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Forest Service

National Forest in North Carolina
Southern Region

Croatan National Forest

Travel Analysis Project Report

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Executive Summary

Objectives of Forest-Wide Travel Analysis Project Report (TAP)

The objectives of Forest-wide TAP conducted over the past year were to:

- identify key **issues** related to the Croatan National Forest transportation system, in particular affordability and cumulative effects;
- identify **benefits, problems and risks** related to the Croatan National 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)**; and
- **indicate the location of unneeded roads and possible new road needs**.

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

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Interdisciplinary Team and Specialized Support

The TAP was conducted by an Interdisciplinary Team (IDT) with extensive internal participation, and limited participation by partners and the general public. The primary participants were:

- Cliff Northrop, Assistant Forest Engineer – Travel Analysis Team Leader
- Jim Gumm, District Ranger
- Lynn Hicks, Engineering, Heritage, Recreation, Lands and Special Uses Staff Officer
- James Cherry, Fire Management Officer
- Will Dienst, Timber Management Assistant
- Steven Maharry, Silviculturalist
- Karl Buchholz, Civil Engineer, Editor
- Gisele Majidi-Weese, Civil Engineer, Editor

This document has been reviewed by various Forest Service representatives of the National Forests in North Carolina and the Southern Region and is available to other Forests and the public upon request. The Croatan National Forest TAP will be part of the project file for future EA projects.

Overview of the Croatan National Forest Road System

The Croatan National Forest TAP scale is Forest-wide and is not being completed in conjunction with an Environmental Assessment (EA). The Croatan National Forest road system currently comprises some 200 miles, 195 miles of which the Forest is responsible for. This road system provides access to approximately 161,103 acres of National Forest, as well as to interspersed private tracts and nearby local communities maintaining (see **Figure 1**). The system supports both recreation and resource management. It is comprised of a combination of old “public” roads, roads constructed to access timber sales and subsequent silvicultural activities, roads constructed to access recreation areas, and a variety of other routes. These range from double lane paved roads to single lane gravel or native surface roads that may be useable by passenger cars, to high clearance routes, to travel ways that are closed for periods of time greater than one year. Funding for the construction or reconstruction of all types was generally provided either by congressional appropriations, authorized as a component of a timber sale, or were constructed by private entities prior to the acquisition of the land by the USDA Forest Service. Maintenance funding is primarily by congressional appropriations, partners, and timber sales generally fund any maintenance required during the life of a particular sale operation.

Figure 1: Croatan National Forest

Key Issues, Benefits, Problems and Risks, and Management Opportunities Identified

- **Current appropriations and supplemental revenue sources are not sufficient to adequately maintain the Croatan National Forest's 200 mile road system as currently configured**. Without changes, the existing road system requires an annual expenditure of approximately $**544,220**. The Forest received approximately $107,000 in allocated funds in 2017. Much of these funds go towards overhead costs. The Forest also collects monies from cooperative use agreements with private entities. This amount typically comes to roughly $6,000 annually. In 2016 and 2017, the National Forests in North Carolina, through an agreement with the North Carolina Wildlife Resource Commission was able to accomplish $251,000 in road maintenance and repair. This agreement will be repeated going forward with similar values of work being accomplished. This is an average of $126,000 annually. Another source of funding that is available to the Forest is through the enforcement of special use agreements that require compensation from the user commensurate with the level of use. This would potentially result in approximately $1,000 in additional road maintenance funding. Combining these revenue sources results in a road maintenance budget of $240,000. This is nearly 44% of the minimum funding required to maintain the Croatan National Forest's road system
- **There is limited system mileage which primarily serves either as access to private inholdings, or as general access to adjacent communities.** The State of North

Carolina owns and manages its road system through the Department of Transportation (NCDOT). NCDOT has strict guidelines for assumption of ownership and jurisdiction of roads. Roads would be required to meet standards for secondary roads in order to be considered for transfer of jurisdiction and maintenance costs to NCDOT. Of the 200 miles of the current system, 5 miles are primarily maintained by state or private entities. This report identifies another 12 miles of road as opportunities for possible transfer of maintenance responsibility.

- **Certain roads, particularly those located in areas with poorly drained soils, may be causing undue stress to water quality** and associated aquatic organisms, especially if they cannot be regularly and properly maintained. This is particularly the case in watersheds that are classified as "impaired". The Croatan National Forest does not have any impaired watersheds. In some cases there appear to be opportunities to decrease the total system maintenance costs, while at the same time better protecting water quality by decommissioning those roads with the highest risk and least benefit. The TAP has identified 6.5 miles of National Forest System roads to be considered for decommissioning.
- **There are a number of roads that will likely be needed at some time in the future, but which do not appear to be needed for actions currently being proposed.** Storage of these roads (closure for at least a year, with only custodial maintenance provided) should be strongly considered. The TAP analysis suggests that approximately 44 miles should be considered for conversion to storage and custodial maintenance until needed.
- **In order to meet budgetary limitations, some roads currently opened year round have been identified to be considered for seasonal closure** (38 miles); **and some roads currently maintained for passenger car use have been identified to be considered for conversion to high clearance use only** (20 miles).
- Relatively high road densities may be impacting some sensitive wildlife species in a few specific areas of the Forest. Overall, however, road densities do not exceed those allowed by the Forest Plan. As configured the overall road density, exclusive of non-FS jurisdiction roads, is 0.79 miles/square mile, and the open road density is 0.52 miles per square mile.
- **Several roads or portions of roads may have to be closed due to insufficient bridge replacement funding**. There are six bridges on the Forest located on open roads, of which one is load restricted or otherwise deficient.
- **Opportunities should be sought to increase road maintenance revenues** where possible through the use of commercial road use collections, stewardship contracts,

