

2014 Monitoring and Evaluation Annual Report

Revised Land and Resource Management Plan Sumter National Forest

September 22, 2015



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Forest Supervisor's Certification

I have evaluated the monitoring results and recommendations in this report. I have directed that the action plan developed to respond to these recommendations be implemented according to the periods indicated, unless new information or changed resource conditions warrant otherwise. I have considered funding requirements in the budget necessary to implement these actions.

With these completed changes, the *Revised Land and Resource Management Plan, Sumter National Forest* is sufficient to guide management activities unless ongoing monitoring and evaluation identify further need for change.

Any amendments or revisions to the forest plan will be made using the appropriate National Environmental Policy Act procedures.

/s/ John Richard Lint

John Richard Lint

Forest Supervisor

Francis Marion and Sumter National Forests

9/22/2015

Date

Executive Summary - 2014 Monitoring and Evaluation Annual Report Findings

Ecosystem Condition, Health and Sustainability

- Timber sales and prescribed burning continue to be the major vegetation management treatments that the forest uses to create or maintain desired vegetation conditions. Nonnative invasive (NNIS) species control and wildlife management activities also help achieve desired vegetation conditions particularly for threatened, endangered and sensitive plants.
- The Sumter National Forest sold 11.3 MMCF of wood products in 2014. The timber program emphasizes first and intermediate thinnings and regeneration harvest to keep stands/forests healthy. Regeneration harvest is used to develop early successional habitat that: benefits wildlife; promotes desirable understories of grasses and forbs; provides a sustainable wood supply; and, establishes a range of age classes across the forest. Woodland establishment and maintenance is also accomplished mostly through commercial timber harvest and provides habitat for a variety of wildlife and plant species that are in limited supply on the forest. Commercial timber harvesting provides jobs and economic input to local communities as well as provides funding for other forest/watershed restoration work.
- Non-native loblolly pine removal harvest and conversion back to native tree species has already taken place on 1,790 acres on the Andrew Pickens Ranger District. Approximately 4,892 acres of stands typed as loblolly pine remain. Most of these stands will be converted to native species types over the next five to seven years.
- Two thousand six hundred and eleven acres of non-native invasive (NNIS) species were treated on the Sumter in 2014 (1,631 acres on the Enoree, 932 acres on the Long Cane and 48 acres on the Andrew Pickens).
- On the Enoree, 558 acres of NNIS plants were controlled to improve habitat for native canebrakes. On the Long Cane, 543 acres of NNIS plants were controlled to improve basic mesic and native canebrake communities within the Turkey/Stevens Creek corridor. On the Long Cane, 11 acres of NNIS plants were treated along roadsides adjacent to a post oak savanna.
- Timber sales and other vegetative treatments on the Enoree and Long Cane Ranger Districts are being used to increase the amount of oak forest types. This has included 4,358 acres of commercial thinning, 1,258 acres of precommercial thinning and 821 acres of herbicide release treatments of desirable hardwood species.
- Trends in early, mid and late successional habitat have changed little in the last several monitoring reports. Early successional habitat for management prescription 9G2 is within the lower end of the desired percentage range. Early successional habitat in management prescription 10B has increased, but remains well below the desired percentage.
- Approximately 85 acres of wetland habitat was restored on the Enoree Ranger District (McCullough Road, 15 acres; compartment 104, 40 acres; and Brazzlemans Bridge, 30 acres). Ten ephemeral wetlands were restored on the Long Cane Ranger District in compartment 270.

- A decision is in place to add large wood to Howard Creek (a trout stream being restored on the Andrew Pickens Ranger District) through a cooperative effort with South Carolina Department of Natural Resources.
- Habitat improvement activities and monitoring were done for the following plant species populations:

Smooth Coneflower (*Echinacea laevigata*) - Endangered

- Smooth coneflower habitat was improved on Barton Creek Road on the Andrew Pickens Ranger District.

Miccosukee Gooseberry (*Ribes echinellum*) - Threatened

- Approximately 720 acres were prescribed burned to improve habitat for Miccosukee gooseberry and Georgia aster on the Long Cane Ranger District. USDA Animal and Plant Health Inspection Service (APHIS) began trapping hogs (a non-native species) in the area in May of 2015. NNIS plants were also treated with herbicide.

Georgia Aster (*Symphotrichum georgianus*) – Sensitive: Candidate for federal listing

- Georgia aster populations were monitored on the two piedmont Districts. Of 12 geographically distinct populations, plus one introduced; only one appears to be stable – the population in McCormick County maintained by Duke Energy and South Carolina Electric and Gas (SCE&G) through a special use permit (more than 2,000 plants).
- Actions to restore or maintain Georgia aster include:
 - 25 acres adjacent to a Georgia aster population were masticated and seeded with native grasses and forbs, providing additional habitat
 - 720 acres in compartment 314 on the Long Cane were prescribed burned to benefit Georgia aster and Miccosukee gooseberry habitat.

Species Monitoring Activities

- On the Andrew Pickens, two new populations/sub-populations of Piedmont barren strawberry (*Waldsteinia lobata*), three new populations of whorled horsebalm (*Collinsonia verticillata*) and two new populations of mountain witch alder (*Fothergilla major*) were found. Piedmont barren strawberry is a U.S. Fish and Wildlife Service at risk species “petitioned to list and for which a positive 90-day finding has been issued (listing may be warranted)”;

- At least 18 new occurrences of Piedmont aster (*Eurybia mirabilis*) and at least two new occurrences of Oglethorpe oak (*Quercus oglethorpensis*) were found along 13 miles of lower Turkey Creek on the Long Cane Ranger District.
- Two occurrence of Spider lily (*Hymenocallis coronaria*) were monitored on the Long Cane; only the Savannah River population was located and counted.
- Four bald eagle nests were monitored on the Enoree in 2014, three of which were active.
- Thirteen rare communities were documented on the Andrew Pickens. Twelve of these were wetland seeps including the Piedmont/Blue Ridge springhead seepage swamp, Southern Appalachian herb bog, montane low elevation seep and the saturated Appalachian/Piedmont alder thicket. The other rare community type documented represents a basic mesic forest community as part of the southern and central Appalachian cove forest ecosystem.
- Several rare communities were documented along lower Turkey Creek including: basic mesic forests; river bluffs; and, two Piedmont upland depression swamps. The latter is dominated by willow oak and dwarf palmetto including new occurrences of Oglethorpe oak.

Wildlife Demand Species and WMA Permits Sold

- There has been a steady decline in quail coveys since 1988 across the state according to survey counts. However, stable to upward trends for bobwhite quail on portions of the piedmont districts have been found in areas being maintained as woodlands (Indian Creek and RENEW areas on the Enoree and Long Cane Ranger Districts, respectively). A large tract of private land was acquired on the Enoree Ranger district in 2014 and will be managed to provide additional openland/woodland habitat on the District.
- In 2004, the Indian Creek Woodland Savanna Restoration Initiative restored woodland savanna habitat on 8,300 acres of the Enoree Ranger District as well as 7,700 acres of private land. In 2014, the District received funding from the Forest Service and the Natural Resource Conservation Service (Joint Chief's). Funds will help accelerate woodland savanna restoration, reduce wildfire risk and enhance water quality on 21,000 acres of public land and 19,000 acres of private land. The restoration will also provide crucial habitat for important and declining grassland birds, including Northern bobwhite, Loggerhead shrike, prairie warbler and Bachman's sparrow.
- The deer harvest for 2014 represents a nine percent increase in harvest from 2013 (225,806) and is 36.7 percent below the record harvest established in 2002 (319,902).
- The overall reduction in turkey harvest seen since 2002 is likely attributed to poor reproduction. The modest increase in the recruitment ratio in 2014 is still below what is considered good. This figure was driven by a high percentage of hens (59%) that had no poults at all by late summer. Lack of reproductive success among eastern wild turkey is often associated with poor weather conditions (cold and wet) during nesting and brood-rearing season.

- The 2014 bear harvest (63 bears) was in line with average state harvest levels.
- The number of WMA permits sold in 2014 was 61,581 (3,354 more than in 2013).

Prescribed Burning and Hazardous Fuels Treatments

- Prescribed burning mostly with some mechanical fuels treatments were completed on just a little over 32,900 acres. This is an increase from the 2013 accomplishments by nearly 6,000 acres.
- The Sumter National Forest saw a shift in Fire Regime Condition Class (FRCC) from the previous FY 2013 report. FRCC 1 increased 60,000 acres forestwide while FRCC 2 decreased by 40,000 acres. FRCC 3 also decreased by 4,500 acres forestwide.
- FRCC 3 acres are continuing to decrease and shift into FRCC 1 due to increased prescribed fire use along with non-commercial and commercial mechanical fuel treatments. Monitoring plots are being installed to track these changes. Stewardship contracts and timber sales are providing more opportunities for treating fuels than existed a few years ago.

Air Quality

- The pollutants of most concern on the Sumter are particulate matter and ozone. Levels of these two pollutants are measured at air monitoring sites near all three ranger districts.
- Since 2009, none of the fine particulate matter monitoring stations near the national forest (Enoree and Long Cane Ranger Districts) are exceeding the current fine particulate matter National Ambient Air Quality Standards (NAAQS) set by the Environmental Protection Agency for either the 24-hour or the annual fine particulate (PM2.5 standard).
- Local and regional PM2.5 concentrations do not appear to be correlated with PM2.5 emissions from prescribed fires based on information for the piedmont districts.
- Ozone levels (three-year average) are below NAAQS limits. Exposure to elevated ozone levels can cause human health concerns and has negative impacts to vegetation.

Watershed Condition and Riparian Areas

- A total of 84 acres were treated to improve soil and water conditions in 2014. This included five acres of continuing treatment/stabilization, 52 acres of gully head stabilization and six acres of road obliteration and stabilization.
- Funds from 2014 were used to develop an aerial fertilization contract, to purchase fertilizer, and to pay for fixed-wing flight time. Approximately 132 acres of soil improvement through fertilization will be implemented in the spring of 2015. This amount is lower than usual.

- Approximately 25 acres of wetland restoration were accomplished in 2014 to help create or improve structural diversity and composition within riparian corridors on the Long Cane and Enoree Ranger Districts.
- Wetland restoration work has consisted of plugging abandoned agricultural ditches and returning normal groundwater levels to wetland areas. As a result, there has been a rapid response from a variety of amphibians, mammals, birds, and wetland plants. Continued monitoring combined with research is planned to determine short and long-term results from this restoration work.
- Approximately 75 acres of wetlands were inspected for wetland function on the Enoree and Long Cane Ranger Districts. No problems were noted.
- A watershed assessment was completed for Hughes Creek and Coxs Creek (two 6th level watersheds on the Enoree Ranger District). Watershed assessments are being used to identify and prioritize ecosystem restoration work. Funding for work comes from a combination of KV, stewardship and appropriated funds. The forest is also pursuing accomplishing restoration work from compensatory mitigation projects in cooperation with the Army Corps of Engineers.

Recreation

- While the human population is increasing, the National Visitor Use Monitoring (NVUM) survey indicated a slight downward trend in recreation use. Almost 79 percent of the people who visited were very satisfied with the overall quality of their recreation experience. Another 16 percent were somewhat satisfied and less than one percent expressed any level of dissatisfaction.
- Developed sites and wilderness scores showed that developed facilities, access and perception of safety all were above the 85% national satisfaction target. Access and perception of safety rated higher than 85% for undeveloped areas.
- The surveys did show that there are areas that could use improvement: overnight sites - improve availability of recreation information and signage; general forest areas - improve restroom cleanliness, in such areas as trailheads; and, wilderness - improve signage.
- The majority of the visiting population is very satisfied with road condition and adequacy of signage forest-wide. Over three quarters of the visiting population also think that road condition and adequacy of signage is very important.
- Localized impacts to riparian areas from recreation activities have been observed through field observation in FY 2014. Most of these were associated with unauthorized trails or uses.
- Motorized trail maintenance continues to be a high priority for the recreation program on the forest. Appropriated funds, recreation fees and grant dollars provide funding. Recreation fees are used almost exclusively for maintaining/reconstructing OHV trails to increase financial and environmental sustainability.

- Impacts from off-highway vehicles (OHV) still occur but are generally at acceptable levels. Wet weather closures on OHV trails continue to work well and have reduced trail damage and associated impacts like rutting in riparian areas and areas adjacent to trails. Geotextiles or other materials are being used in riparian areas to harden trails when these areas cannot be avoided.
- Private boating on the upper segment of the Chattooga Wild and Scenic River has been monitored through a permit system since it started in December 2012. The total number of boaters recorded in 2012-2013 was 185 and in 2013-2014, it was 29.

Heritage Resources

- Forty-nine heritage sites were monitored in 2014. Vandalism or damage was found on four sites and forest users had damaged another site.
- Twenty Priority Heritage Assets including the Badwell Cemetery (38MC360), the Cyper Creek Rhyolite Quarries (38ED675, 38ED740, 38ED 741), Cherry Hill Plantation (38MC712), Orange Hall (38UN145), Rose Cottage (38UN182), the Gist Slave Cemetery (38UN225) and Tyger Village (38UN213) had condition assessments completed.

Miscellaneous

- No new system roads were constructed, 24 miles were reconstructed and about six miles were decommissioned. Approximately 12 miles of timber roads were reconstructed associated with timber sales.
- Travel analysis was completed for the Francis Marion and Sumter National Forest in 2014 (both forests combined) following direction found in the 2005 Travel Management Rule (36 CFR 212.5), Forest Service Manual 7712 and Forest Service Handbook 7709.55-Chapter 20. The report identifies road maintenance funding shortfalls and the minimum road system needed to implement current Forest Plan direction.
- The total system road mileage decreased slightly to 1,085 miles on the forest.
- Payments to the 12 counties within the Sumter National Forest through the Secure Rural School Act Payments were \$1,304,526.
- Approximately 1,315 acres of land were acquired on the Enoree Ranger District in 2014.

Chapter 1 Introduction

The Sumter National Forest is 366,449 acres in size and is located in the central piedmont and western mountains of South Carolina. It is composed of three districts: Andrew Pickens, Enoree and Long Cane. The *Revised Land and Resource Management Plan, Sumter National Forest* (Forest Plan), approved on January 15, 2004, guides management activities on the forest. These lands are managed to provide goods and services for timber, outdoor recreation, water, wildlife, fish and wilderness following multiple-use goals and objectives.

Forest Plan monitoring and evaluation is conducted to determine if the forest is moving toward or achieving the desired conditions for resources and to evaluate impacts of management activities. Forest Service resource specialists, universities, state resource agencies and contract specialists conduct surveys and inventories on a variety of natural resources annually.

New planning requirements (36 CFR 219) were promulgated in 2012 and are commonly referred to as the “2012 Planning Rule”. The 2012 Planning Rule establishes new requirements for monitoring. Further information will be made available to the public relative to the new requirements starting in FY 2016.

Chapter 2 Monitoring Results and Findings

Issue 1. Ecosystem Condition, Health and Sustainability

Sub-Issue 1.1 – Biological Diversity

MQ 1: Are rare ecological communities being protected, maintained, and restored?

Information

This monitoring question is responsive to goal 12, objectives 12.01 and 12.02 and standards FW-30, FW-31 and FW-32.

Objective 12.01: Restore 500 to 2,500 acres of Table Mountain pine forest over the 10-year planning period.

Objective 12.02: Restore 1 percent to 5 percent of the riparian corridor on slopes less than 8 percent in the canebrake community over the 10-year planning period in the Piedmont.

The monitoring elements are defined as follows:

1. Baseline acreage, condition, and distribution of rare communities on the Forest.
2. Rare communities restored. Specifically, Table Mountain pine dominated communities and canebrakes.

Results

1. Thirteen rare communities were documented on the Andrew Pickens by contractor David White, three of which were greater than one acre in size. Twelve of these were wetland seeps including the Piedmont/Blue Ridge springhead seepage swamp, Southern Appalachian herb bog, montane low elevation seep and the saturated Appalachian/Piedmont alder thicket. The other rare community type documented represents a basic mesic forest community as part of the southern and central Appalachian cove forest ecosystem. On the Long Cane, several rare communities were documented along 12 miles of lower Turkey Creek including basic mesic forests, river bluffs and two Piedmont upland depression swamps, the latter dominated by willow oak and dwarf palmetto including new occurrences of Oglethorpe oak. The digital rare community layer for the Sumter is constantly being updated with new information. Currently over 150 occurrences for rare communities are documented with about half on the Andrew Pickens.
2. On the Enoree, 558 acres of non-native invasive plants were controlled to improve habitat for native canebrakes. On the Long Cane, 543 acres of non-native invasive plants were controlled to improve basic mesic and native canebrake communities within the Turkey/Stevens Creek corridor. Native cane restoration efforts along the Chattooga Wild and Scenic River, previously initiated in conjunction with the Chattooga Conservancy, continued in 2014 with the transplanting of river cane rhizomes and removal of competing vegetation. On the Long Cane, 11 acres of non-native invasive plants were treated along roadsides adjacent to a post oak savanna.

