge Road between Dan Gap and Milksick Cove Roads would affect sedimentation. NEPA also requires the full consideration of a paving alternative and an alternative involving the implementation and maintenance of sediment control measures. These reasonable alternatives would meet the agency's stated primary purpose and need for the road, reduce the environmental impacts, reduce the cost, and, therefore, must be considered. It is worth noting that, as far as we can tell from numerous visits to the road over the years to examine the existing situation, the agency never has attempted to install comprehensive sediment control measures and to regularly and properly maintain them, therefore, the efficacy of this option is, at worst, untested here, not already unsuccessful.

The TAP spreadsheet provides an insightful comparison to another road that faced similar erosion and sedimentation problems which the Forest Service ultimately paved – Sarah's Creek Road. Paving the steep section of Sarah's Creek Road appears to have reduced the sediment

delivery of that section of road to nearby streams which the Forest Service now considers a “low” risk. (TAP spreadsheet). The paved section of the road also has “low” maintenance needs, reportedly requiring \$806 annually to maintain. TAP spreadsheet. For perspective, the annual road maintenance cost for the paved section of Sarah’s Creek Road is approximately 0.1% of the cost to construct the proposed reroute.

To be clear, paving Forest Service roads should only be used as a last resort. While we appreciate the agency’s effort to reduce sedimentation from the Tuckaluge Creek Road, in this instance we believe paving the problematic sections of that road and installing enhanced sediment control features is socially, ecologically, and economically preferable over rerouting the road. At a minimum, the agency must assess whether the proposed reroute is economically feasible and provides additional environmental benefits in the project RAP and EA.

IX. WATER QUALITY

We are pleased that the agency is taking steps to address the longstanding water quality problems in the Warwoman watershed. As the District knows, both Warwoman Creek and Roach Mill Creek have been listed on Georgia’s 303(d) list as impaired for sediment for a number of years. With approximately 90% of the Upper Warwoman watershed in Forest Service ownership, the agency has a unique opportunity and obligation, to address these problems. Upper Warwoman Watershed Assessment, 1. Commitments to decommission portions of roads, restrict access to certain roads, and barricade illegal ATV trails that impact water quality are all improvements. (EA at 16-17). *The modified proposed action’s additional commitments to drop the Henry Page commercial stands, change Finney Creek unit # 1 from commercial to non-commercial harvest, and reduce road reconstruction from 11 to 2 miles will be particularly beneficial for water quality in this area.* (EA at 23-24). We appreciate, and believe it necessary that the agency implement these actions to prevent further impairment of Warwoman and Roach Mill Creeks.

We remain concerned however about the impact of two aspects of the proposed and modified proposed actions on water quality: the 315-acre Tuckaluge Spur unit and proposed reroute of Tuckaluge Creek Road. The Chattooga River Total Maximum Daily Load (TMDL) determined that the Upper Warwoman watershed required a 64% reduction in sediment load to meet water quality standards, yet the proposed action and modified proposed action contemplate *increasing* the sediment load by 18% and 12% respectively. (EA at 92, 98).²¹ The agency’s own estimate of sediment impacts to 5th and 6th order streams reveals that two of the largest contributors of sediment, under the proposed and modified proposed actions, are the reroute of the Tuckaluge Spur Road and harvest of the Tuckaluge Spur timber unit. (EA at 85, 94).

²¹ According to the EA, the Upper Warwoman watershed has a current sediment load of 21,700 t/d. (EA at 92). The proposed action will result in a net increase in the watershed of 4,049 t/d. (*Id.*) The EA does not provide the net sediment increase expected under the modified proposed action but does state that the modified proposed action is expected to result in 3,917 t/d of increased sediment from ground based activities and a reduction of 1,278 t/d of sediment as a result of road improvements; subtracting the latter from the former provides the net increase for the modified proposed action. The percentages were derived by dividing the expected net increase by the current sediment load.

In fact, the single action that is the largest contributor of sediment to the Upper Warwoman watershed under both the proposed and modified proposed action is the reroute of the Tuckaluge Creek Road by adding a mile to the Tuckaluge Spur Road. The agency estimates that this new road segment will contribute 974 tons of sediment to Tuckaluge Creek per decade. (EA at 85, 94). Critically, decommissioning the problematic section of the Tuckaluge Creek road is only predicted to reduce sediment loading to the creek by 419 t/d. *Id.* This point cannot be overstated: the solution to reducing the sediment impacts of Tuckaluge Creek Road is expected to result in a net sediment increase of 555 tons. The Tuckaluge Creek Road reroute cannot be justified as an improvement to water quality and runs afoul of the TMDL's objective of reducing sedimentation in the Upper Warwoman watershed. At a minimum, the EA must acknowledge that this solution will exacerbate, not improve, sediment loading problems in Tuckaluge Creek.