and partnerships, including volunteer groups, such as hunters, equestrian organizations, ATV user groups and others.

Comparison of Existing System to Minimum Road System

Refer to Appendix F for a summary of proposed changes to the existing road system suggested by the TAP, as information available to inform future NEPA analyses and decisions.

Next Steps

- TAP recommendations will be used to inform NEPA decisions, many of which will eventually be implemented in conjunction with various restoration projects on the Forest.
- Prior to implementing these recommendations, NEPA determinations will be conducted at the appropriate scale, using the TAP to inform issues, particularly cumulative effects and affordability.
- The road system should be revisited with an updated Forest-wide TAP, probably on about a 10-year cycle, with the next one due by approximately the year 2025.

Public Involvement

In order to satisfy the requirement for public involvement and best serve the process of informing future NEPA decisions regarding cumulative effects and affordability, as well as Forest planning, participation opportunities for comment on TAP recommendations were provided to the various agencies and key stake holders, including NC Wildlife Resource Commission, the NCDOT, the NC Forest Service, environmental groups, equestrian, mountain bike, outfitters, special interests groups and elected officials.

Context

Alignment with National and Regional Objectives

Sub-Part "A" Travel Analysis is required by the 2005 Travel Management Rule (36 CFR 212.5). Forest Service Manual 7712 and Forest Service Handbook 7709.55-Chapter 20 provides 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. The six steps are as follows:

Step 1 – Setting Up the Analysis
Step 2 – Describing the Situation
Step 3 – Identifying Management Concerns
Step 4 – Assessing Problems, Benefits and Risks
Step 5 – Describing Opportunities and Setting Priorities
Step 6 – Reporting

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 also 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 MRS. 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. This letter, including a diagram which further illustrates the relationship between NEPA and TAP is included in Appendix G.

The document entitled "Sub-Part "A" Travel Analysis (TAP), Southern Region Expectations, Revised to align with 2012 Chief's Letter" and attached in Appendix H, supplements the National direction for Forest-scale TAPs developed for the Southern Region.

Coordination with Forest Plan

The current Forest Plan for the Croatan National Forest was adopted in 2003. It provides specific direction for overall management of the Croatan National Forest. The Forest-wide TAP tiers to the Croatan National Forest's Forest Plan by informing future NEPA actions that implement the Forest Plan and have transportation components. The TAP has been informed by the Watershed Condition Framework, and likewise, the TAP is intended to inform future Forest restoration activities, including watershed restoration.

Management Areas

Please refer to the Revised Land and Resource Management Plan (LRMP) and the LRMP Appendices for the Croatan National Forest, 2002, for detailed descriptions, including standards and guidelines for road standards and management direction for each Management Area (MA), MA - 1 through MA – 7, within the Croatan National Forest.

Budget and Political Realities

The roads located on the Croatan National Forest are a combination of historic trails that have undergone improvement over the years, roads that were built in the decades of the 1950's, 1960's, 1970's and 1980's to access timber sales, roads constructed for access to communities, either internal or adjacent to the Forest, roads constructed by recreational users, and roads constructed or otherwise acquired through a variety of means to comprise the current system. As is the case for much of the rest of the infrastructure on the Forest, funding has been inadequate to properly maintain all of the Forest's roads and bridges. In some cases these roads and bridges have become superfluous to our administrative needs, and many no longer meet

public needs either. Changes are becoming inevitable, being driven both by the budget as well as by the need to have the most efficient and effective transportation system on the ground as possible. The TAP process is an attempt to begin to identify a proposed MRS, which will only come into place as NEPA decisions are made and then actual on-the-ground decisions are implemented. The MRS will probably change over time as well, as public needs and financial resources change. Therefore, it is expected that new Forest-wide TAP analyses will continue to be needed, probably on about a 10-year cycle.

Fixing America's Surface Transportation (FAST) Act

On December 4, 2015, President Obama signed the Fixing America's Surface Transportation (FAST) Act (Pub. L. No. 114-94) into law. The FAST Act authorizes $305 billion over fiscal years 2016 through 2020 for transportation programs. The National Forests in North Carolina will apply for all of this money. The FLTP provides dedicated funding to improve access within Federal lands owned by the Federal government. The Forest Service annually receives $15 to $19 million from this funding. The Croatan National Forest has designated 14.4 miles of NFSR to be included in the FLTP system. The projects to be funded by the FLTP are selected by the Region 8 (Southern Region) Regional Forester with input from the Region 8 Director of Engineering. The amount of funding that each Forest unit receives varies from year to year depending on the priorities for the Region. To date, the Croatan National Forest has not received any FLTP funding.