Findings

1. Several new rare communities have been found and documented on the forest since the FY2013 report (for Long Cane and Andrew Pickens- above) and since the FY2012 report (Enoree – Atkins Global Survey).
2. The condition of select basic mesic, post oak savanna and native canebrake communities are improving on the Enoree and Long Cane Ranger Districts.0

MQ 2: Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?

This monitoring question is responsive to goal 8, objectives 8.01, 8.02, 8.03, 8.04, 8.05 and 8.06.

Objective 8.01: Restore 2,000 - 6,000 acres of native communities on sites occupied by loblolly pine on the Andrew Pickens during the ten-year planning period.

Objective 8.02: Provide 8,000 - 11,000 acres of woodlands in the piedmont and 4,000 – 5,000 acres of woodlands in the mountains on dry-xeric sites in woodland, savanna, open grassland or shrubland conditions with fire-associated rare communities preferred over the 10-year planning period.

Objective 8.03: Create conditions to restore dry-mesic oak, oak-pine, and pine-oak forest communities on 20,000 acres currently in loblolly pine forest in the piedmont over the 10-year planning period.

Objective 8.04: Increase shortleaf pine and shortleaf pine/oak communities on 2,000 - 10,000 acres in the piedmont. This will be done on sites with low risk of littleleaf disease.

Objective 8.05: Increase structural diversity by creating canopy gaps in one to five percent of closed canopy mid and late-successional mesic deciduous forest (including mixed mesophytic and mesic oak forests). Gaps are defined as small openings (smaller than 2 acres in size) and are designed to release mast-producing species, particularly hard mast (e.g., oak, hickory, walnut) and soft mast bearing trees (e.g. cherry, black gum, persimmon) over the 10-year planning period.

Objective 8.06: Restore more diverse native communities on 1,000 - 2,000 acres currently occupied by white pine stands. Prioritize xeric to intermediate sites over the 10-year planning period.

The monitoring elements are defined as follows:

1. Restore native communities on sites occupied by loblolly pine forest on the Andrew Pickens.
2. Prefer rare communities on dry-xeric sites in the piedmont and mountains.
3. Create conditions to restore dry-mesic oak, oak-pine, and pine-oak communities on the piedmont.
4. Increase shortleaf pine and shortleaf pine/oak communities on the piedmont.
5. Increase structural diversity by creating gaps in 1 to 5 percent of closed canopy mid- and late-successional mesic deciduous forests.
6. Restore sites currently occupied by white pine stands to diverse native communities.

7. What are the trends in management indicator species (MIS) population indices in relationship to major forest community/conditions? Frequency of occurrence trends for hooded warbler, scarlet tanager, pine warbler, Acadian flycatcher and brown-headed nuthatch.

Results

1. **Objective 8.01.** Loblolly pine removal harvest has already taken place on 1,790 acres on the Andrew Pickens Ranger District. The GIS database currently shows 4,892 acres of stands typed as loblolly pine on the district. In addition, a number of stands no longer typed as loblolly pine still have a component of loblolly pine remaining. The table below shows the acreage of loblolly pine removal harvests accomplished or planned to date. This acreage has increased by 837 acres from the previous report.

<u>Timber Sale</u>	<u>EA/Decision</u>	<u>Acres</u>
Village Creek	Village Creek	167
Hell Hole	Chauga Loblolly	90
Chauga 1	Chauga Loblolly	134
Mt Grove Church	Chauga Loblolly	34
Hell Stone Branch	Chauga Loblolly	126
Cedar Creek	Cedar Creek	106
Tamassee Knob	Ross Mt/Tamassee	38
Cherry Cove	Ross Mt/Tamassee	85
Fine Alley	Ross Mt/Tamassee	54
Compartment 26	Ross Mt/Tamassee	119
Garland Fields	Loblolly Pine Removal	186
Turkey Ridge	Loblolly Pine Removal	149
Cut/leave FY14	Loblolly Pine Removal	<u>502</u>
	Total to Date	1,790

2. **Objective 8.02.** Existing and planned woodland habitat areas:

<u>Acres</u>	<u>District</u>	<u>Area or project</u>
360	Andrew Pickens	Garland tract
207	Andrew Pickens	Cedar Creek project
144	Andrew Pickens	Compartment 61
784	Andrew Pickens	Loblolly Pine Removal/Restoration
447	Enoree	Lower Enoree – Indian Creek project
840	Enoree	Indian Creek Woodlands
964	Long Cane	Renew project
<u>130</u>	Long Cane	Post Oak Savannah
3,800		

Though this acreage is significant, it is much less than the plan objective. It is unchanged from the previous report.

3. **Objective 8.03.** Activities to increase oak types on the piedmont in FY 2014 included

- 4,358 acres of commercial thinning
- 1,258 acres of precommercial thinning
- 821 acres released by herbicide applied with a directed foliar spray

Silvicultural prescriptions generally emphasize release of desirable oaks and hickories where possible. This is especially significant in stands that are regenerated. In the commercial thinning, precommercial thinning, and herbicide release treatments above, oak species are favored for retention and other species are discriminated against.

863 acres of the commercial thinning above were in management prescription 9G2 – Restoration of Upland Oak-Hickory and Mixed Pine-Oak Hickory Forests. Harvest and stand improvement activities depend upon where environmental assessments have been done and are not spread evenly across management prescriptions in any given year.

Table 1 displays the result of a GIS query relative to the number of acres in pine types and oak types on the piedmont districts and in management prescription 9G2.

Table 1. Acres in Pine and Oak Types on Piedmont Districts and in Management Prescription 9G2

Area or Mgt. Prescription	Loblolly and Virginia Pine	Oak Types
Piedmont Districts	202,939	61,319
9G2 Mgt. Prescription	29,903	10,622

4. **Objective 8.04.** The GIS database currently shows 3,126 acres of shortleaf pine on the piedmont. This is 53 acres more than reported in FY 2013.
5. **Objective 8.05.** No activities were implemented to create small canopy gaps in FY 2014.
6. **Objective 8.06.** The GIS database currently shows 6,954 acres of white pine type on the Andrew Pickens Ranger District. This is 177 acres higher than last year. The district has a project in the planning stages to meet this objective.
7. Information relative to this question was last addressed in the 2013 Sumter Monitoring Report.

Findings

1. Steady progress is being made toward Objective 8.01. This objective should be met within the next year or two.
2. Objective 8.02 is unlikely to be fully achieved during the planning period at current funding and staffing levels given the number of woodland, grassland, savanna, and shrubland projects being planned.
3. Thinning piedmont loblolly pine stands will allow sunlight to reach the forest floor and should help stimulate advanced regeneration of oaks and hickories (Objective 8.03). Though few

loblolly pine stands are being converted to oak types, the oak component is typically increasing in regenerated stands.

In 2014, the District received funding from the Forest Service and the Natural Resource Conservation Service. Funding will help accelerate woodland savanna restoration, reduce wildfire risk and enhance water quality on 21,000 acres of public land and 19,000 acres of private land in the Indian Creek Project Area (phases I and II). The restoration will also provide crucial habitat for important and declining grassland birds, including Northern Bobwhite, Loggerhead Shrike, Prairie Warbler and Bachman's Sparrow.

4. The objective of restoring shortleaf pine communities is unlikely to be achieved during the planning period because few areas with adequate soil conditions are being found. To stay relatively free from littleleaf disease, shortleaf pine needs good soil depth (approximately 8"+ topsoil) with well drained to moderately well drain soils. Past erosion has generally left such soils in very few places. The areas found thus far tend to be very small, isolated parts of certain ridges or flats (Objective 8.04).
5. No projects were implemented to create canopy gaps (Objective 8.05).
6. No projects were implemented in white pine stands in FY 14. However, the project in early planning stages should meet this objective (Objective 8.06).
7. Refer to the 2013 Sumter Monitoring Report for the most recent updated information.

MQ 3: Are key successional stage habitats being provided?

Information

This monitoring question responds to goals 8 and 13; desired conditions for management prescriptions 7.E.2, 8.A.1, 8.B.2, 9.A.3, 9.G.2 and 10.B; and standard FW-33. The monitoring elements are defined as:

1. Trends in early, mid and late successional habitat by management prescription group.
2. The number of acres, conditions and distribution of existing old growth.
3. Trends in MIS population indices in relationship to major forest community/conditions to help indicate the effects of management on successional habitats. Frequency of occurrence trends for prairie warbler, Swainson's warbler, field sparrow and American woodcock.

Results

1. Trends in early, mid and late successional habitat by Management Prescription have changed little in the last several reports. Early successional habitat for management prescription 9G2 is within the lower end of the desired percentage. Early successional habitat in management prescription 10B has increased, but remains well below the desired percentage. See Table 2 for early, middle and late successional habitat by management prescription.

Table 2. Amount of Early, Middle and Late Successional Habitat by Management Prescription

Management Prescription	Total Forested Acres	Successional Stage	AP (acres)	EN (acres)	LC (acres)	Desired Percentage	Actual Percentage
7E2	60,165	Early	0	1,054	509	4-10	3%
		Mid to late	10,539	22,954	22,148	50+	92%
		Late	7,353	11,359	12,372	10+	52%
8A1	36,678	Early	980			4-10	3%
		Mid to late	32,452			50+	88%
		Late	21,077			10+	57%
8B2	7,679	Early		14	379	10-17	5%
9A3	11,221	Early		42		4-10	>1%
		Mid to late		11,056		50+	99%
		Late		4,910		10+	44%
9G2	41,791	Early		718	1,467	4-10	5%
		Mid to late		22,268	15,551	50+	91%
		Late		11,076	8,198	10+	46%
10B	136,518	Early		5,693	3,728	10-17	7%
		Mid to late		65,596	53,676	20+	88%
		Late		35,522	29,067	10+	48%

2. Information relative to this question was last addressed in the 2013 Sumter Monitoring Report. Table 3 was revised and acreage by physiographic type is now included.

Table 3. Old Growth Acres and Stand Count by Forest Community Type and Physiographic Area

COMMUNITY TYPE	SOUTHERN BLUE RIDGE		SOUTHERN PIEDMONT		TOTAL	
	COUNT	ACRES	COUNT	ACRES	COUNT	ACRES
Conifer-Northern Hardwood Forest	6	662	0	0	6	662
Dry-Mesic Oak Forest	51	3,462	5	102	56	3,564
Dry-Xeric Oak Forest, Woodland, Savannah	6	255	1	24	7	279
Dry, Dry-Mesic Oak-Pine Forest	105	5,928	1	182	106	6,110
Eastern Riverfront	0	0	10	947	10	947
Mixed Mesophytic Forest	9	1,063	0	0	9	1,063
River Floodplain Forest	8	254	104	6,432	112	6,686
Xeric Pine and Pine/Oak Forest, Woodland	43	2,298	0	0	43	2,298
TOTAL	228	13,923	121	7,686	349	21,609

3. Refer to the 2013 Sumter Monitoring Report for information relative to MIS.

Findings

1. Table 2 indicates that all management prescriptions have an abundance of mid-late successional stage acreage, and late successional stage acreage in comparison with desired conditions. In contrast, all management prescriptions are “below” to “far below” the desired condition for early successional stage forest, except for management prescription 9G2. Many projects are in progress to address this need, and several projects have signed decisions and are waiting for implementation. However, budgets and personnel are also a limiting factor in achieving the desired conditions. NEPA process compliance and costs are also a factor.
2. The number of stands in the 100-year age class has increased since the last report.
3. Refer to the 2013 Sumter Monitoring Report for information relative to MIS.

MQ 4: How well are key terrestrial habitat attributes being provided?

Information

This monitoring question is responsive to goals 3, 4, 8 and 9, Objective 9.01 and standard FW-18. Objective 9.01 is to construct or restore wetlands on 600 acres in the riparian corridor on the piedmont over the 10-year planning period.

The monitoring elements are defined as follows:

1. Acres, conditions and distribution of wetland habitats and ephemeral wetlands.
2. Trends in MIS population indices in relationship to major forest communities/conditions. Frequency of occurrence trends in pileated woodpecker.
3. Trends in hard mast production capability.

Results

1. Wetland restoration projects were implemented during FY 2014 on the Enoree and Long Cane Ranger Districts. Approximately 85 acres were restored on the Enoree Ranger District (McCullough Road, 15 acres; compartment 104, 40 acres; and Brazzlemans Bridge, 30 acres). Ten ephemeral wetlands were restored on the Long Cane Ranger District in compartment 270. Four waterfowl management areas are located on the Enoree Ranger District: Dunaway (eight acres), Duncan Creek (12 acres), Enoree (26 acres), and Tyger River (91 acres). All areas were flooded during FY 2014 except for Duncan Creek, which was being repaired.
2. Refer to the 2013 Sumter Monitoring Report for information relative to MIS.
3. Table 4 displays the results of the 2014 hardmast survey conducted by the South Carolina Department of Natural Resources and compares it to previous surveys.

Table 4. Hard Mast Crop Quality, South Carolina Mountains, 2012-2014

Hard Mast Species	Crop Quality		
	2012	2013	2014
White Oak	Poor	Poor	Good
Red Oak	Fair	Poor	Good
Chestnut Oak	Poor	Poor	Fair
Hickory	Poor	Poor	Good

Findings

1. Additional wetland restoration projects are planned on the Forest.
2. Refer to the 2013 Sumter Monitoring Report for information relative to MIS.
3. Hard mast production is quite variable across the mountains from year to year.

MQ 5: What is the status and trend in aquatic habitat conditions in relationship to aquatic communities?

Information

This monitoring question is responsive to goals 3 and 4 and Objective 11-OBJ-2. Objective 11-OBJ-2 is to restore and enhance stream habitat and aquatic communities on 50 miles of streams. This includes woody debris, stream bank stabilization, brook trout restoration and in-stream habitat improvement.

The monitoring elements are defined as follows:

1. Trends in the composition and abundance of macroinvertebrate communities.
2. Trends in the composition and abundance of stream fish communities.
3. Trends in aquatic habitat conditions. Perennial and intermittent streams are managed in a manner that provides a source for large wood to channels.
4. Improve, rehabilitate, or restore aquatic habitat.

Results

1. Refer to the 2013 Sumter Monitoring Report for information on the most recent macroinvertebrate surveys. Macroinvertebrate surveys are planned in FY 2016.
2. No aquatic surveys were conducted on the piedmont Districts in 2014. However, surveys are planned beginning in FY 2016. Trout streams are monitored annually on the Andrew Pickens Ranger District and results are presented in Tables 5 and 6. Three fish species found on the Andrew Pickens Ranger District (white sucker, rainbow trout and brown trout) are considered non-indigenous (Warren, et al. 2000). The remaining species captured are native to the watersheds.

Table 5. Fish Surveys Sites Sampled on the Andrew Pickens Ranger District and Species Captured

Stream	Site #	Watershed	# Species Captured				
			2010	2011	2012	2013	2014
Chattooga River							
<i>Big Bend Site</i>		Chattooga River			13		
<i>Ellicott Rock Site</i>		Chattooga River		15			
<i>Spoonauger Site</i>			16				16
Pigpen Branch	1	Chattooga River					2
	2						3
Tamassee Creek	1	Chattooga River					
	2						
	3		1				
Crane Creek	1	Cheohee Creek	1	1	1		1
<i>Left Trib Site</i>	2		1	1	1	1	1
Jacks Creek	1	Chattooga River			1		1
Howard Creek		Whitewater River		5			
<i>Lower</i>			5				
<i>Upper</i>			2				
Limber Pole Creek		Whitewater River		1			
Moody Creek		Cheohee Creek				1	1
	3		3				
King Creek	1	Chattooga River					
<i>Lower</i>			1	1	1		1
<i>Middle</i>			1	1	1		1
<i>Upper</i>			1	1	1	1	1
Indian Camp Branch	1	EF Chattooga River	2				
	2						
Ira Branch		Chattooga River	1				
Corbin Creek		Whitewater River		7			
<i>Lower</i>			3				
<i>Upper</i>			3				
Laurel Fork Creek		Whitewater River	5				
Coley Creek		Whitewater River		0			
Whetstone Creek		Chattooga River		8			
Swafford Creek				1			
Long Creek				4			
Toxaway Creek				9			
Rocky Fork Creek				5			

Table 6. Species Captured in Andrew Pickens Ranger District Streams

Species		2010	2011	2012	2013	2014
Catostomidae						
<i>Catostomus commersoni</i>	White sucker	x	x	x		x
<i>Hypentelium nigricans</i>	Northern hogsucker		x			
<i>Moxostoma rupiscartes</i>	Striped jumprock	x	x	x		x
Centrarchidae						
<i>Lepomis auritus</i>	Redbreast sunfish	x	x	x		x
<i>Lepomis macrochirus</i>	Bluegill					x
<i>Lepomis microlophus</i>	Redear sunfish		x			
<i>Micropterus coosae</i>	Redeye bass		x			
Cottidae						
<i>Cottus bairdi</i>	Mottled sculpin	x	x	x		x
Cyprinidae						
<i>Campostoma anomalum</i>	Central stoneroller	x	x	x		x
<i>Clinostomus funduloides</i>	Rosyside dace	x	x			x
<i>Hybopsis rubrifrons</i>	Rosyface chub		x			
<i>Luxilus coccogenis</i>	Warpaint shiner	x	x	x		x
<i>Nocomis leptocephalus</i>	Bluehead chub	x	x	x		x
<i>Notropis lutipinnis</i>	Yellowfin shiner	x	x	x		x
<i>Notropis spectrunculus</i>	Mirror shiner	x	x	x		x
<i>Rhinichthys cataractae</i>	Longnose dace	x	x	x		x
<i>Rhinichthys atratulus</i>	Blacknose Dace	x	x			x
<i>Semotilus atromaculatus</i>	Creek chub		x			x
Ictaluridae						
<i>Noturus insignis</i>	Margined madtom		x			
Percidae						
<i>Etheostoma hopkinsi</i>	Christmas darter		x			
<i>Etheostoma inscriptum</i>	Turquoise darter	x	x	x		x
Salmonidae						
<i>Oncorhynchus mykiss</i>	Rainbow trout	x	x	x		x
<i>Salmo trutta</i>	Brown trout	x	x	x		x
<i>Salvelinus fontinalis</i>	Brook trout	x	x	x	x	x

3. Aquatic habitat surveys are planned in FY 2016.
4. A decision is in place to add large wood to Howard Creek (a trout stream on the Andrew Pickens Ranger District). Habitat improvement work is being planned for FY 2016 for all Districts. This work will include but is not limited to installation of aquatic passable culverts and large wood to streams.