The Tuckaluge Spur unit is similarly predicted to be a large source of sediment input to Tuckaluge Creek. Timber harvest in the Tuckaluge Creek watershed is expected to result in a net sediment increase of 669 t/d under the proposed action and 452 t/d under the modified proposed action. (*Id.*) Presumably, most of the 452 t/d under the modified proposed action is attributable to the Tuckaluge Spur unit as it is the only unit in the Tuckaluge Creek watershed designated for commercial harvest under that alternative. This one stand appears to account for more sediment input to the watershed than many of the other harvest units combined.

The high level of sedimentation is partially attributable to steep slopes in the Tuckaluge Spur stand. Approximately 65% of the unit is located on slopes over 35% and 30% of the unit is located on slopes over 50%. (attached Appendix 1 – Table 1). Using ground-based logging equipment on steep slopes in an area with high rainfall (EA at 58) is nearly guaranteed to generate substantial sediment runoff.

To mitigate these risks the Forest Service proposes to rely on Best Management Practices (BMPs) and other Forest Plan standards. (EA at 89-81). BMPs and the Forest Plan are important tools to minimize and mitigate soil movement, but they do not eliminate risk. Pointedly, the Upper Warwoman Watershed Assessment found that 46% of the roads surveyed were not meeting BMPs at stream crossings.²² Even when BMPs are implemented correctly, they are designed to be effective only in the ordinary case, not the extraordinary case. Unpredictable weather, abnormally steep terrain, and other factors may combine to reduce or eliminate the effectiveness of BMPs. Additionally, the EA commits to avoiding the use of skidders on sustained slopes over 35% as a “mitigation measure.” (EA at 31). Most of the Tuckaluge Spur unit is located on sustained slopes over 35%, reducing the amount of this stand which is available for harvest. Comparison of the risks inherent in attempting to harvest timber on very steep slopes immediately upstream of a Clean Water Act § 303(d) impaired stream with

²² The project's RAP acknowledges that culverts in the project area are blocking aquatic organism passage. (RAP at 12). Even existing forest roads which are exempt from CWA section 404 permits must comply with certain mandatory federal and state BMPs. (33 C.F.R. § 323.4(a)(6); *see* Corps RGL 86-03). These BMPs include requirements that road/stream crossings must not restrict flood flows or aquatic organism passage. A goal of this project, and a much better expenditure of the agency's limited road funds, should be to ensure that all roads which are retained in the project area comply with these BMPs for stream crossings.

any perceived benefit of harvesting timber only on those portions of the stand on sustained slopes *less than 35%* calls for dropping this stand from the project altogether.

1) Clean Water Act § 404

The EA fails to address the fact that Clean Water Act § 404 permits will be required to extend the Tuckaluge Spur Road by a mile. To be adequate, the EA must acknowledge that § 404 permits are necessary and assess the likelihood of obtaining the permits. In this instance, § 404 permits cannot be obtained, precluding the proposed Tuckaluge Creek Spur extension.

Clean Water Act § 404 requires a permit from the U.S. Army Corps of Engineers to discharge dredged or fill material into waters of the United States unless the discharge is for the purpose of an exempt activity. (33 U.S.C. § 1344(f)(1)(E)). Forest roads are exempt only if the road is intended to be used *solely for silvicultural activities and silvicultural support activities*. (U.S. Army Corps. of Engineers, Regulatory Guidance Letter (RGL) 86-03, “Exemptions to CWA-Roads: Section 404(f)(1)(E) Exemption of Farm and Forest Roads (33 C.F.R. Part 323.4(a)(6)) (April 4, 1986)(emphasis added)). The Tuckaluge Spur extension is not intended to be used solely for silvicultural activities but principally to “maintain public access through this area” if the Tuckaluge Creek Road is decommissioned. (RAP at 3). As a result, it does not qualify for the forest road exemption.

The proposed Tuckaluge Spur extension requires five stream crossings. (EA at 54). Reconstructing the existing 2.1 miles of road requires four additional stream crossings many of which will have to be upgraded. These crossings cannot receive § 404 permits because there are other less environmentally damaging alternatives to the proposed reroute available and because the reroute would contribute to a violation of state water quality standards.