Under MAP-21, the Forest Highway program was repealed and in its place a new program, the Federal Lands Access Program (FLAP), was created. This program differs from the old Forest Highways program in that funding is available to improve access to all Federal lands and not just National Forests. Similar to the Forest Highway program, FLAP transportation projects are funded for infrastructure that is under State, county or other local government jurisdiction. No road network needs to be designated and, as a result, no projects located on the NFSR system are eligible for FLAP funding.

Alignment with Watershed Condition Framework

Along with the other National Forests across the country, the Croatan National Forest recently conducted an analysis of its watersheds, categorized them as to their condition and prioritized them for future efforts at improvement. Three categories were identified: Class 1 – Functioning Properly, Class 2 – Functioning at Risk, and Class 3 – Impaired Function. These classifications were performed on watersheds at the 6th order Hydrologic Unit Classification (HUC) according to standard procedures described in the "Watershed Condition Framework (WCF)" technical guide, found at

http://www.fs.fed.us/publications/watershed/Watershed_Condition_Framework.pdf. It was determined that six watersheds on the Croatan National Forest are Class 1, 15 are Class 2. The Croatan National Forest does not have any Class 3 (impaired) watersheds. None of the watersheds on the Croatan National Forest were selected as priority watersheds. It is possible that one or more of the watersheds on the Croatan National Forest may be selected for priority work at some time in the future.

The Forest-wide TAP analysis was heavily informed by the WCF. Any watershed improvement work will be informed in the future by the TAP and the watershed analysis for individual 6th level watersheds (see map in **Appendix I**).

Overview of the Croatan National Forest and the Supporting Transportation System

General Description of the Croatan National Forest Land Ownership Patterns, Land Use and Historic Travel Routes

The Croatan National Forest is comprised of 161,103 acres, occupying almost 52% of the proclamation boundary. Almost all is forested, with about 51,992 acres (or 32%) being Wilderness or otherwise classified as Roadless, and 109,221 acres (or 68%) being available for active forest management. Interspersed within the proclamation boundary and adjacent to the National Forest are a few tracts managed as Timber Investment Management Organizations (TIMOs) or Real Estate Investment Trusts (REITs), as well as some scattered large forest industry tracts, and a few private tracts. There are a few communities and military facilities within the proclamation boundary as well, including Havelock, Newport, and the Cherry Point Marine Corps Air Station. These communities and facilities surround the outside of the forest. It is unavoidable that some travel routes are located in wet areas, as much of the Croatan National Forest is flat and wet.

The lands of the Croatan National Forest are administered by the Croatan Ranger District. The number of acres administered by the District is indicated in **Table 1**:

Table 1: Croatan National Forest Acreage

District	Total Acreage	Wild and Roadless Acres
Croatan National Forest	161,103	51,992

There are two (2) major developed recreation areas on the Forest: Cedar Point and Flanner's Beach. There are other smaller developed day use areas and campgrounds across the Forest. In

addition, the Forest allows dispersed recreation on some 159,000 acres. Many recreation sites on the Forest collect fees from users. These fees are returned to the Forest and are available for use to maintain and improve recreational facilities including roads that access these facilities. This is another source of revenue that is often used to accomplish road maintenance.

Motorized and Non-Motorized Trails

Also there are 47 miles of trails, supporting a variety of uses, including OHVs, equestrian, biking, pedestrian, and mixed use. Motor vehicles are restricted to those roads shown on the official Motor Vehicle Use Map (MVUM) included in **Appendix C**.

Description of the Croatan National Forest's Transportation System

Several Federal and State highways, including US 70, US 17, NC 24 and NC 58, and quite a number of roads under state jurisdiction traverse various parts of the Croatan National Forest. Some of these State secondary roads are part of the Federal Lands Access Highway system, which provides access to relatively large tracts of the Forest. There are approximately 36 miles of Federal Lands Access Highways on the Croatan. Federal Lands Access Highways replace Forest Highways which were eliminated with the implementation of the MAP-21 Transportation Act. These are roads maintained under state jurisdiction, which on occasion receive reconstruction project funding through the Highway Trust Fund.

There are approximately 200 total miles of National Forest system road under the jurisdiction of the Croatan National Forest. Of the total, 195 miles are maintained by the National Forests in North Carolina. This mileage is comprised of 130 miles suitable for passenger car use, almost all of which are open to the public on a year round basis, 70 miles only suitable for high clearance vehicular traffic, of which 12.8 miles are opened to the public and 57.2 miles which are at least seasonally closed. There are 10 miles on the system inventory that are closed for periods of time greater than one year, being in "storage" for future use when needed.