Findings

1. Refer to the FY 2013 Monitoring report for the most current information.
2. Surveys in 2014 indicated a high number of species. Rosyside dace is a good indicator of high quality small mountain streams.
3. Refer to the FY 2013 Monitoring report.

4. No aquatic passable culverts were installed or large wood added to streams in FY 2014.

MQ 7: What are the status and trends of federally listed species and populations or habitats for species with viability concerns on the Sumter National Forest?

Information

This monitoring question is responsive to goals 4, 10 and 12, Objectives 10.01 and 10.02, and standards 9F-1 through 9F-8 and FW-25 through FW-28.

Objective 10.01: To maintain or restore at least eight self-sustaining populations for smooth coneflower and, if possible, four populations for small whorled pogonia on the Andrew Pickens, including the habitat to support them.

Objective 10.02: To maintain or restore at least eight self-sustaining populations for Georgia aster and one population for Florida gooseberry on the piedmont districts and the habitat to support them.

The monitoring element is defined as follows:

1. Trends in recovery of threatened and endangered species (TES), and status and distribution of some viability concern species that are not specifically identified under other elements. Species targeted under this element will be determined through periodic review of each species' status and conservation priority. Priorities will likely vary through the life of the forest plan, as new information is available.

Results

Smooth Coneflower (*Echinacea laevigata*)

Restoration and maintenance efforts in FY 2014 included habitat improvement on 13 acres of smooth coneflower on Barton Creek Road.

Miccosukee Gooseberry (*Ribes echinellum*)

Restoration/maintenance efforts in C-314 on the Long Cane included 720 acres that were prescribed burned to benefit Miccosukee gooseberry (and Georgia aster). USDA Animal and Plant Health Inspection Service (APHIS) began trapping hogs in the area in May of 2015. Compartment 314 was treated for non-native invasive plants in FY 2012. Another treatment is scheduled in 2016.

Persistent Trillium (*Trillium persistens*)

There is no new information to report since the 2013 Monitoring report.

Georgia Aster

Monitoring for Georgia aster, a candidate for federal listing, occurred on the Piedmont districts of the Sumter in 2014. Of 12 geographically distinct populations, plus one introduced; only one appears to be stable – the population in McCormick County maintained by Duke Energy and South Carolina Electric and Gas (SCE&G) through special use permit (more than 2,000 plants).

Actions to restore or maintain Georgia aster include:

- 25 acres adjacent to a Georgia aster population were masticated and seeded with native grasses and forbs, providing additional habitat
- 720 acres in C-314 on the Long Cane were prescribed burned to benefit Georgia aster (and Miccosukee gooseberry).

Sensitive Plants

Contractor David White documented new occurrences on the Andrew Pickens and Long Cane, including the following:

- On the Andrew Pickens, two new populations/sub-populations of Piedmont barren strawberry (*Waldsteinia lobata*), three new populations of whorled horsebalm (*Collinsonia verticillata*) and two new populations of mountain witch alder (*Fothergilla major*) were found. Piedmont barren strawberry is a U.S. Fish and Wildlife Service at risk species “petitioned to list and for which a positive 90-day finding has been issued (listing may be warranted)”;
- On the Long Cane along 13 miles of lower Turkey Creek, at least 18 new occurrences of Piedmont aster (*Eurybia mirabilis*) and at least two new occurrences of Oglethorpe oak (*Quercus oglethorpensis*) were found.

Two occurrence of Spider lily (*Hymenocallis coronaria*) were monitored on the Long Cane; only the Savannah River population was located and counted.

Carolina Heelsplitter

There is no new information to report since the 2013 Monitoring report.

Brook Floater

There is no new information to report since the 2013 Monitoring report.

Webster’s Salamander

There is no new information to report since the 2013 Monitoring report.

Bald Eagle

Four nests were monitored on the Enoree in 2014, three of which were active.

Findings

1. There are no additional findings from previous monitoring reports.

MQ 8: What are the trends for demand species and their use?

Information

This monitoring question is responsive to goals 8, 22 and 23 and Objective 23.01. Objective 23.01 is to maintain or improve 150 acres of ponds/lake habitat for recreational fisheries.

The monitoring elements are defined as follows:

1. Trends in harvest data for bobwhite quail, white-tailed deer, Eastern wild turkey and black bear; wildlife management area (WMA) permits sales, turkey tags and bear permits issued.
2. Trends in MIS population indices in relationship to major forest community/conditions. Frequency of occurrence trends in bobwhite quail, Eastern wild turkey and black bear.
3. Maintain or improve ponds/lakes for recreational fisheries.

Results

1. Every year since 1988, the South Carolina Department of Natural Resources (SCDNR) has conducted the Bobwhite Quail Hunter Survey. The purpose of the survey is to collect quantitative information on hunter success, which aids biologists in tracking quail population trends. Statewide, the 2013-2014 survey shows that hunters flushed an average of 0.48 coveys per hour, the same as the 2012-2013 season.

During the 2014 deer season, it is estimated that 109,446 bucks and 93,506 does were harvested for a statewide 202,952 deer.

During the 2014 spring season, it is estimated that a total of 14,649 adult gobblers and 1,599 jakes were harvested for a statewide 16,248 turkeys. This figure represents a 15% decrease in harvest from 2013 (19,211) and a 36% decrease from the record harvest established in 2002 (25,487). Even though all individuals receiving a set of SCDNR-issued Turkey Transportation Tags were licensed to hunt turkeys, only 42% actually hunted turkeys. Based on this figure, approximately 45,945 hunters participated in the 2014 spring turkey season, a 9% decrease from 2013 (50,752).

During the 2014 black bear season, 63 bears were harvested (Mountain harvest only), a decrease of 64 bears when compared to the 127 harvested during 2013. There were 1,195 permits sold in 2014 (Mountain permits only), a decrease from 2013 (1,285).

Funds generated from the sale of wildlife management area (WMA) permits enable the South Carolina Department of Natural Resources to lease approximately 1.1 million acres of land for wildlife conservation and management. With nearly 300,000 acres enrolled in the WMA program, the US Forest Service is the largest landowner in the program. In 2014¹, there were 61,581 WMA permits sold (8,561 resident WMA permits, 1,817 non-resident WMA permits, 46,193 Sportsman's Licenses, and 5,010 Junior Outdoor Licenses).

2. Bird monitoring is conducted every year on the Sumter National Forest. The information is compiled annually into a Southeast Region database (R8 bird data). Detailed results were last reported in the FY 2013 Monitoring report.

Breeding Bird Survey data from 1966-2012 indicate that the bobwhite quail population in South Carolina has declined 6.4% annually (Sauer et al. 2014). Despite the state-wide downward population trend, bobwhite quail numbers appear to be stable or increasing on portions of the Enoree and Long Cane Ranger Districts, particularly in areas that are managed as fire-dependent woodlands (e.g., the Indian Creek Project on the Enoree Ranger District and the RENEW Project on the Long Cane District).

The Enoree and Long Cane Ranger Districts have two large areas that are managed to provide woodland habitat (Indian Creek and RENEW, respectively). The Indian Creek area will be expanded in the near future to include the recently acquired Delta Tract. Vegetative management treatments are planned including herbicide spraying, mastication, mowing and prescribed burning. Vegetative management treatments including prescribed burning and timber harvesting along with development of native species will enhance habitat for a number of bird species including some that are tracked as MIS (including turkey).

SCDNR turkey brood surveys indicate that statewide turkey recruitment increased in 2014. The average brood size of 3.9 poults remained relatively consistent and the total recruitment ratio of 1.6 was actually up about 23% from 2013. Recruitment ratio is a measure of young entering the population based on the number of hens in the population.

In South Carolina, there are two resident populations of black bears, one in the mountains and upper piedmont and one in the coastal plain. Bear populations are increasing and their range is expanding in South Carolina. Based on a 2003 bear population study, SCDNR estimates the upstate bear population to be over 1,000 bears. In 2014, SCDNR and the Sumter National Forest continued working on a project that will be used to produce an updated estimate of the mountain population of black bears.

3. There are twelve recreational fishing ponds totaling 94 acres on the Sumter National Forest. Largemouth bass and bream are the primary fish in the ponds. A few of the ponds have been stocked with catfish. Population monitoring and water chemistry was assessed in ponds in 2014. Habitat improvement with the addition of trees and brush occurred in 70 acres of Strom Thurmond Reservoir on the Long Cane Ranger District and in 36 acres of 5 fishing ponds on the Enoree Ranger District.

¹ The SCDNR 2014 license year goes from July 1, 2014 through June 30, 2015. The figures reported here represent data from July 2014 through February 2015.

Findings

1. There has been a steady decline in quail coveys across the state since 1988 according to survey counts.

The deer harvest for 2014 represents a nine percent increase in harvest from 2013 (225,806) and is 36.7 percent below the record harvest established in 2002 (319,902).

The overall reduction in turkey harvest seen since 2002 is likely attributed to poor reproduction. The modest increase in the recruitment ratio in 2014 is still below what is considered good. This figure was driven by a high percentage of hens (59%) that had no poults at all by late summer.

The 2014 bear harvest was in line with the average state harvest.

The number of WMA permits sold in 2014 was 3,354 more than in 2013.

2. Stable to upward trends for bobwhite quail on portions of the Enoree and Long Cane Ranger Districts likely reflects an emphasis on fire-maintained forests. Early successional habitat and woodlands are being developed, but they still comprise a low percentage of national forest land. Continued emphasis needs to be placed on timber stand thinning, woodland management, regeneration harvests, and use of prescribed fire.

Lack of reproductive success among eastern wild turkey is often associated with poor weather conditions (cold and wet) during nesting and brood-rearing season. During 2014, most of the state saw significant rainfall that began late in the spring and continued throughout most of the summer. As with quail, turkeys will benefit from projects on national forest land that increase early successional habitat, such as woodland management, thinnings and prescribed burning.

Black bears typically require large expanses of forest dominated by a diversity of mast-producing hardwoods and shrubs intermixed with early successional vegetation such as blackberries and pokeberries. However, black bears are adaptable and as long as they can find adequate food sources and have suitable den sites they can be found in a variety of habitats. The upward trend of black bears in the mountains reflects the amount of suitable habitat that is available.

3. No monitoring of ponds was conducted in 2013.

MQ 6: What are the status and trends of forest health threats on the Sumter?

Information

This monitoring question is responsive to goals 7, 15, 16, and 20; Objectives 15.01, 17.01 and 20.01; and standards 9F-8 and FW-27.

Objective 15.01: To control non-native invasive plants on, at a minimum, 1,000 acres by the end of the 10-year planning period, emphasizing management prescriptions where biodiversity or restoration is a primary objective.

Objective 17.01: To improve forest health on 10,000 – 50,000 acres of pine forests by reducing stand density.

Objective 20.01: To maintain FRCC 1 by restoring historic fire return intervals and reducing the risk of losing ecosystem components to wildlife on approximately 250,000 acres over the 10-year planning period.

The criteria for classifying lands in FRCC 1 are:

- Fire regimes are within or near the historical range.
- The risk of losing key ecosystem components is low.
- Fire frequencies have departed from historical frequencies by no more than one return interval.
- Vegetation attributes (species composition and structure) are intact and functioning within an historical range.

Where appropriate, these areas can be maintained within the historical fire regime by treatments such as fire use.

The monitoring elements are defined as follows:

1. Condition and trends of forest fuels and acres of hazardous fuels treated through wildland fire use, prescribed fire and mechanical treatments.
2. Maintain fire regime condition class 1 by restoring historic fire return intervals and reduce the risk of losing ecosystem components to wildfire.
3. Compliance with National Ambient Air Quality Standards (NAAQS) air particulate emissions from National Forest System lands [36 CFR 219.27(a) (12)].
4. Improve forest health in pine stands by reducing stand densities.
5. Treatments to eliminate or control NNIS. Emphasize treatments for PETS or to specific areas. Baseline acres infested with non-native plants by species.

Results

1. Preparedness and hazardous fuels personnel achieved just over 32,900 acres of hazardous fuels reduction during the 2014 fiscal year. This is an increase from the 2013 accomplishments by nearly 6,000 acres.

Wildland fire preparedness funding and staffing (equipment, personnel, and leadership) was still below an efficient level and not consistent with designed Fire Program Analysis (FPA) organization. As a result, wildland fire losses were not being minimized due to the funding shortfall. Because of organizational shortages, the Forest is unable to provide 7-day coverage, staff for multi-fire days, and provide an ongoing prevention program.

Shortages of firefighting resources are also common when wildfires and prescribed fire operations occur on the same day. Recommendations have been to continue requesting wildland fire preparedness funding and at the same time pursue alternative funding sources. Alternative funding sources could include developing partnerships with cooperators to help offset funding shortfalls and to maximize benefits from appropriated funds.

The Forest Service previously received American Recovery and Reinvestment Act of 2009 (ARRA) funding which started with FY 2010 that allowed an agreement to be formed between The Nature Conservancy (TNC) and the Forest Service. This agreement continued through FY 2012 and expired in FY 2013. After expiration of the ARRA agreement, a Title II agreement was implemented and which has allowed the continued use of TNC prescribed fire burn module. The TNC module provides leadership, firefighters, and equipment to assist Forest Service burn crews in planning and implementing prescribed fire treatments on federal lands.

Table 7. Hazardous fuels treated on the Sumter through both mechanical and prescribed fire methods

Treatment	Andrew Pickens (Acres)	Enoree (Acres)	Long Cane (Acres)	Treatment Total Acres
Prescribed Fire-Hazardous Fuels	5,429 (3,485)	8,689 (-2,895)	11,545 (1,201)	25,663 (1,791)
Prescribed Fire-Wildlife		6,107 (6,170)	1,163 (-1,947)	7,270 (4,160)
District Total RX Acres	5,429	14,796	12,708	32,933
Bolded black acres in parentheses show an increase from FY13 accomplishments while bolded red show a decrease.				

- It is difficult to measure Condition Class 1 (CC1) using GIS data. The Forest modeled CC1 in GIS by looking at fire intervals (burn history), mechanical treatments, and stand age for some forest types. In 2004, the Sumter CC1 was 35,627 acres, in 2010, the Sumter CC1 was 67,400 acres, and in 2014, the Sumter CC1 was 108,122 acres. The processes and technologies used to calculate change in FRCC is evolving. As data collection and dissemination occurs, these processes continue to refine FRCC acreage breakdowns throughout the forest. The following table displays FRCC on the Sumter. Figures 1-3 show the distribution of FRCC across each district.