To obtain a permit, the Forest Service must show that there is no “practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem.” (40 C.F.R. § 230.10(a)). Army Corps Section 404 Guidelines establish rebuttable presumptions that (i) alternatives for non-water dependent activities that do not involve special aquatic sites exist; and (ii) alternatives that do not involve special aquatic sites have less adverse impact on the aquatic environment. (40 C.F.R. § 230.10(a)(3)). Streams in the project area, including those impacted by the Tuckaluge Spur reroute, are defined by riffle and pool complexes (EA at 138) which are considered “special aquatic sites.” (40 C.F.R. § 230.45). Because the proposed reroute will impact special aquatic sites and because a roadway is not a water-dependent activity, no permit may be issued unless the Forest Service clearly demonstrates that there is no practicable alternative. (See 40 C.F.R. § 230.10(a)(3)). But here there already is a practicable alternative – improving the existing Tuckaluge Creek road to reduce sediment loading to nearby streams. The proposed reroute cannot be implemented because a practicable alternative to the discharges required to implement the reroute exists, meaning it cannot obtain § 404 permits.

Furthermore, “[n]o discharge of dredged or fill material shall be permitted if it . . . [c]auses or contributes . . . to violations of any applicable State water quality standard.” (40 C.F.R. § 230.10(b)(1)). Warwoman Creek is listed on Georgia’s 303(d) list as impaired for sediment. By definition, 303(d) listed waters are not meeting state water quality standards. As

discussed above the proposed reroute, including the discharge of fill material resulting from stream crossings, will result in a net increase in sediment loading to Tuckaluge Creek which empties directly into Warwoman Creek. For the additional reason that the proposed reroute will contribute to an ongoing violation of a state water quality standards in Warwoman Creek it cannot obtain § 404 permits.

Conclusion

Georgia ForestWatch, the Southern Environmental Law Center, and the Georgia Chapter of the Sierra Club recommend that the following changes be incorporated into the project:

- Do not force fire, either in terms of extent or habitat, into areas that do not readily burn. This practice requires both limiting the number of ignitions, and restricting the location of ignitions to ridges and south facing slopes. This practice will reduce the total area burned and help mimic natural, ecologically beneficial fire patterns.
- Details describing how prescribed burns will be implemented, including number of ignition points, topographic positions to be lit, and long term plans for changes in the burn frequency, should be explicitly stated in the final Environmental Assessment and draft Decision. These plans should be coupled with a program that monitors both the full spectrum of prescribed burning goals and potential damage.
- Woodland treatments in productive, moist sections of the Sandy Ford area (CS 46029, CS 46006, and CS 46007) should be dropped from the project.
- Mesic site species should be retained in mesic parts of intermediate oak-pine thinning and oak-pine regeneration treatments.
- Ground based logging should be avoided on slopes over 35%, which are widespread within vegetation management areas. For this and other reasons, the especially steep and moist stands CS 44001 and CS 52009, should be dropped from the project.
- Invasive species represent one of the greatest threats to the ecological integrity of CONF, and widespread invasion of previously native dominated forest could overwhelm all the benefits provided by this project. To avoid that fate, the road daylighting should be dropped from this project or the Forest Service should commit to regular monitoring and eradication of NNIS in these areas, beginning prior to implementation and lasting throughout the duration of the treatment.

Similar monitoring and eradication for NNIS should occur in *all* treatments in the project that open the forest canopy, particularly in the woodland, oak regeneration and prescribed burn units.

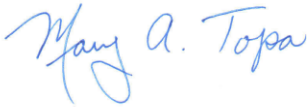
- The project's impacts on roadless characteristics of the Windy Gap uninventoried roadless area should be analyzed. The area should be managed consistent with the provisions of the 2001 roadless rule and in a way that preserves the area for inclusion

in the next roadless inventory to be completed as part of the next Forest Plan revision. At a minimum, avoiding both commercial logging in Windy Gap and construction of Tuckaluge Spur Road are alternatives that must be fully considered under NEPA.

- Extending the Tuckaluge Spur Road to address the sedimentation issues created by the Tuckaluge Creek Road is neither likely to be effective nor feasible. Sedimentation analysis in the EA indicates the extension would actually increase sedimentation over the next decade, a major concern given the impaired waterways immediately downstream. The agency also cannot obtain necessary Clean Water Act § 404 permits for the road extension and reconstruction, and the \$900,000 needed for the extension and reconstruction may make the project cost prohibitive, in addition to being fiscally irresponsible. The plans for new road construction should be dropped, and instead the problematic section of Tuckaluge Creek Road should be improved and likely paved.

We appreciate your willingness to engage the public in seeking input regarding this project and look forward to answering any questions the district might have and continuing our dialogue about this project. Georgia ForestWatch would very much like to be kept informed of any changes in the project, especially as these changes may apply to issues referred to in our response, but also to those of other interested groups. We look forward to reviewing the final Environmental Assessment, as well as engaging in any other opportunities for public participation in this project.

Sincerely,



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Attachment: GFW Appendix Warwoman 4.6.15 Response