Maintenance Levels

The Forest Service catalogs its roads in the official inventory, I-Web, by Maintenance Levels (ML), loosely defined as follows:

- ML 5 – Single or Double Lane Paved Roads with high degree of user comfort;
- ML 4 – Moderate User Comfort; primarily double lane aggregate roads with ditches;
- ML 3 – Lowest level maintained to accommodate passenger car traffic;
- ML 2 – Maintained primarily only to accommodate use by high clearance vehicles; and
- ML 1 – Basic Custodial Care. Closed to all traffic for periods greater than one year.

Table 2 and **Figure 2** below show the current breakdown of the Croatan National Forest road system by operational maintenance level:

Table 2: Croatan National Forest Road System Mileage by Operational ML

Maintenance Level	ML 5	ML 4	ML 3	ML 2	ML 1	Total
NFS Road Mileage	13.6 mi	86.9 mi	48.8 mi	35.5 mi	7.9 mi	192.7 mi

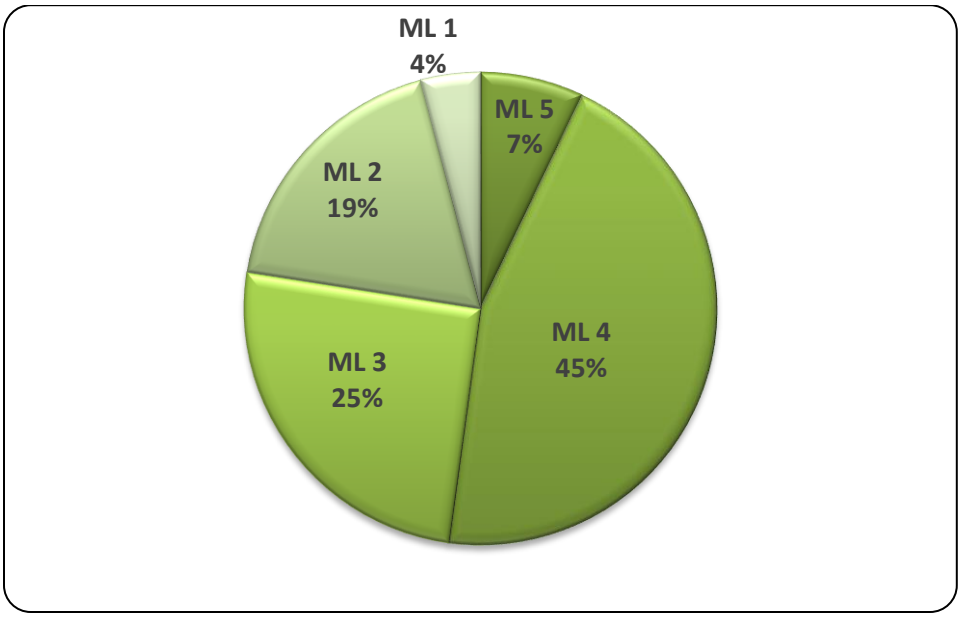


Figure 2: Croatan National Forest Roads by Operational ML (percent)

Private and Co-op Roads

Certain roads located on the Croatan National Forest are needed to provide access to private tracts of land, or by municipalities or large private landowners in cooperation with the Forest. The maintenance responsibility for and jurisdiction of these roads are identified in the official inventory. Costs for maintaining these roads are generally pro-rated to the appropriate benefitting entity, as further specified in the enabling agreements.

Unauthorized Roads

At any given time there may be roads found to be in existence on the landscape that are not shown in the inventory or on an official map. These roads are considered to be unauthorized roads, unneeded for use by the Croatan National Forest. They are subject to decommissioning at any time funding becomes available for that purpose.

Road Maintenance Funding

The Croatan National Forest maintains its road system primarily with funding provided through the annual Interior and Related Agency's budget, specifically the CMRD line item. The Croatan National Forest received approximately $103,000 of this funding in Fiscal Year (FY) 2017. Another source of revenue available for certain types of maintenance on the Croatan National Forest road system is CMLG. CMLG funding in the amount $228,000 was received in FY 2017 for roads on the Croatan National Forest. This is related to nonemergency repair of damage caused by Hurricane Matthew. Roads that support forest management operations may be maintained with timber sale or stewardship dollars during the life of the operation, but that is not typically a long term solution. The Croatan National Forest annually generates approximately $11,000 in CWFS funds for road maintenance. Finally, partners and user groups may provide some road maintenance support. In 2015 and 2016 the Croatan National Forest entered into a project agreement with the NC Wildlife Resources Commission, which accomplished an annual average value of $126,000 in maintenance of the road system. This funding is focused on maintenance of roads and road segments that support hunting and fishing access across the Forest. This agreement is anticipated to continue in the future. Adding these revenue streams, the total funding available for Croatan National Forest road system maintenance is $**468,000**.