Table 8. Hazardous fuels treated on the Sumter through both mechanical and prescribed fire methods

District	FRCC 1	FRCC 2	FRCC 3	Total Acres
Andrew Pickens	16,656	20,942	40,077	77,675
Enoree	54,876	39,466	69,401	163,742
Long Cane	36,590	17,934	61,219	115,744

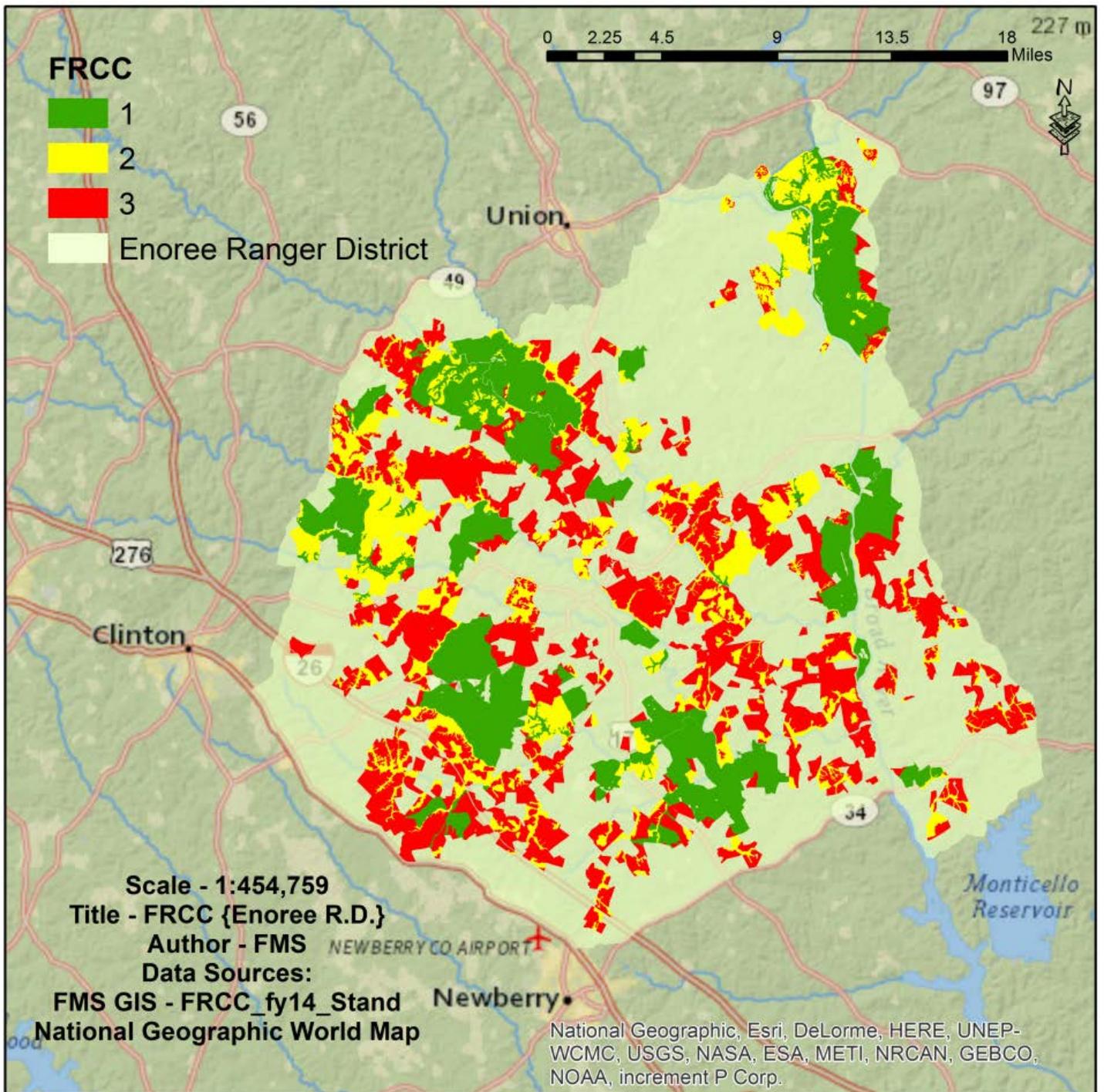


Figure 1. Enoree Ranger District Fire Regime Condition Class

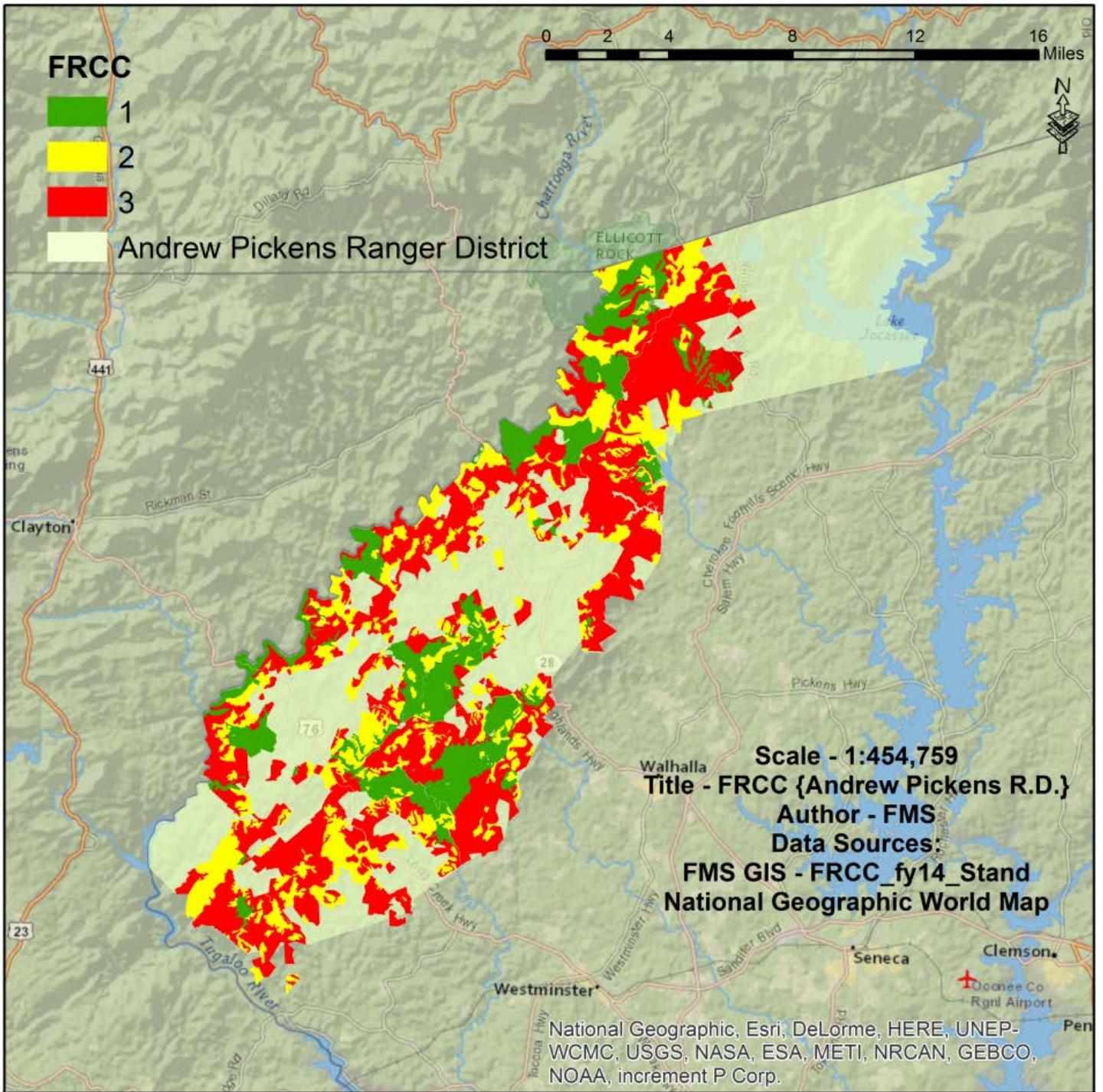


Figure 2. Andrew Pickens Ranger District Fire Regime Condition Class

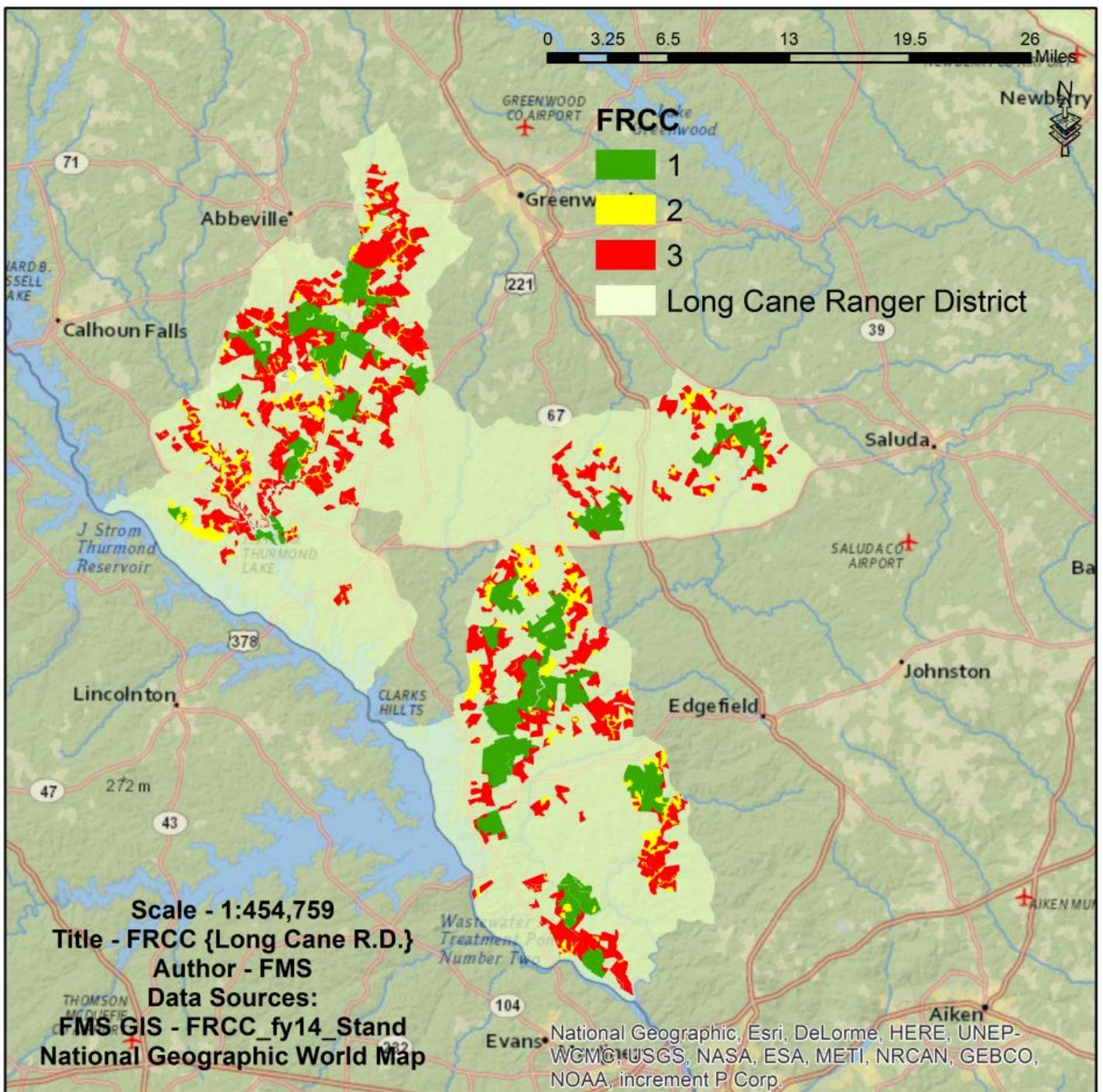


Figure 3. Long Cane Ranger District Fire Regime Condition Class

3. The best way to evaluate air quality status and trends as related to both forest health and wilderness character is to compare measured air pollutant concentrations to air quality standards. Congress has directed the U.S. Environmental Protection Agency (EPA) to set NAAQS. This standard is reviewed every few years, and revised (strengthened) if the most recent scientific research indicates that the current standard is not protective enough of sensitive populations. The criteria pollutants of most concern on the Sumter are particulate matter and ozone. These two pollutants are measured at air monitoring sites near all three ranger districts. Fine particulate

matter is the leading cause of regional haze (also known as visibility impairment), while ozone can harm sensitive vegetation within the forest. Additionally, at elevated concentrations, these two pollutants can impair the health of both employees and visitors to the national forest.

Particulate Matter: Particulate matter is a mixture of extremely small particles made up of soil, dust, organic chemicals, metals, and sulfate and nitrate acids. The size of the particles is directly linked to health effects, with smaller particles causing the worst impacts to human health. As a result, EPA has set a primary NAAQS for ultra-small (less than 2.5 microns in diameter) particulate matter on both a short-term (24-hour) and annual basis. The 24-hour fine particulate matter (PM_{2.5}) NAAQS is currently set at 35 µg/m³ while the annual PM_{2.5} NAAQS is 12 µg/m³. The graphics below show the measured PM_{2.5} levels at the three monitoring sites located near the Sumter. As shown, levels are below the 24-hour and annual air quality standards, and continue to be improving.

The South Carolina Department of Health and Environment Control (DHEC) operates fine particulate matter monitoring sites throughout the state, including several near the three noncontiguous ranger districts of the Sumter.

- *Andrew Pickens.* This portion of the Sumter is located in the northwestern corner South Carolina, in Oconee County. The only wilderness area within the Sumter is Ellicott Rock on the Andrew Pickens. Although PM_{2.5} concentrations used to be measured at a monitoring site in Oconee County, that site has not operated since 2010.
- *Enoree.* The Enoree is located in north-central South Carolina portions of which fall within Chester, Fairfield, Laurens, Newberry and Union Counties. A nearby monitoring station in Spartanburg County (21.7 miles northwest of the district) measures PM_{2.5} concentrations in the area.
- *Long Cane.* The Long Cane is located along the border between South Carolina and Georgia, with portions falling in Abbeville, Edgefield, Greenwood, McCormick and Saluda Counties. Two PM_{2.5} monitoring stations are nearby: one east in Edgefield County; and one south in Richmond County, Georgia. These two monitoring sites are located 6.8 miles and 8.1 miles south of the district, respectively.

The maximum measured values and trends at the above monitoring sites as compared to both the daily and annual PM_{2.5} NAAQS are shown in the graphs on the next page. (Data Source: http://www.epa.gov/airdata/ad_rep_mon.html). The blue columns are measured annual averages; the green columns are measured daily values; and the annual and daily NAAQS are shown by red lines. Note that since 2009, none of the fine particulate matter monitors near the National Forest are exceeding the current fine particulate matter NAAQS.

As shown, measured particulate matter pollution near the two Ranger Districts are not exceeding either the 24-hour or the annual PM_{2.5} standard.

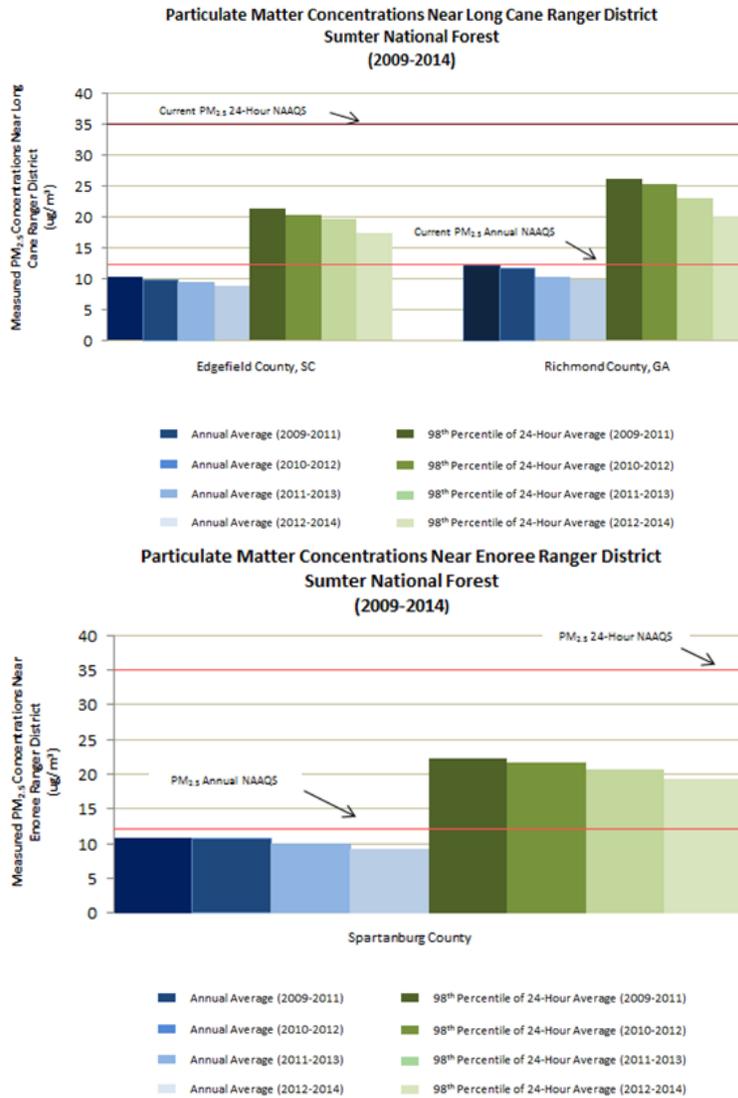


Figure 4. Particulate matter concentrations on the Sumter National Forest from 2008 to 2014

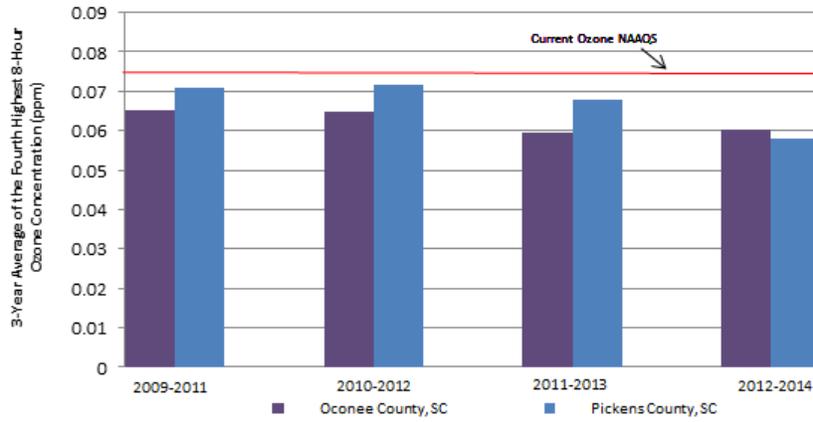
Ozone: Exposure to elevated ozone levels can cause human health concerns as well as negative impacts to vegetation. As with fine particulate matter, a national air quality standard for protection of both public health and the environment has been set for ground level ozone. The current ozone NAAQS is set at 0.075 ppm.