Cost of Operating and Maintaining the Croatan National Forest Roads and Bridges

Operations Costs

As indicated in the previous section, approximately $76,000 of appropriated funds are available annually with which to operate and maintain the Croatan National Forest road system. Of this, approximately $32,000 (42%) are required to cover fixed costs, including management salaries, rent, fleet, travel, training and cost pool contributions. This amount also covers items such as data management, contract preparation and administration and upward reporting. This base amount is required regardless of the size of the road system being managed. A remainder of approximately $44,000 are applied for road maintenance activities, which must also include replacement of deficient bridges. In addition, approximately $11,000 in maintenance funds are generated each year from timber sales. These funds are used to maintain roads impacted by haul and other activities associated with timber sales.

Road Maintenance Costs

The primary components of road maintenance on the Croatan National Forest include (in addition to inspections) 1) blading and ditching, 2) surfacing (repaving in the case of some ML4 and ML5), 3) signs and markings, 4) drainage structures, and 5) mowing and brushing. **Table 3**

displays typical unit costs for these items on the Croatan National Forest road system by maintenance level:

Table 3: Average Annual Cost per Mile (Excluding Bridge and Major Culvert Replacement)

Maintenance Activity	Frequency	ML 1	ML 2	ML 3	ML 4 Aggregate	ML 4 Asphalt	ML 5
Road Reconditioning (Grading, Ditching & Shoulders)	Biannual for ML 3 and ML4 Once every 5 years for ML 5 shoulders	$7	$20	$500	$500	$0	$0
Aggregate Surface Replacement	Assume 4% annual surface material loss	$0	$30	$1,000	$2,000	$0	$0
Shoulder Replacement	ML 5 only once per 5 years	$0	$0	$0	$0	$0	$100
Asphalt Repair	Assume 30 Year Life of Asphalt Surface	$0	$0	$0	$0	$3,000	$4,000
Drainage Repair or Replacement	One >36" CMP per mile per 10 year	$0	$0	$500	$500	$600	$600
Drainage Repair or Replacement	One <36" CMP per mile per 5 years - ML 1, 2 dips	$3	$40	$300	$300	$300	$300
Sign Replacement or Repair	Average	$0	$0	$60	$60	$60	$60
Gate Repair	Once per 5 years	$0	$10	$40	$0	$0	$0
Vegetation Removal, Mechanized	Mechanical - once per 5 years ML 3,4 &5, once per 10 years ML 2	$0	$0	$100	$100	$100	$100
Vegetation Removal	Herbicide once per 4 years	$0	$0	$0	$0	$0	$0
Hazard Tree Removal	Annual	$0	$0	$100	$100	$100	$100
TOTALS		**$10**	**$100**	**$2,600**	**$3,560**	**$4,160**	**$5,260**

Bridge Maintenance and Reconstruction Costs

The Croatan National Forest has 6 bridges and major culverts. These have to be inspected every other year, at an average cost of about $257 per bridge inspection. At the present time, one bridge is load-limited and in need of maintenance or replacement because it is located on an open road. (Load limited bridges will be rated and posted in the interim until funding for replacement can be obtained). Typical bridge replacement costs for the Croatan National Forest is about $5,000 per linear foot for a typical one lane bridge. These costs need to be added to the total road maintenance costs above to get a true picture of the total road and bridge maintenance costs for the next 10 years on the Croatan National Forest.

Operation and Maintenance Costs for the Croatan National Forest Roads and Bridges

Combining the information from the previous sections results in the **Table 4** below, which shows the total annual cost to maintain the Croatan National Forest roads and bridges to standard as the system currently exists:

Appendix E shows the cost of maintaining the recommended MRS that balances costs and revenue.

Table 4: Typical Annual Road Maintenance Costs on the Croatan National Forest

Maintenance Item	Mileage	Unit Cost	Total Cost
Fixed Cost to Operate	1	$32,000	$32,000
Maintenance of Level 1 Roads	7.9	$10	$79
Maintenance of Level 2 Roads	35.5	$100	$3,550
Maintenance of Level 3 Roads	48.8	$2,600	$126,880
Maintenance of Level 4 Roads	86.9	$3,560	$309,364
Maintenance of Level 5 Roads	13.6	$4,160	$56,576
Inspection of 50% of Bridges Each Year	3	$257	$771
Replacement of Deficient Bridges	1 per 10 Year, 30 feet Length	$15,000	$15,000
Total Annual Cost			**$544,220***

*Note: Compare current available budget of $239,000 to the needed amount of $544,220.

Assessment of Issues, Benefits and Risks

Economics

The primary economics issues relate to the inability to adequately maintain the existing road system with current available funding sources. As indicated previously, $**239,000** are available annually from the Forest and the Forest's partners with which to operate and maintain the system, whereas the needed funding for the system as currently configured is approximately $**544,220.** As a result of the shortfall, deferred maintenance continually accrues on the system, but more importantly, it is not possible to maintain BMPs required to adequately protect water quality and associated aquatic organisms. Meanwhile, roads and bridges are leading to closures (permanent and seasonal), as well as load restrictions on bridges. The system is consequently failing to meet the needs of both the recreating and travelling public, and to provide for adequate resource access for forest management activities, including prescribed fire and fire suppression.