Several monitoring sites measure ozone near the Sumter's three ranger districts:

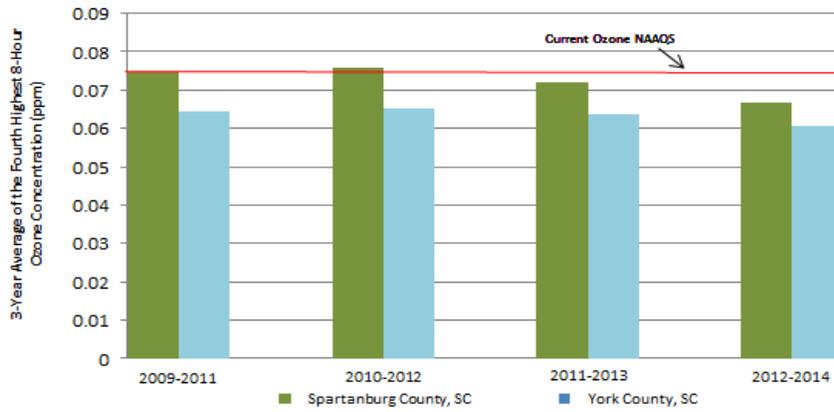
- *Andrew Pickens.* Ozone concentrations are currently measured at two monitoring sites near the District. The ozone monitor in Oconee County is adjacent to the District, while an ozone monitor in Pickens County is located 17.4 miles east of the District.
- *Enoree.* Two air quality monitoring stations currently measure ozone near this Ranger District. One is located in Spartanburg County, 28 miles west of the District, and the other is in York County, approximately 26 miles away from the Enoree Ranger District.
- *Long Cane.* There are four ozone monitoring stations currently operating near the Long Cane Ranger District. A monitor in Columbia County is less than 0.6 miles west of the District. There are also monitors located in Abbeville County, 6.8 miles north of the District; Edgefield County, 8.1 miles east of the District; and Aiken County, 21.1 miles south of the District.

The following graphs show the ozone concentrations at the monitors near each ranger district for the years 2009-2014, calculated in the same form as the NAAQS (3-year average of the 4th highest 8-hour ozone concentration). The NAAQS is shown below as the red line. Note all of the most recent 3-year averages are below the NAAQS. (Data Source: http://www.epa.gov/airdata/ad_rep_mon.html)

Ozone Concentrations Near Andrew Pickens Ranger District
Sumter National Forest
2009-2014



Ozone Concentrations Near Enoree Ranger District
Sumter National Forest
2009-2014



Ozone Concentrations Near Long Cane Ranger District
Sumter National Forest
2009-2014

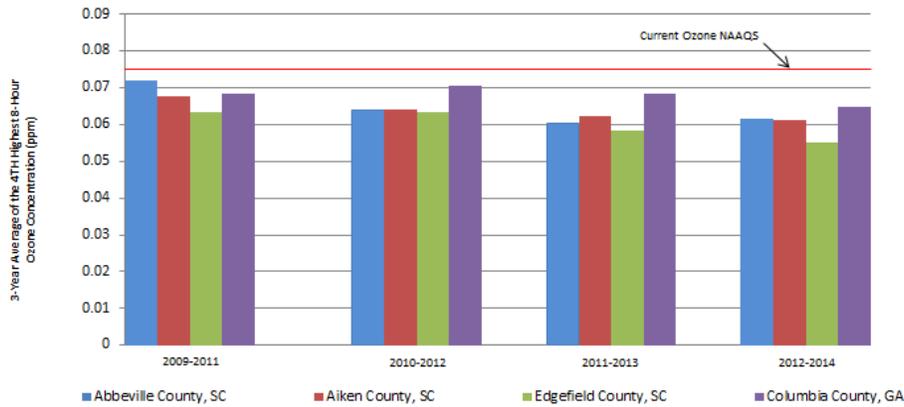


Figure 5. Ozone concentrations on the Sumter National Forest from 2009 to 2014

Flora: Air quality impacts to sensitive flora can be caused by both acute and chronic exposures to elevated concentrations of ground-level ozone. If annual ozone exposures remain high then the long-term effects may lead to a reduction in photosynthesis and ecological impacts.

The graphs below provide a historical summary of the two ozone exposure indices (N100 and W126) over the past 10 years for the Joyce Kilmer-Slickrock Wilderness Area. The N100 is the number of hours greater than or equal to 0.100 parts per million. The W126 is a weighted function, where the results place a greater emphasis on peak concentrations and the values decrease to zero below 0.020 ppm.

The annual W126 results in the first graph below show three summaries (bars) of the data and these include: 1) the three consecutive months with the greatest W126 using 24 hours of available data, 2) the three consecutive months with the greatest W126 using 12 hours of available data between 0800 - 1600, and 3) a rolling three year average of the 12-hour W126 results. The red line in the W126 and N100 graph is the 24-hour concern threshold that (when both are exceeded for a specific year) experimental trials have predicted a 10 percent or greater loss in biomass.

Yellow poplar is found near this monitoring location and controlled experiments have shown this ozone sensitive species is predicted to have 10 percent biomass reduction if both the W126 and N100 thresholds are exceeded (Lefohn, 1998). The 24-hour W126 threshold is 14.5 ppm-hours and the N100 threshold is 4 hours. The combined 24-hour W126 and N100 for each year between 2009 and 2013 the threshold was not exceeded.

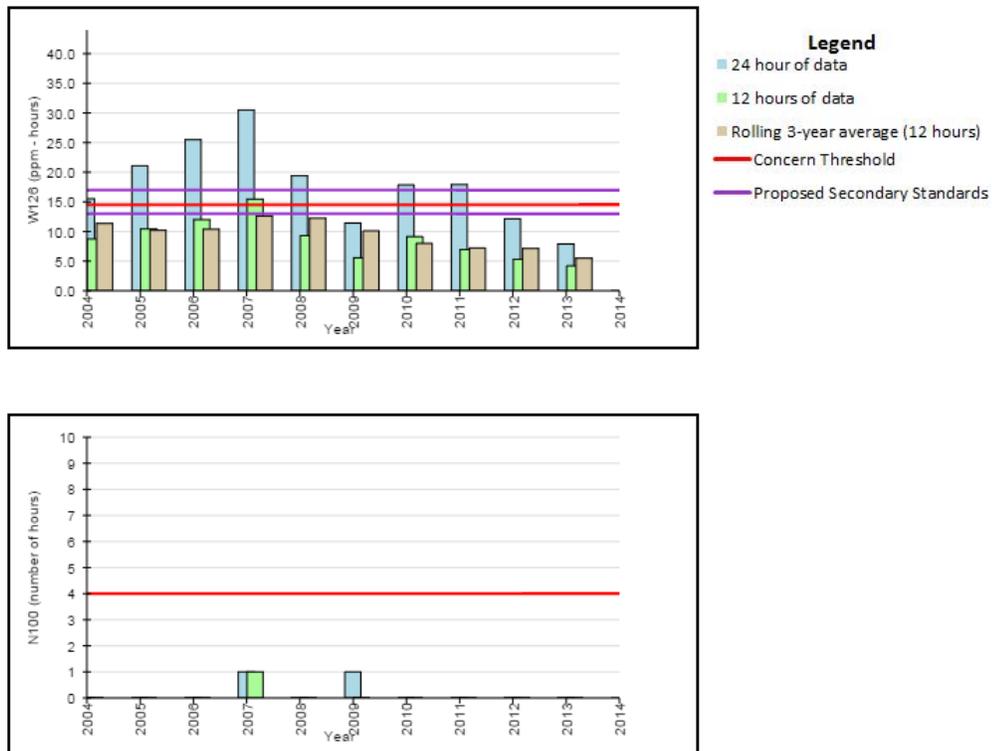


Figure 6. Ozone exposures to sensitive flora

Source: <http://webcam.srs.fs.fed.us/graphs/o3calc/vegetation.php>

Acidic Deposition:

Acidic deposition of sulfates and nitrogen compounds from anthropogenic sources can negatively affect sensitive ecosystems. These compounds can acidify soil and surface waters, affect nutrient cycling and affect the ecosystem services provided by forests. Sulfates and nitrogen compounds are deposited in precipitation (known as wet deposition), as well as particulates and aerosols (known as dry deposition), or directly from clouds/fog vapor.

In the United States, there are many locations where measurements are taken of wet deposition, as opposed to dry or cloud deposition. However, not all National Forests or wildernesses are monitored directly. For this reason, statistical models, using monitored wet acidic deposition, precipitation amounts, and topographic data are being used to provide a spatial estimate of wet acidic deposition for the eastern United States (Grimm and Lynch, 2004). The results presented in the two graphs below show the estimated trend in wet deposition (red line) along with the distribution (box plots) in the modelled estimates for Ellicott Wilderness.

Since 1983, the wet sulfate deposition has decreased on average about 0.6689 kilograms per hectare (kg/ha) each year while the total nitrogen has decreased 0.0676 kg/ha each year. Both models are highly significant with less than one in 1000 cases where there is actually no relationship between the mean of the annual wet sulfate deposition as predicted by the years since 1983 and the mean of the annual precipitation. Overall, 81% of the variation in the estimated mean of the annual wet sulfate deposition and 67% of the total nitrogen can be accounted for with the two predictors.

Wet Sulfate

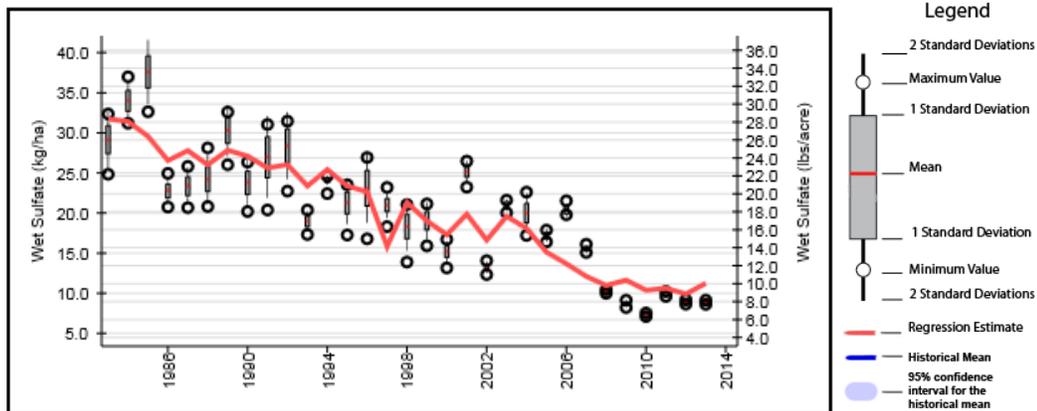


Figure 7. Sulfate Depositions on the Sumter National Forest.

Source: <http://webcam.srs.fs.fed.us/graphs/dep/>

Wet Total Nitrogen

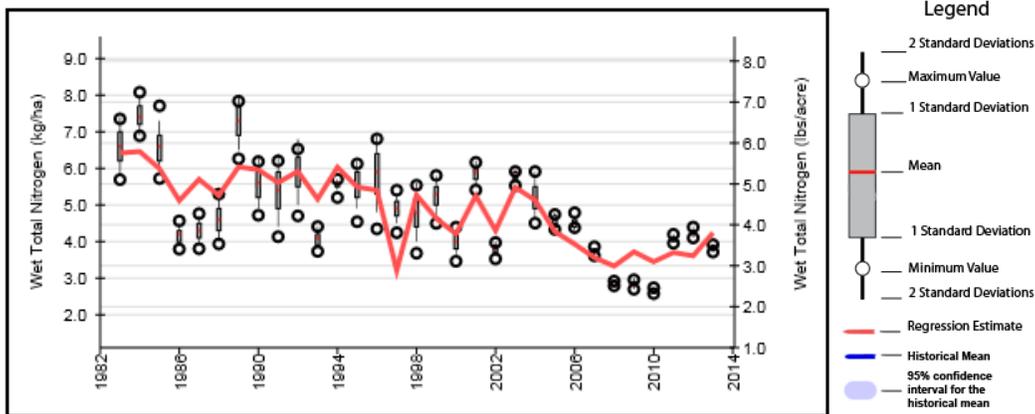


Figure 8. Wet Nitrogen Depositions on the Sumter National Forest.

Source: <http://webcam.srs.fs.fed.us/graphs/dep/>

Emissions from wildland and prescribed fire

Emissions from wildland fire include carbon dioxide, water, carbon monoxide, particulate matter, hydrocarbons or volatile organic compounds, and nitrogen oxides. Carbon dioxide and water generally make up over 90 percent of the total emissions. The most important pollutant from wildland fire emissions is fine particulate matter (PM_{2.5}) due to the amount emitted and the effects on human health and visibility.

With the current prescribed fire program, it is important to assess whether there is any indication that levels of local and regional PM_{2.5} levels are mirroring that trend. The graph below shows the daily and annual fine particulate matter concentrations near the Long Cane and Enoree Ranger Districts from 2008 through 2014 compared to acres burned from prescribed fire conducted during the same period. Since fine particulate matter is no longer measured near the Andrew Pickens Ranger District, a comparison between prescribed fire acres burned and measured PM_{2.5} could not be made for that District. As shown, local and regional PM_{2.5} concentrations do not appear to be correlated with PM_{2.5} emissions from prescribed fires.

Daily and Annual PM_{2.5} Trends Compared to Acres Burned From Prescribed Fires Long Cane and Enoree Ranger Districts-Sumter National Forest 2008-2014

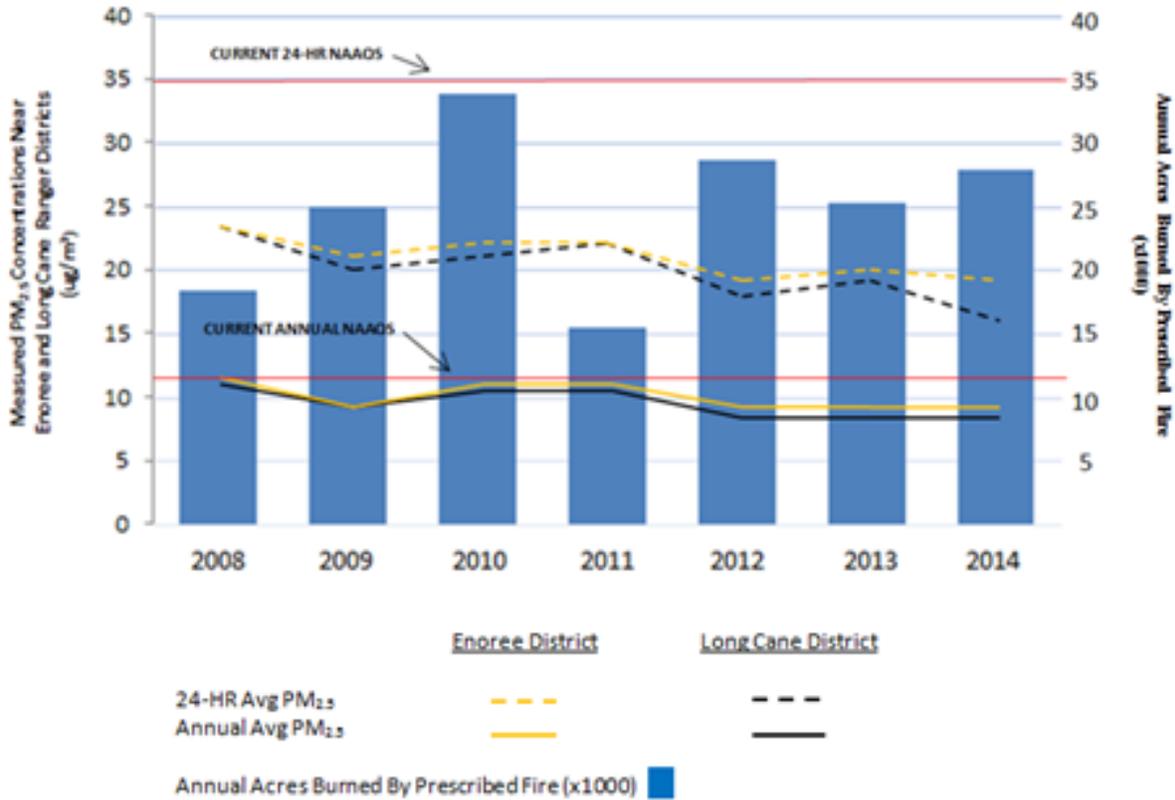


Figure 9. Particulate Matter Trends on the Long Cane and Enoree Ranger Districts.

- In FY 2014, 4,358 acres of commercial thinning were sold. Table 9 displays acres sold from 2005 – 2014.

Table 9. Acres of Commercial Thinning Sold from 2005 to 2013

Fiscal Year	Acres
2005	2,786
2006	2,482
2007	1,757
2008	2,571
2009	3,039
2010	3,076
2011	4,492
2012	4,024
2013	4,287
2014	4,358
Total	32,872

- Two thousand six hundred and eleven acres of NNIS were treated on the Sumter NF in 2014 (1631 acres on the Enoree, 932 acres on the Long Cane and 48 acres on the Andrew Pickens), including native canebrakes, roadsides adjacent to the post oak savanna and habitat for the federally endangered Florida gooseberry. Feral hogs were controlled on numerous acres across the Sumter.

Findings

- Returning and maintaining fire in fire-adapted communities is a critical component of maintaining a healthy forest. Habitats on the Sumter vary from two to three-year fire return intervals. Two-year fire return interval habitats consists of the Long Cane District’s Lick Fork Lake woodland area and the Enoree District’s Indian Creek woodland area.

The table below displays fire frequency accomplishments.

Table 10. FY14 Fire Frequency Accomplishments

Fire Frequency Rotation	District	Acres	District	Acres	Total Acres
Less than 2 Years	Long Cane	1,367	Enoree	401	1,768
2-3 Years	Long Cane	14,258	Enoree	3,938	18,196
Total Acres		15,625		4,339	19,965

To maintain these areas, 1,768 acres were treated on lands having a less than two-year fire frequency rotation (2006-2014) in these fire dependent habitats. Three-year return intervals are desired to maintain the fire adapted pine and pine-hardwood habitats throughout the Sumter. 18,196 acres of these fire-adapted habitats were treated in FY 2014. A total of 32,933 acres were treated in FY 2014, above the desired 25,000 acres treated annually to meet objectives set in the Forest Plan.

Uncertain budgets, increased operational costs and a string of continuing congressional resolutions have limited the availability of resources and prescribe burning opportunities to accomplish objectives. Yet, all three districts shared personnel and equipment to help achieve over half the year’s targeted treatment acres despite operating half of the normal operating period.

- The Sumter National Forest saw a shift in Fire Regime Condition Class (FRCC) from the previous FY 2013 to FY 2014. FRCC 1 increased 60,000 acres forest wide while FRCC 2 decreased 40,000 acres forest wide. FRCC 3 decreased by 4,500 acres forest wide. Again, it is important that science and technology continue to improve FRCC calculation methods.

FRCC 3 acres are continuing to decrease and shift into FRCC 1 due to increased prescribed fire use, non-commercial and commercial mechanical treatments of forest stands. Stewardship contracts and timber sales are providing more opportunities for treating fuels than existed a few years ago. Monitoring plots are currently being installed to track these changes empirically.

Overall, the forest did not meet its goal of increasing FRCC 1 acres but succeeded in increasing overall forest health. There are fewer acres by overall percentage in FRCC 3 than have been recorded since monitoring FRCC began.

3. All air quality monitors near the Sumter show that ozone and fine particulate matter concentrations meet air quality standards. No negative impacts either to forest visitors or to forest vegetation are anticipated. Emissions from prescribed fire do not appear to be correlated with local and regional fine particulate matter concentrations and thus will not hinder the state's ability to attain air quality standards and visibility goals. Based on modeling results acidic deposition is improving in the Ellicott Wilderness. The threshold of ozone exposure to sensitive flora is not exceeded.
4. From FY 2005 through FY 2014, the Sumter NF has sold 32,872 acres of commercial thinning, which is within the range of objective 17.01.
5. NNIS on the forest continue to increase and threaten forest health, biodiversity and ecosystem function. While current treatment levels in some areas of the Sumter have increased from FY13 levels, they are not nearly enough to offset the problem. The forest is conducting re-treatments to establish control within priority areas.

Feral hogs by their rooting and trampling compact soils, reduce water quality and disturb plant regeneration. Hog activities directly threaten sensitive plant species and increase the spread of non-native invasive plants. Hogs threaten game and nongame wildlife by predation, competition for resources and spread disease and parasites.

Sub-Issue 1.2 – Watershed Condition and Riparian Areas

MQ 15: Are watersheds maintained (and, where necessary, restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?

Information

This monitoring question is responsive to goals 1, 2, 3 and 5 and objectives 1.01, 2.01 and 5.01.

Objective 1.01: To improve soil and water conditions on 1,500 acres through stabilization or rehabilitation of actively eroding areas such as gullies, barren areas, abandoned roads or trails, and unstable stream banks over the 10-year planning period.

Objective 2.01: Stream flows needed to protect stream processes, aquatic and riparian habitats and communities, and recreation and aesthetic values will be determined on 50 streams.

Objective 5.01: To improve soil productivity on 8,000 acres of disturbed, low productivity, eroded soils with loblolly and shortleaf pine in the piedmont during the 10-year planning period.

The monitoring elements are defined as follows:

1. Are National and State BMPs and forest standards being implemented to protect and maintain soil and water resources?
2. Improve soil and water conditions through stabilization or rehabilitation of actively eroding areas such as gullies, barren areas, abandoned roads or trails, ditches, and unstable stream banks.
3. Improve soil productivity on disturbed, low productivity, eroded soils with loblolly and shortleaf pine in the piedmont.
4. The in-stream flows needed to protect stream processes, aquatic and riparian habitats and communities, and recreation and aesthetic values will be determined.

Results

1. National and *South Carolina Best Management Practices for Forestry* (BMPs) are incorporated into the Forest Plan as standards. They apply to all projects that have the potential to impact soil and water quality on the Forest. BMP monitoring is conducted annually on a selected set of project activities following national BMP monitoring protocols. Four timber sale units, approximately one mile of fireline and one herbicide treatment area (privet treatment in Worthy's Bottom) were evaluated in 2014.
2. A total of 84 acres were treated to improve soil and water conditions in 2014. This included five acres of continuing treatment/stabilization, 52 acres of gully head stabilization and six acres of road obliteration and stabilization. Most of the soil and water improvement work continues to be on the Enoree, due to the severe erosion, gully and associated loss of productivity prior to land acquisition by the Federal government in the 1930's. CWKV² and other funding sources have helped in achieving objectives for addressing: poor soil and water conditions due to eroding gullies and barrens (galls); stream stabilization and restoration; abandoned or unclassified roads; user-created trails; and, unstable streambanks. The acres of soil and water improvements under Objective 1.01 were slightly below the 150-acre annual average needed to meet plan direction.
3. Funds from 2014 were used to develop an aerial fertilization contract, to purchase fertilizer, and to pay for fixed-wing flight time. Approximately 132 acres of soil improvement through fertilization will be implemented in the spring of 2015. This amount is lower than usual.

Native grasses are used when possible for erosion control on treated gullies and other disturbed areas. Most of the immediate needs for native grass seed are supplied by plant production fields on the Enoree. Maintenance and collection of native seed is needed to keep the production fields viable. Commercial native seed sources are available. In some instances, herbicides to treat unwanted or invasive plants may be needed within production fields. Some efforts to broadcast native seeds with PAM³ show some signs of success, but additional information is needed to verify the observations.

² The Knutson-Vandenberg (K-V) fund is derived from timber sale receipts. CWKV funds are used for a variety of projects, including: reforestation; timber stand improvement practices to enhance stand productivity, promote the reforestation, maintenance, or improvement of a variety of forestland ecological conditions, and maintain biological diversity; and protection and improvement of all other resource values on timber sale areas, including wildlife, soil, watershed, range and recreation. The first priority for use of K-V funds is reforestation of harvested areas.

³ Polyacrylamide (PAM) - PAMs are polymer-based materials used to facilitate erosion control and decrease soil sealing by binding soil particles, especially clays, to hold them on site.

4. There was no work on objective 2.01 in FY 2014.

Findings

1. BMP inspections showed that all of the sale units were in compliance. Little, if any, timber sale activity affected riparian areas.

Maintenance of firelines will be needed in the future to reduce entrenchment of fireline from repeated use. Due to dry conditions, small areas of prescribed burns had burned too hot, consuming organics, exposing soils and causing some local mortality.

The inspection at Worthy's Bottom indicated that non-target overstory hardwood trees were killed due to the inappropriate use of herbicides. It is still unknown if there were any impacts to water quality. It is unlikely that any herbicides were applied to surface waters and the water quality is not expected to be degraded.

2. The soil and water improvements under Objective 1.01 were only 56% of the 150-acre annual average needed to meet plan direction. In spite of this, there appear to be ample future opportunities to expand this work based on compensatory mitigation banking opportunities in the Hughes Creek-Broad River Watershed and efforts to address watershed conditions within the priority watersheds of Lower Indian Creek-Enoree River, Little Turkey-Stevens Creek, Hughes Creek-Broad River and Coks Creek-Broad River. The Forest Service, Army Corps of Engineers and Duke Energy of the Carolinas are working on a project that would potentially result in significant stream restoration work on the Enoree Ranger District.
3. Soil fertilization remains a reliable method to return nutrients to severely eroded or nutrient depleted sites. Sites are tested before application to validate nutrient deficiencies and to determine fertilizer composition. Continued funding is needed since a substantial backlog of low-site lands have been identified on the Enoree Ranger District and some on the Long Cane Ranger District. Based on past and expected future work, the forest should meet the planned level of 8,000 acres over the next decade.
4. There is no information relative to this objective.

MQ 16: What are the conditions and trends of riparian area, wetland and floodplain functions and values?

Information

This monitoring question is responsive to goals 3, 4, 8 and 9, objectives 4.01 and 11-OBJ-1 and standards 11-1 thru 11-25.

Objective 4.01: To create and maintain dense understory of native vegetation on 1 to 5 percent of the total riparian corridor during the 10-year planning period.

Objective 11-OBJ-1: To improve structural diversity and composition within the riparian corridor on 2,000 acres on the piedmont as canebrake habitat restoration.

The monitoring elements are defined as follows:

1. Are management strategies in riparian areas adhering to Forest Plan riparian guidelines? Are conditions in riparian areas or corridors providing for soil conservation, associated habitats and necessary shade and cover for aquatic habitats?
2. Create and maintain a dense understory within riparian corridors. Improve structural diversity and composition within the riparian corridor on the piedmont.
3. Acres of riparian area inventoried for condition (i.e. terrestrial habitat, vegetative composition, woody debris recruitment, and non-native invasive plants).

Results

1. BMP inspections showed that riparian buffers on selected harvest units complied with Forest Plan standards. Riparian buffers were providing resource protection.
2. Approximately 25 acres of wetland restoration were accomplished in 2014 to help create or improve structural diversity and composition within riparian corridors on the Long Cane and Enoree Ranger Districts.
3. Approximately 75 acres of wetlands were inspected for wetland function on the Enoree and Long Cane Ranger Districts. This consisted of walking through and taking notes about the riparian condition and associated wetlands.

Findings

1. Many of the riparian areas on the Enoree and Long Cane Ranger Districts that were once wetlands have been ditched and drained for agricultural purposes prior to Federal land acquisition. This has adversely affected riparian areas and habitats. Some of the ditches are contributing sediment into streams as well.

A watershed assessment was completed for Hughes Creek and Coxs Creek, two 6th level watersheds on the Enoree Ranger District. The watershed assessments are being used to identify

and prioritize project work for funding. Funding for work comes from a combination of KV, stewardship and appropriated funds. The forest is also pursuing accomplishing restoration work from compensatory mitigation projects⁴.

2. Restoration work in wetlands has resulted in the creation of structural diversity and composition through canopy gaps and increased sunlight reaching the forest floor. Plugging agricultural ditches and returning normal groundwater levels to these areas has rehydrated soils. There has been a rapid response from a variety of amphibians, mammals, birds, and wetland plants soon after restoration work was completed. Continued monitoring combined with research is planned to determine short and long-term results from this restoration work.
3. Riparian condition assessments/inventories need to be included in the early stages of project planning. Information collected while riparian corridor conditions are being reviewed and evaluated is probably not being documented sufficiently in all cases to provide long-term benefits. In addition, integrated surveys may not obtain all the needed information. We need to address this lack of documentation in the future.

Issue 2. Sustainable Multiple Forest and Range Benefits

Sub-Issue 2.1 – Recreational Opportunities

MQ 9: Are high quality, nature-based recreational experiences being provided, and what are the trends?

Information

This monitoring question is responsive to goals 22 and 23. The monitoring element is defined as follows:

1. Results and trends in user satisfaction ratings relative to nature-based recreational experiences.

Results

1. Visitor use monitoring surveys were conducted on the Francis Marion and Sumter National Forests in FY 2008 and again in 2012.

Findings

2. While the human population is increasing, the NVUM indicated a slight downward trend (visitor use on both forests decreased by about 3%) in recreation use. Almost 79 percent of the people

⁴ Compensatory mitigation refers to the restoration, establishment, enhancement, and/or preservation of wetlands, streams, or other aquatic resources conducted specifically for the purpose of offsetting authorized impacts to these resources. In 2008, EPA and the U.S. Army Corps of Engineers jointly promulgated regulations revising and clarifying requirements regarding compensatory mitigation. According to these regulations, the fundamental objective of compensatory mitigation is to offset environmental losses resulting from unavoidable impacts to waters of the United States authorized by Clean Water Act Section 404 permits issued by the U.S. Army Corps of Engineers.

who visited were very satisfied with the overall quality of their recreation experience. Another 16 percent were somewhat satisfied and less than one percent expressed any level of dissatisfaction.

Developed sites and wilderness scores showed that developed facilities, access and perception of safety all were above the 85% national satisfaction target. Access and perception of safety rated higher than 85% for undeveloped areas.

The surveys did show that there are areas that could use improvement, overnight sites (improve availability of recreation information and adequacy of signage), general forest areas (improve restroom cleanliness, in such areas as trailheads) and wilderness (improve adequacy of signage). The majority of the visiting population is very satisfied with road condition and adequacy of signage forest-wide. Over three quarters of the visiting population also feel that road condition and adequacy of signage is very important.

MQ 10: What are the status and trends of recreational use impacts on the environment?

Information

This monitoring question is responsive to goals 1, 3, 4, 5, 22, and 23, desired condition for management prescription 11 and standards FW-2, FW-10, FW-11, FW-14, FW-70, FW-76, and FW-77.

The monitoring elements are defined as follows:

1. Recreation activities impact to riparian areas and/or water quality.
2. Impacts associated with OHV activities.
3. Are motorized and non-motorized trails being maintained?

Results

1. Localized impacts to riparian areas from recreation activities have been observed through field observation in FY 2014. Most of these were associated with unauthorized trails or uses. The type of impacts tend to be localized and include effects from soil exposure, compaction, displacement, concentrated flow, erosion, sediment, damage to riparian trees, dispersal of human or solid wastes, etc. Most activities are located outside of riparian corridor or designed and mitigated to reduce effects.
2. Impacts from off-highway vehicles (OHV) still occur but are generally at acceptable levels. Wet weather closures on OHV trails continue to work well and have reduced trail damage and associated impacts like rutting in riparian areas and areas adjacent to trails. More attention is being taken to avoid riparian areas and harden areas that tend to rut with geotextile or other materials. The installation and use of gradients that roll with the terrain to control excessive surface drainage, with outslopes, reverse grades, dips and other water control features are helping to limit the amount of accumulated concentrated flow, erosion, sediment and connections to streams. Sections with severe damage and problems difficult to rectify are considered for closure or relocation.