Environmental and Social

The primary issues in the environmental arena relate to 1) erosion of the roadbed, cut slopes, fill slopes and ditches, with the resulting sediment discharge affecting water quality and associated aquatic organisms; 2) in some cases, road density effects on certain wildlife species, such as bear; and 3) the roads serving as a conduit for invasive species. In the social arena, the effects are primarily the demand for adequate access, sometimes offset by the need for providing solitude. Law enforcement faces increasing challenges due to the high demand for recreation site use. Access is needed by a wide variety of Forest users, including bikers, hikers, hunters, fishermen and other recreationists, as well as for forest management activities, such as restoration projects and fire suppression. Roads require regular surveillance and inventorying, as they can easily become sites for crime, illegal dumping and similar activities.

Safety and Function

The primary issues related to safety and function of the Croatan National Forest road system include 1) maintenance of a clear and smooth travel way, 2) access in the proximity of the intended use, 3) functioning of the drainage features, 4) width and stability of the road bed, 5) proper signs and markings, and 6) structurally and functionally sufficient bridges.

Measurement and Rating

Benefits and risks of the overall system were tabulated and appear in **Table D2** of **Appendix D**. The standard list of questions in the Forest Service Handbook was used as a guide to further assist in identifying the benefits and risks. The degree of risk was rated subjectively as being high, medium or low for the system by appropriate specialists. Then, after considering the entire system, each road was also considered. Those with particular issues, benefits and/or risks

different from those of the entire system were listed and further described below for further consideration. As related projects become identified at some time in the future, this list may be referenced to inform projects or proposed changes in the MRS.

Recommendations and Proposed Mitigation Measures

Rationale Used to Arrive at Proposed Minimum Road System

The Chief's letter, dated March 29, 2012, reaffirms that "the Agency expects to maintain an appropriately sized and environmentally sustainable road system that is responsive to ecological, economic, and social concerns. The National Forest road system of the future must continue to provide needed access for recreation and resource management, as well as support watershed restoration and resource protection to sustain healthy ecosystems". Budget realities being what they are, roads that are not needed for any resource use cannot be supported in the future. Roads that appear to be unneeded, or which appear to have both low benefit and high risk to various environmental or social values were flagged for consideration as decommissioning candidates. There are **6.5 miles** in this category (Table 5 and Appendix B).

Table 5: Roads Recommended for Decommissioning (Likely Not Needed)

Road Number	Road Name	Segment Mileage
FS 168	Horse Island	0.90
FS 173	Sheep Ridge Lane	1.50
FS 174	Seaborn	2.89
FS 202	Horse Pen Branch	0.40
FS 3055	West Road	0.36
FS 3091	Peak Road	0.50
Total Mileage		**6.5 miles**

Roads that primarily provide access to the public and local community or roads where transfer opportunities exist need to be considered for transfer of maintenance responsibility as appropriate. In this category, **12.2 miles** were identified for consideration (Table 6).

Table 6: Roads recommended for Transfer of Maintenance Responsibility

Road Number	Road Name	Segment Mileage
FS 123	Pringle	3.696
FS 166	Jabez Pine	1.400
FS 167	Pine Crest	1.103
FS 177A	Millis Swamp Spur	0.788
FS 3018	Catbrier	0.150
FS 3057	Dixon Fields	0.800
FS 606	Mattocks	3.166
FS 610	Georges Branch	0.300
FS 616	Neds Creek	0.840
Total Mileage		**12.2 miles**

Administrative roads are roads with the single purpose of accessing administrative facilities. A total of **0.4 mile** of administrative road is proposed for removal from the NFS system with the intent of managing the road with the facility it accesses by yielding maintenance jurisdiction to the State of North Carolina (**Table 7**).

Table 7: Administrative Roads Recommended for Removal from the NFS System

Road Number	Road Name	Segment Mileage
FS 135	Croatan Work Center	0.204
FS 145	Croatan Ranger Office	0.170
Total Mileage		**0.4 miles**

Totaling the mileages from **Tables 5, 6** and **7** yields **19.1 miles** of roads that can be considered for removal from the Forest Service maintained road system.

Roads not planned as needed for project access within the next decade, and which appear to be currently receiving extremely low use by the public or appear unneeded for management purposes, such as fire suppression access, were identified to be considered for storage; there are approximate **26.1 miles** of roads in this category (**Table 8**).