3. Motorized trail maintenance continues to be a high priority for the recreation program on the Forests. Funding comes from appropriated, recreation fee, and grant dollars (the latter is used almost exclusively for maintaining/reconstructing OHV trails to increase financial and environmental sustainability). We continue to find ways, like volunteer workdays and hosts, to leverage our limited resources while reducing the impacts associated with OHV activities. The better understanding of the need for wet weather and post maintenance closures has also resulted in reduced maintenance and better results. Non-motorized trails often have varying maintenance needs. Equestrian trails can be very difficult to maintain, especially if not properly located. Most trails will have issues if located within wetlands or riparian areas. Hiking trails tend to have the fewest impacts and lower maintenance needs. Maintenance levels and costs also depend to some degree on levels of trail use.

Findings

1. Most recreation areas have limited impacts on riparian areas, water quality, and comply with BMPs. Many recreational uses revolve around some proximity to streams and are most noticeable at the site location or in the general vicinity. Impacts are most noticeable when use levels are high. Many impacts can be avoided, minimized or mitigated with site closure and rehabilitation.
2. The policy of closing OHV trails during wet weather conditions has reduced impacts on riparian areas and other natural resources as well as the trail facility itself. The wet weather closure information also aids users in determining whether facilities are open before they travel. Poor trail sections are sometimes closed and relocated using better techniques to reduce effects. Mitigation measures such as trail hardening, reshaping and improving dips or other drainage features help reduce excessive rutting and off trail damage.
3. Increased emphasis on motorized trail maintenance with timely closures across the Sumter is reducing resource impacts. Forest personnel and user-groups have educated riders on when to avoid riding on trails when damage can occur (i.e. wet weather conditions). As a result, many of the trails are in good condition and maintenance has been reduced. However, dependent on the type and amount of use, continued diligence is needed to maintain them. Equestrian uses can be a challenge because the intensity of the impacts on the trail is greater. Impacts to trails from mountain bikes seem to be related to use levels. Hiking trails, when located properly, generally are easier to maintain and have fewer problems.

MQ 13: Are the scenery and recreational settings changing and why?

Information

This monitoring question is responsive to goals 13, 28 and 30 and Objective 23.02. In the piedmont (Objective 23.02), increase acreage that is at least ½ mile from an open road to 35,000 acres, emphasizing lands blocks that are at least 2,500 contiguous acres in size.

The monitoring elements are defined as follows:

1. Acres of National Forest land that meet or exceed established scenic integrity (SIO) and recreation opportunity spectrum (ROS) objectives.

Results

1. Project and field review of ground disturbing activities were ongoing in FY 14. Proposed projects on the Sumter National Forest met the established SIO standards and ROS objectives.
2. The National Forest acreage that is at least ½ mile from an open road is 44,327 acres per analysis in FY 2012.

Findings

1. Ongoing field reviews of projects being implemented are needed to determine that SIO and ROS objectives are being met.
2. More 2,500 acres areas that are at least ½ mile from a road could be created by emphasizing road closure in certain areas.

Sub-Issue 2.2 – Roadless Areas/Wilderness/Wild and Scenic Rivers

MQ 11: What is the status and trend of wilderness character?

Information

This monitoring question is responsive to goals 26 and 27. The monitoring element is defined as follows:

1. Is visitor use within limits that do not impair wilderness characteristics?

Results

1. A biophysical inventory was completed in FY 07 for the Chattooga Wild and Scenic River and the segment in Ellicott Rock Wilderness to assess impacts from recreational use.

Findings

1. The biophysical inventory indicated that visitor use impacts are occurring that could adversely affect wilderness character. An environmental assessment was completed in 2012⁵ that not only permitted boating in the upper segment, but also established monitoring protocols to determine biophysical and social impacts from recreation use in the river corridor including the portion in wilderness.

The initial biophysical monitoring of recreation impacts to endangered, sensitive and locally rare plant species and aquatic habitat has been completed. The large wood inventory indicated no impacts to aquatic habitat and to specific plant species (Chattooga River EA Plant Monitoring 2014 Report, Radcliffe). Three plant species populations were visited but only two were located. The two populations found showed no evidence of being impacted by recreation use. Social impacts will begin to be monitored starting in 2015.

⁵ *Managing Recreation Uses in the Upper Segment of the Chattooga Wild and Scenic River Corridor* (2012 EA).

MQ 12: What are the status and trend of Wild and Scenic River conditions?

Information

This monitoring question is responsive to goals 1, 28 and 29 as well as compliance with the Wild and Scenic Rivers Act, Clean Water Act and South Carolina Water Quality Standards.

The monitoring elements are defined as follows:

1. Are free-flowing conditions and outstandingly remarkable values (ORVs) being protected for eligible and designated rivers?
2. Are water quality standards being met for eligible and designated rivers?

Results

1. A biophysical impact inventory was completed in FY07 for the Chattooga Wild and Scenic River. Detailed information is available in the report entitled “Capacity and Conflict on the Upper Chattooga River – An Integrated Analysis of 2006-2007 Reports” (Whittaker and Shelby, 2007). The inventory documented the miles of designated and user-created trails and the number of sites with erosion problems along the trails. A large wood inventory conducted in 2007 was reevaluated again in 2013/14 with a report prepared in 2014.

The Chattooga River has certain indicators that help define limits of self-guided paddling use on Sections III and IV (lower segment). These indicators are numbers of people on certain sections of the river at certain times. On Section III of the Chattooga, the indicator for self-guided use is 175 persons on weekends and holidays, and 125 persons on weekdays.

Private boating use has been monitored on the Upper Segment of the Chattooga River since boating started in December 2012. The decisions to allow use are still being contested in court. Use data is presented in Tables 11, 12 and 13 for the first two boating seasons. Boating is permitted under specific conditions tied to season, zone and flow restrictions.

Table 11. Number of boatable days and number of days actually boated from 2012 -2014 on Upper Segment of the Chattooga River

Month	2012-2013		2013-2014	
	Boatable days	Used Boatable days	Boatable days	Used Boatable days
December	2	2	16	4
January	11	6	4	2
February	8	2	3	0
March	2	0	0	0
April	9	7	3	1
Total	32	17	26	7

Table 12. Boating use by access area in 2012-13 boating season on Upper Segment of the Chattooga River.

Launch site*	Trips	Boaters	People/trip	Percent of total (by boaters)
Put-ins				
Green Creek	23	79	3.4	43
Bull Pen Bridge	24	84	3.5	45
Burrells Ford	7	22	3.1	12
Total put-ins	54	185	3.4	100
Take-outs				
Bull Pen Bridge	6	20	3.3	12
Burrells Ford	36	122	3.4	70
Lick Log Creek	9	32	3.6	18
Total take-outs	51	174	3.4	100
Total use by access point				
Green Creek	23	79		22
Bull Pen Bridge	30	104		29
Burrells Ford	43	144		40
Lick Log Creek	9	32		9

*No use of Norton Mill Creek (aka County Line Trail). In addition, a few permits were incomplete so put-in and take-out totals do not match.

Table 13. Boating use by access area in 2013-14 boating season on the Upper Segment of the Chattooga River.

Launch site*	Trips	Boaters	People/trip	Percent of total (by boaters)
Put-ins				
Green Creek	2	12	6	41
Bull Pen Bridge	5	15	3	52
Burrells Ford	1	2	2	7
Total put-ins	8	29	3.6	100
Take-outs				
Bull Pen Bridge	1	8	8	28
Burrells Ford	6	19	3	65
Lick Log Creek	1	2	2	7
Total take-outs	8	29	3.6	100
Total use by access point				
Green Creek	2	12		21
Bull Pen Bridge	6	23		40
Burrells Ford	7	21		36
Lick Log Creek	1	2		3

* No use of Norton Mill Creek (aka County Line Trail).

2. Elevated fecal coliform in Stekoa Creek is the primary pollutant that affects the water quality of the Chattooga Wild and Scenic River. The Chattahoochee-Oconee National Forest works with local officials and non-profits because the water quality problems are generated in Georgia. A National Forest Foundation grant temporarily extended work into the Chattooga Wild and Scenic

River downstream of Stekoa Creek. Rabun County, Georgia officials, in cooperation from the Chattooga Conservancy, Rabun County Trout Unlimited, and others, worked to identify problem sections of the wastewater conveyance system, collect fecal coliform data within Stekoa Creek and disseminate public information.

Recently, an EPA 319 (h) grant was approved that will address some of the dispersed nature of the fecal coliform problems with septic systems, agricultural practices and stream buffers. At least two segments of the Rabun County sanitation lines are being replaced with grant funds. Additional monitoring efforts will identify other “hot spots” within the city’s wastewater and sewer distribution system.

Methyl mercury, PCBs and other water quality issues are noted near Tugaloo Lake where the Chattooga WSR flows.

Eligible Rivers

Most of the eligible rivers on the Sumter have little monitoring information documenting water quality. However, the watersheds are primarily forested, have low road density, low agricultural use and development densities. These factors usually indicate good water quality. At this time, there are no plans to allocate funds to expand data gathering.

Findings

1. On the lower segment of the Chattooga River, the 175-person indicator was exceeded four times and the 125-weekday indicator was exceeded zero times in 2014. This does not cross the threshold for additional management actions. On Section IV, the indicators are 160 persons on weekends and holidays and 75 persons on weekdays. During the 2014 calendar year, the weekends and holidays were exceeded two times and the weekday indicators were exceeded zero times. This does not cross the threshold for additional management actions.

The findings of the 2007 biophysical inventory on the Chattooga Wild and Scenic River indicate that visitor use impacts are occurring, but generally confined to heavily used river access trails and local camping areas. Water quality concerns remain in the downstream reaches of the Chattooga Wild and Scenic River relative to fecal coliform and sediment from Stekoa Creek. Findings from self-guided permits do not exceed the threshold for use levels on sections III and IV.

Summary of Findings - Results of 2012 -13 Boating Season on Upper Segment of the Chattooga River

- About 40% of boaters paddled the Chattooga Cliffs Reach, with the Green Creek put-in attracting all the use (no boaters were recorded putting in at Norton Mill Creek).
- Almost half (44%) of all boaters started their trips at Bull Pen Bridge, and many extended their Chattooga Cliffs trips through the Ellicott Rock Reach (about 87% of all boaters started their trips at either Green Creek or Bull Pen Bridge).
- Relatively few boaters (13%) paddled the Rock Gorge Reach from Burrells Ford.

- Approximately 9% of boaters paddled all three reaches.
- The take-out used most often was Burrells Ford, with about 70% of all use.
- Relatively few boaters ended their trips at Bull Pen Bridge (12%) or Lick Log (18%).
- Taken together, in 2012-2013, the highest boating use access areas were Burrells Ford (41% of all boaters used this for either put-in or takeout) and Bull Pen Bridge (29%). Green Creek was also used often (22%), while relatively few used Lick Log.

Summary of Findings - Results of 2013 -14 Boating Season on Upper Segment of Chattooga River

- About 25% of boaters paddled the Chattooga Cliffs Reach, with the Green Creek put-in attracting all the use (no boaters were recorded putting in at Norton Mill Creek).
- Over half (63%) of all boaters started their trips at Bull Pen Bridge, and one extended their Chattooga Cliffs trip through the Ellicott Rock Reach during the 2013-14 boating season (about 88% of all boaters started their trips at either Green Creek or Bull Pen Bridge this season).
- Relatively few boaters (13%) paddled the Rock Gorge Reach from Burrells Ford.
- The take-out used most often was Burrells Ford, with about 75% of all use.
- Relatively few boaters ended their trips at Bull Pen Bridge (13%) or Lick Log (13%).
- Taken together, in 2013-2014, the highest boating use access areas were Burrells Ford (44% of all boaters used this for either put-in or takeout) and Bull Pen Bridge (38%).

The 2012 EA concluded that all of the Chattooga's outstandingly remarkable values (ORVs) are being protected or enhanced. No specific analysis was conducted on the ORVs for the lower segment of the Chattooga, although the cumulative effects analysis found that ORVs for the entire river are being protected or enhanced.

Free-flowing conditions are preserved, water quality is protected and outstanding remarkable values are protected on eligible rivers on the Sumter National Forest.

2. Data to assess water quality concerns in the Wild and Scenic Rivers are probably adequate. The fecal coliform issues in the lower segment of the Chattooga Wild and Scenic River are being addressed, as time and funding permits, by the City of Clayton with assistance from the Chattooga Conservancy and Georgia Environmental Protection Division. Rabun County Trout Unlimited and others assist with collecting water samples and delivering them to be tested in the laboratory. Although progress has been made, additional work is needed to address water quality issues. Grant requests and other funding opportunities are being sought to address these needs.

Issues with trails and camping are increasing, especially near some streams. Even on designated trails, equestrian uses are causing localized resource damage that needs ongoing attention and maintenance. User created trails create resource issues because they are not properly located, designed, managed or maintained and they have not been assessed for impacts to cultural,

biological or other resources. Where these activities are occurring within designated or eligible wild and scenic rivers, increased attention, monitoring and mitigation are needed.

Forest and District personnel monitor projects for compliance with BMPs and forest plan standards. A formal strategy on how to limit and mitigate some public uses, particularly user-created trails, may be needed to address resource damage. Some activities on private lands have affected water quality and other resources and additional work is needed to work with state and local officials to address these concerns.

Sub-Issue 2.3 – Heritage Resources

MQ 14: Are heritage sites protected?

Information

This monitoring question is responsive to goal 31. The forest manages areas with special paleontological, cultural, or heritage characteristics to maintain or restore those characteristics

The monitoring element is defined as follows:

1. Effectiveness of heritage protection measures.

Results

1. The results of site monitoring are presented below.

Table 14. Archaeological Sites

Total number of sites monitored	49
ARPA investigations	0
Other vandalism /damage	4
Damaged by logging	0
Sites damaged by forest users	1
Sites damaged by fire	0
Sites undisturbed	44

Twenty Priority Heritage Assets including the Badwell Cemetery (38MC360), the Cyper Creek Rhyolite Quarries (38ED675, 38ED740, 38ED 741), Cherry Hill Plantation (38MC712), Orange Hall (38UN145), Rose Cottage (38UN182), the Gist Slave Cemetery (38UN225) and Tyger Village (38UN213) had condition assessments completed.

One of the recently restored stone grave monuments at the Badwell Cemetery has been broken, probably by someone standing on or trying to move the stone. Two box tombstones have been displaced at the Woods Family Cemetery (38CS124). One stone lid has been removed from the top of the tomb. This is a recurring problem at the Woods Family Cemetery. The gate on the road to the cemetery should be replaced.

Vandals and artifact collectors continue to use metal detectors to search historic sites and remove artifacts. Recent metal detecting holes were found at early 20th century house site 38UN367 on the Enoree Ranger District. Some metal detecting damage was also found at Rose Cottage (38UN182). Soapstone cobbles and possible pieces of worked soapstone have been displaced and possibly removed from prehistoric soapstone quarries (38OC48, 38OC205) on the Andrew Pickens Ranger District. Unauthorized use of woods roads, ATV, horseback riding and bike trails are causing erosion and disturbance on sites. Protection boundaries were repainted on several unevaluated archeological sites. Eight fire lookout towers are historic sites in need of repair, restoration and documentation. Buildings at the Russell House Site (38OC106) continue to deteriorate.

Several sites are being damaged by water erosion along the shoreline of the Strom Thurmond Lake on the Long Cane Ranger District. South Carolina Electric and Gas Company submitted annual monitoring reports on significant archeological sites on the shorelines of the Stevens Creek and Neal Shoals Hydroelectric Projects impoundments. There was no active erosion reported. Monitored sites include 38CS167, 38CS224, 38ED48, 38ED118 and 38ED441.

Findings

1. The Forest has identified Priority Heritage Assets and is monitoring them at least once every five years. The Forest needs to develop Heritage Preservation Plans for at risk sites and implement regularly scheduled monitoring. Plowed wildlife openings should be inventoried for heritage resources and any significant sites found protected. A Forest Heritage Curation Plan should be developed to assess curatorial needs. The effects on archeological sites due to dispersed recreation should be assessed. Site management plans should be written for priority heritage assets and significant threatened sites.

Issue 3. Organizational Effectiveness

MQ 17: How do actual outputs and services compare with projected levels?

Information

This monitoring question is responsive to goals 14 and 18 and Objective 10B-OBJ-1. Objective 10B-OBJ-1 states provide local economies with 4.7 to 7.4 MMCF of wood products annually.

The monitoring element is defined as follows:

1. Emphasize high quality forest products on the Piedmont.
2. Are roads being maintained, constructed or reconstructed to reduce sediment delivery to water bodies? Provide a transportation system that supplies safe and efficient access for forest users while protecting forest resources.
3. Determine the costs of doing management.
4. Estimate the returns to counties.

Results

1. The Sumter NF sold 4.8 MMCF of forest products for sale in management prescription 10B in FY 14. Total Sumter volume sold (all management prescriptions) in FY 14 was 11.3 MMCF.
2. The roads constructed, reconstructed and maintained are shown in Table 15.

Table 15. Trend Data on Management Activities from FY10 to FY14

Activity	Unit of Measure	FY10	FY11	FY12	FY13	FY14	10 Year Plan Estimate
Volume Sold	MMCF	9.5	10.9	14.5	9.6	11.3	13.9
Road Construction	Miles	0.0	0.0	0.0	0.7	0.0	9.0
Road Reconstruction	Miles	0.0	0.0	0.6	19.0	24	342.0
Timber Roads	Miles	34.2	69.3	40.0	30.6	12.1	N/A
Roads Decommissioned	Miles	0.0	1.3	7.8	6.0 ⁶	6.0 ⁷	0.0
System Mileage	Miles	1,069	1,071	1,073	1,088	1,085	N/A
Roads Maintained	Miles	400	462	637	546 ⁸	590 ⁹	8,450

The Francis Marion and Sumter National Forests completed an analysis of the forestwide transportation system in 2014 that is documented in a planning report, Francis Marion and Sumter Transportation System Analysis Process Report (referred to as TAP) in September, 2014. The TAP is consistent with the 2005 Travel Management Rule (36 CFR 212.5). Forest Service Manual 7712 and Forest Service Handbook 7709.55-Chapter 20 provide specific direction, including the requirement to use a six step interdisciplinary, science-based process to ensure that future decisions are based on an adequate consideration of environmental, social and economic impacts of roads. A letter from the Chief of the Forest Service dated March 29, 2012 was issued to replace a November 10, 2010 letter previously issued on the same topic. It reaffirms agency commitment to completing travel analysis reports for Subpart A of the travel management rule by 2015, and provides additional national direction related to this work, addressing process, timing and leadership expectations. The letter requires documentation of the analysis by a travel analysis report, which includes a map displaying the existing road system and possible unneeded roads. It is intended to inform future proposed actions related to identifying the minimum road system. The TAP process is designed to work in conjunction with other frameworks and processes, the results of which collectively inform and frame future decisions executed under NEPA. The document entitled “Sub-Part “A” Travel Analysis (TAP),

⁶ Primarily associated with legacy and stewardship work on Enoree newly acquired lands.

⁷ Soil & Water road erosion mitigation work on Long Cane district and forest wide unclassified road decommissioning

⁸ Emphasis has shifted to accomplishing maintenance through timber sales and integrated target accomplishment.

⁹ Emphasis has shifted to accomplishing maintenance through timber sales and integrated target accomplishment.

Southern Region Expectations, Revised to align with 2012 Chief’s Letter” supplements the national direction for Forest Scale TAPs developed for the Southern Region.

The objectives of the Forestwide TAP conducted were to:

- identify key issues related to the Francis Marion and Sumter National Forests transportation system, in particular affordability and cumulative effects;
- identify benefits, problems and risks related to the Forest’s transportation system;
- identify management opportunities related to the existing transportation system to suggest for future consideration as National Environmental Policy Act (NEPA) decisions (examples included items such as road decommissioning within priority watersheds and needed aquatic passage improvement projects);
- create a map to inform the identification of the future Minimum Road System (MRS);
- indicate the location of unneeded roads and possible new road needs.

Table 16 below shows the current break down of the FMS road system by objective maintenance level:

Table 16. FMS Road System Mileage by Objective Maintenance Level.

District	ML 1	ML 2	ML 3	ML 4	ML 5
Enoree	207.2	42.6	199.6	36.8	0.5
Andrew Pickens	67.0	33.5	73.7	23.8	3.1
Long Cane	142.1	28.9	174.3	39.4	1.7
Francis Marion	140.0	82.0	294.9	55.8	1.4
Forest Totals	556.4	187.0	742.6	155.8	6.6

Note: Forest Service regulations at 36 CFR 212.5(b)(1) requires the Forest Service to identify the minimum road system needed for safe and efficient travel and for administration, utilization and protection of National Forest System (NFS) lands.

Cost of Operating and Maintaining the FMS Roads and Bridges to Standard

Costs to maintain the FMS roads and bridges to standard as the system currently exists are shown in Table 17.

Table 17. Typical Unit Costs for Road Maintenance Components on the FMS (Annual and or Deferred).

Item	Miles/Number	Unit Cost	Total Cost
Fixed Cost to Operate	1648.3 mi.	\$366 per mi.	\$610,488
Maintenance of Level 1 Roads	556.4 mi.	\$400 per mi.	\$222,546
Maintenance of Level 2 Roads	187 mi.	\$2,600 per mi.	\$486,153
Maintenance of Level 3 Roads	742.6 mi.	\$7,500 per mi.	\$5,569,358
Maintenance of Level 4 Roads	155.8 mi.	\$9,750 per mi.	\$1,518,806
Maintenance of Level 5 Roads	6.6 mi.	\$11,000 per mi.	\$72,655
Inspection of ½ of Bridges each Year	29	\$900/bridge	\$26,100
Replacement of Deficient Bridges	1 per Year, 40’ Av. Length	\$5,000/ft.	\$200,000
Total Annual Cost			\$8,706,106

Risks and Benefits Associated with Roads

A forestwide interdisciplinary team (IDT) conducted a risk/benefit analysis of each road on the two forests. The IDT developed criteria for five resource risk and four benefit categories. The risk and benefit criteria categories listed in Table 18 were developed by each resource specialists. The analysis was completed and results are documented in an Access database and are integrated with district road maps.

Table 18. Risk and Benefits Categories Considered in the Analysis

Risk	Benefit
Terrestrial Plants and PETS	Terrestrial Plants and Animals
Aquatic Organism Passage	Recreation Access
Hydrologic Modification	Vegetation Management Access
Non-Native Invasive Species	Public Infrastructure and Incident Management Access
Public Safety/Law Enforcement	

Table 19 displays the results of the forestwide risk/benefit assessment by the IDT.

Table 19. Current Risk and Benefit Assessment of NFS Roads on FMS

Criteria		Miles of Roads					Total Miles
Benefit	Risk	ML-1	ML-2	ML-3	ML-4	ML-5	
H	L		2.1	2.9			5.0
H	M		3.7	57.2	29.1		90.0
H	H		0.2	11.6	26.8	2.4	41.0
M	L	24.3	45.4	45.1			114.9
M	M	44.9	43.6	300.8	29.4	2.9	421.6
M	H	2.1	5.4	44.8	47.0	0.6	99.9
L	L	280.4	30.3	53.0	0.5	0.1	364.3
L	M	186.5	48.6	169.8	12.5	0.6	418.0
L	H	18.1	7.5	57.4	10.5		93.6
Total		556.4	187.0	742.6	155.8	6.6	1648.3

Table 20 represents the minimum road system (MRS) for future management as recommended by the IDT.

Table 20. Recommended MRS for the FMS

Objective Maintenance Level	Proposed Miles	Proposed Cost
1 - BASIC CUSTODIAL CARE (CLOSED)	256.2	\$102,487
2 - HIGH CLEARANCE VEHICLES	605.3	\$1,573,858
3 - SUITABLE FOR PASSENGER CARS	636.5	\$4,773,548
4 - MODERATE DEGREE OF USER COMFORT	56.7	\$552,542
5 - HIGH DEGREE OF USER COMFORT	3.4	\$37,576
D - Decommission	(90.2)	
Total	1558.1	\$7,040,011

- Table 21 displays the budget allocation for both the Sumter and Francis Marion National Forests (information is not tracked separately for each forest).

Table 21. Francis Marion and Sumter national Forest Annual Budget

Fiscal Year	Budget Amount
2012	\$16,985,722
2013	\$14,983,097
2014	\$15,506,587

- The total FY12 to FY14 payments to the 12 counties within the Sumter are displayed in Table 22.

Table 22. Trend Information on the Secure Rural School Act Payments to Counties

National Forest	2012	2013	2014
Sumter NF Total	\$1,335,956	\$1,254,064	\$1,304,526

Findings

- Results were within plan expectations in FY 2014. The amount of timber sold in management prescription 10B varies significantly from year to year, depending on where timber sales are located.
- The roads program continued to emphasize the reconstruction of roads to meet the intended traffic volumes safely and lessen impacts to forest resources. Road designs emphasized mitigating negative impacts to resources and focused on improving watershed health and removing barriers to aquatic organism passage. System road projects associated with timber sales were mainly for resurfacing, culvert replacement and removal of vegetation encroaching on the roadway.

Road decommissioning was emphasized through budget direction and funding allocations.

The Sumter continued to assess the backlog of deferred maintenance needs with the focus on open roads classified as maintenance level 3, 4 or 5.

Forest road mileage remained relatively steady, while corporate data continues to be reviewed and updated. Roads associated with new land acquisition were analyzed to be decommissioned, stored or added to the system by interdisciplinary teams.

3. The forest's budget has increased slightly from FY13 levels but has remained flat in recent years.
4. Local counties again received payments in 2014 through The Secure Rural Schools and Community Self-Determination Act of 2000. The act supplies payments to counties to: a) provide funding for schools and roads; and b) to make additional investments in projects that enhances forest ecosystems and improves cooperative relationships. In the last few years, (2012 - 2014) payments to counties have been relatively stable but have gradually declined in the last 5 years.

MQ 18: Are silvicultural requirements of the forest plan being met?

Information

This monitoring question is responsive to goals 14 and 18.
The monitoring elements are defined as follows:

1. Are lands being adequately restocked within 5 years of regeneration treatments?

Results

1. Most stands are now regenerated by natural regeneration (seed trees vs. planted seedlings). These stands typically have regeneration far in excess of minimum numbers.

Findings

1. No additional action is needed.

MQ 19: Are forest plan objectives and standards being applied and accomplishing their intended purpose?

Information

This monitoring question is responsive to desired conditions, goals, objectives and standards in the plan.

The monitoring elements are defined as follows:

1. Are projects being managed according to requirements and making progress toward achievement of desired condition for vegetation?
2. Management of newly acquired lands.

Results

1. The Sumter has implemented timber sales and prescribed burns on a yearly basis since the forest plan was signed in 2004.

Soil quality monitoring was conducted on the piedmont districts following protocols established in *Soil Disturbance Field Guide* (2009). Timber harvest units were randomly selected for survey. Soil-disturbance classes were used to assess effectiveness of management activities in achieving desired soil conditions relative to established Forest Plan standards. A number of soil attributes were measured (forest-floor, surface-soil and subsurface). Soil disturbance classes displayed in Table 23 range from “0” to “3” (“0” indicating no disturbance to “3” representing a high degree of soil disturbance). The overall detrimental rating reflects the percentage of the unit impacted by management activities.

Table 23. Randomly Selected Stands for Soil Quality Monitoring Disturbance Protocol on the Enoree and Long Cane Ranger Districts

Compt/Stand	Soil Disturbance Class				Detrimental Proportion (%)
	Proportion 0's (%)	Proportion 1's (%)	Proportion 2's (%)	Proportions 3's (%)	
142/25	0	58	32	10	10
145/9	7	53	30	10	17
164/11	13	50	42	0	21
141/13	10	60	27	3	23
244/25	0	73	27	0	10
244/14	7	73	20	0	10

2. First thinnings on newly acquired lands on the Enoree are in the timber sale layout phase. Associated roads will be reconstructed, maintained or obliterated to reduce adverse resource effects.

Findings

1. Timber sales and prescribed burns continue to be the major vegetation management treatments that the forest uses to create or maintain desired vegetation conditions. NNIS control and wildlife management activities also help achieve desired vegetation conditions particularly for threatened, endangered and sensitive species.

Soil quality monitoring indicates that three units complied with forest-wide standard (FW-3). Three units exceeded the standard, which is set at 15 percent soil disturbance over the treatment area.

2. The Lower Enoree First Thinning Project and associated roadwork has begun and timber sales will be completed over the next few years.

Approximately 1,315 acres of land were acquired on the Enoree Ranger District in 2014.

Chapter 3 - Action Plan

Actions Not Requiring Forest Plan Amendment or Revision

a) **Action:** Baseline acreage, condition and distribution of rare communities on the Forest.

Responsibility: Forest biologists and biological technicians

Date: Ongoing

Status: Continue to survey the location and condition of rare communities on the forest. Information should be entered into GIS corporate database. Project effects on rare communities and the introduction and spread of invasive plants in understory plant communities are to be addressed in project analysis.

b) **Action:** Integrate plans to restore forest structure, rare communities, native understory, shortleaf pine and hardwood communities into timber projects and analysis areas.

Responsibility: SO and Districts

Date: Ongoing

Status: Completed and planned watershed assessments provide the basis for future project work and help identify opportunities to use KV and stewardship funds to accomplish work along with appropriated funds. The *Native Cane* and the *Georgia aster/Shortleaf Pine* environmental assessments provide opportunities to improve habitat for key native species. The *AP Loblolly Pine Removal Project* environmental impact statement provides opportunities to develop woodland habitat on the Andrew Pickens Ranger District and includes improving habitat for the federally endangered smooth coneflower.

c) **Action:** Incorporate wetland, riparian habitat and hardwood restoration activities into GIS corporate layer information and identify potential additional projects on the forest.

Responsibility: Forest biologists and soil scientist

Date: Ongoing

Status: Completed and planned watershed assessments provide the basis for future project work and provide opportunities to use KV and stewardship funds to accomplish work along with appropriated funds. Categorical exclusion number 18 has been used to complete NEPA analysis. This relatively new category is exclusive to restoring wetlands, streams, riparian areas or other bodies of water.

d) Action: The forest will work with the State of South Carolina and supply information relative to prescribed burning on the forest in order to help the state meet air quality standards relative to fine particulates and ozone.

Responsibility: Districts and SO

Date: Ongoing

Status: Forest personnel will work with state personnel in order to help the state meet air quality standards. The SO will work toward collecting fine particulate monitoring information on the Andrew Pickens Ranger District.

e) Action: The forest will develop protocols to monitor bats and will begin to inventory/monitor ecosystem recovery in restored wetlands.

Responsibility: SO Wildlife Biologist, Sumter Wildlife Biologist, SO Soil Scientist

Date: Ongoing

Status: Bat monitoring will continue on the Forest and additional information will be collected on the Andrew Pickens Ranger District coinciding with the recent federal listing of the Northern long-eared bat. An agreement with researchers at Clemson University is in place and bat monitoring will begin in FY 2016. Agreements will also be put in place to monitor/study species/habitat recovery in wetlands.

f) Action: Aquatic species and habitat inventory and monitoring will be done on the piedmont and mountain districts through an agreement with the Center for Aquatic Technology and Transfer (CATT).

Responsibility: SO Wildlife Biologist and Sumter Wildlife Biologist

Date: Ongoing

Status: Funding agreement is in place and work will begin in FY 2016.

g) Action: Air quality (fine particulate matter) monitoring will be conducted on the Andrew Pickens Ranger District.

Responsibility: District and SO

Date: FY 2016

Status: Regional air specialist will set up monitoring station(s) in FY 2016.

h) Action: Recreation monitoring will begin on the Chattooga Wild and Scenic River starting in September 2015 and will continue for approximately 18 months. It will address monitoring questions identified in *Managing Recreational Uses in the Upper Segment of the Chattooga Wild and Scenic River Corridor* environmental assessment and Decision Notices for the: Sumter National Forest, Oconee County, South Carolina; Chattahoochee-Oconee National Forest, Rabun County, Georgia; and, Nantahala National Forest, Jackson and Macon Counties, North Carolina.

Responsibility: SO and district Recreation Specialists

Date: FY 2015 through FY 2017

Status: Contract has been awarded and data collection is set to begin.

Actions That Require Forest Plan Amendment or Revision

No actions require a forest plan amendment.

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Appendix A - List of Preparers

The following individuals contributed to this report:

Jim Bates	Forest Archaeologist
LaRue Bryant	Forest Engineer
Jason Jennings	Forest Soil Scientist
Robert Morgan	Forest Archaeologist
Jeff Magniez	Sumter Zone Wildlife Biologist
Robin Mackie	Forest Ecologist/Botanist
Jay Purnell	Forest Silviculturist
Allan Hepworth	Fuels Specialist
Brian Schaffler	Forest Fire Management Officer
Geoff Holden	GIS Specialist
Dan Stratton	Air Resource Specialist, Region 8 Air Resource Team
Jim Knibbs	Environmental Coordinator
Mary Morrison	Forest Planner
Peggy Nadler	Lands Program
H. Scott Ray	Natural Resources Staff Officer
James R. Anderson	Fire, Lands and Minerals Staff Officer
Tony L. White	Safety, Heritage, Interpretation, Recreation, and Engineering Staff Officer

Appendix B - Amendments to Forest Plan

Amendment #1 to the 2004 *Revised Land and Resource Management Plan Sumter National Forest* was signed on January 31, 2012 for *Managing Recreation Uses in the Upper Segment of the Chattooga Wild and Scenic River Corridor*.

**SUMTER NATIONAL FOREST
FISCAL YEAR 2014
MONITORING AND EVALUATION ANNUAL REPORT
COMMENT FORM**

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I have the following comments on the Monitoring and Evaluation Annual Report:

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Comments can also be submitted electronically to: comments-southern-francismarion-sumter@fs.fed.us.

Mail comments to: Mary Morrison, Forest Planner
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