Table 8: Roads Recommended for Storage

Current RMO	Revised RMO (Optimal)	Road No.	Segment Mileage
C1[1]	D0[2]	3045	0.45
D1[3]	D0	209	2.25
		3060	0.34
		3062	0.73
		3068	1.5
		3069	1.01
		3070	0.3
D2[4]	D0	173	1.5
		3007	0.5
		3008	1.5
		3009	1.0
		3010	1.0
		3011	6.1
		3012	3.6
		3013	1.3
		3142	0.6
D3[5]	D0	127E	0.8
		168	0.9
		3018-1	0.15
		606A	0.6
Total Mileage		**26.1**	

Some roads that are primarily needed only for administrative use, by hunters or currently useable by passenger vehicles, were recommended to be considered for conversion to a lower objective maintenance level roads, that is, open only for high-clearance vehicles (not suitable for passenger cars). Approximately **22.75 miles** were identified that should be considered in this category (Table 9). In general, roads receiving the highest amount of use, especially by the

[1] C1 - Seasonal Low Speed (single-lane gravel road). Gated but seasonally open for hunting and wildlife habitat management. Available for administrative duties and fire protection. Accept non-motorized use such as hiking, biking, and horseback riding. Access route for vegetation management activities.
[2] D0 - Road in Storage. Culverts pulled, out sloped roads, no maintenance except to prevent environmental damage. Physically closed to prohibit all motorized access. Future access for vegetation management activities
[3] D1 - Linear Wildlife Opening. Closed with a gate or other structure. Allow occasional access for mowing operations and administrative use and fire protection. Create and maintain as wildlife habitat. Future access for timber harvesting activities.
[4] D2 - Open 4-Wheel Driveway. Maintain drainage and road prism only to provide access for high-clearance vehicles. Encourage use for 4-WD vehicle use, hunting and/or fishing. No commercial timber harvest.
[5] D3-Restricted Low Standard Timber Haul Road. Maintain drainage and turnarounds. For 2-WD, timber harvesting, fire protection, hunting, wildlife habitat management, and non-motorized use (hiking, biking, equestrian, etc.)

motoring public, or which access major developed recreation areas, should not be downgraded in objective maintenance level.

Table 9: Roads Recommended for Reduction in Objective Maintenance Level

Route Number	Route Name	Segment Mileage	Existing Objective ML	Recommended Objective ML
FS 121D	Brown	3.11	4	2
FS 127W	Hadnot Rd	0.84	3	2
FS 129	Morton Field	1.06	3	2
FS 133	Pinecliff Tower Road	1.60	4	2
FS 134	Holston Hunter	1.50	5	2
FS 143	Flybus North	1.86	3	2
FS 146A	Collins Road	0.83	3	2
FS 163	Belangia	1.00	3	2
FS 166	Jabez Pine	0.50*	3	2
FS 166	Jabez Pine	1.40	3	2
FS 169	Little Deep Creek	2.41	3	2
FS 3049	Bryant	0.67	3	2
FS 606	Mattocks	3.17	3	2
FS 616	Neds Creek	0.84	3	2
FS 766	Bender	1.97	3	2
Total Mileage		**22.75 miles**		

Note: *This section is under State management

Inclement weather has a particularly costly impact on native and gravel surfaced roads. Therefore, to the extent possible, roads should be identified for seasonal closure. The TAP recommends that **43.3 miles** that are currently opened year-round be identified and converted to seasonally closure (**Table 10** and map in **Appendix L**).

Table 10: Existing Open Roads Recommended for Seasonal Closure

Route Number	Route Name	Segment Mileage
FS 121-1	North Little	1.95
FS 121D	Brown	3.11
FS 127W	Hadnot Rd	0.84
FS 129	Morton Field	1.06
FS 133	Pinecliff Tower Road	1.38
FS 134	Holston Hunter	1.50
FS 143	Flybus North	1.86
FS 144	Hunters Creek	4.54
FS 146A	Collins Road	0.83
FS 155	Deep Sand	3.23
FS 156	Pine Grove	3.03
FS 157	Loopy	1.80
FS 163	Belangia	1.00
FS 166	Jabez Pine	1.90
FS 169	Little Deep Creek	2.41
FS 176	Wolf Swamp	2.00
FS 177	Millis Swamp	2.72
FS 204	Crooked Run	1.49
FS 3049	Bryant	0.67
FS 606	Mattocks	3.17
FS 616	Neds Creek	0.84
FS 766	Bender	1.97
Total Mileage		**43.3 miles**

Miles by ML Proposed as Unneeded, by Watershed Condition Class

All existing roads on the Croatan are needed for future management. The total number of miles on the Croatan National Forest which have been suggested as “unneeded” by the TAP is zero. The number of un-needed miles in “at risk” and “impaired” watersheds is zero and zero respectively. The number of un-needed miles in priority watersheds is zero.

Recommended Conversion of Existing Road System to Minimum Road System

Appendix F lists the existing road system miles by maintenance level, and then proposes changes which respond to the rationale above to comprise the future minimum road system. Although some roads have been suggested to comprise these changes, there are others which

have not yet been identified. During the next decade the suggested changes in overall road system makeup should inform projects, and additional individual road change proposals will be identified, with the goal of achieving the proposed minimum road system, and associated financial sustainability as quickly as is practical.

Best Management Practices (BMPs) Applicable to the Croatan National Forest

When maintaining the forest roads located on the Croatan National Forest the following BMPs should be adhered to as a minimum:

- National BMPs for Water Quality Management on Forest System Lands
- Applicable State of North Carolina BMPs
- Best Management Practices listed in the current Forest Plan.
- Completed Watershed Action Plans

Appendices

A-1. Map of Existing Road System

A-2. Map of Existing Road Maintenance Levels

B. Map of Likely Needed - Likely Not Needed Roads

C. Motor Vehicle Use Map

D. Benefits and Risks of Existing Road System

E. Maintenance Costs of Existing Road System and Recommended Minimum Road System (MRS)

F. Comparison of Existing and Recommended MRS (miles by ML)

G. Chief's Letter of Direction

H. Southern Region Expectations

I. Croatan 6th Order Hydrologic Unit Classification (HUC)

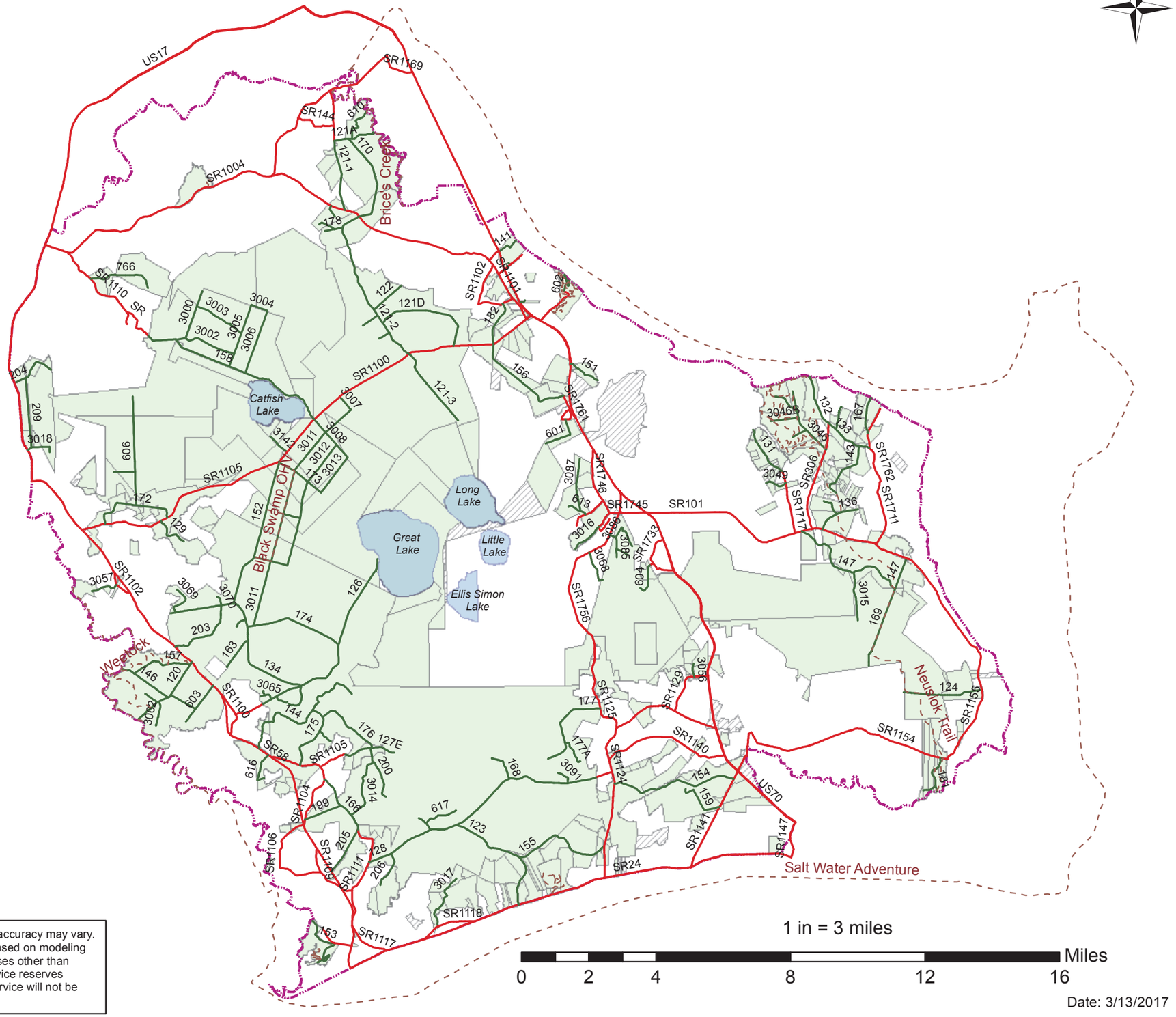
J. Croatan National Forest Management Areas

K. Current Road System Benefits, Problems, and Risks

L. Open Roads Recommended for Seasonal Closure

Appendix A-1

Croatan National Forest
Travel Analysis Project
Existing Road System



Legend

System Type

- Forest Service Road
- Municipal Road
- Trail

Ranger District

- Croatan Ranger District

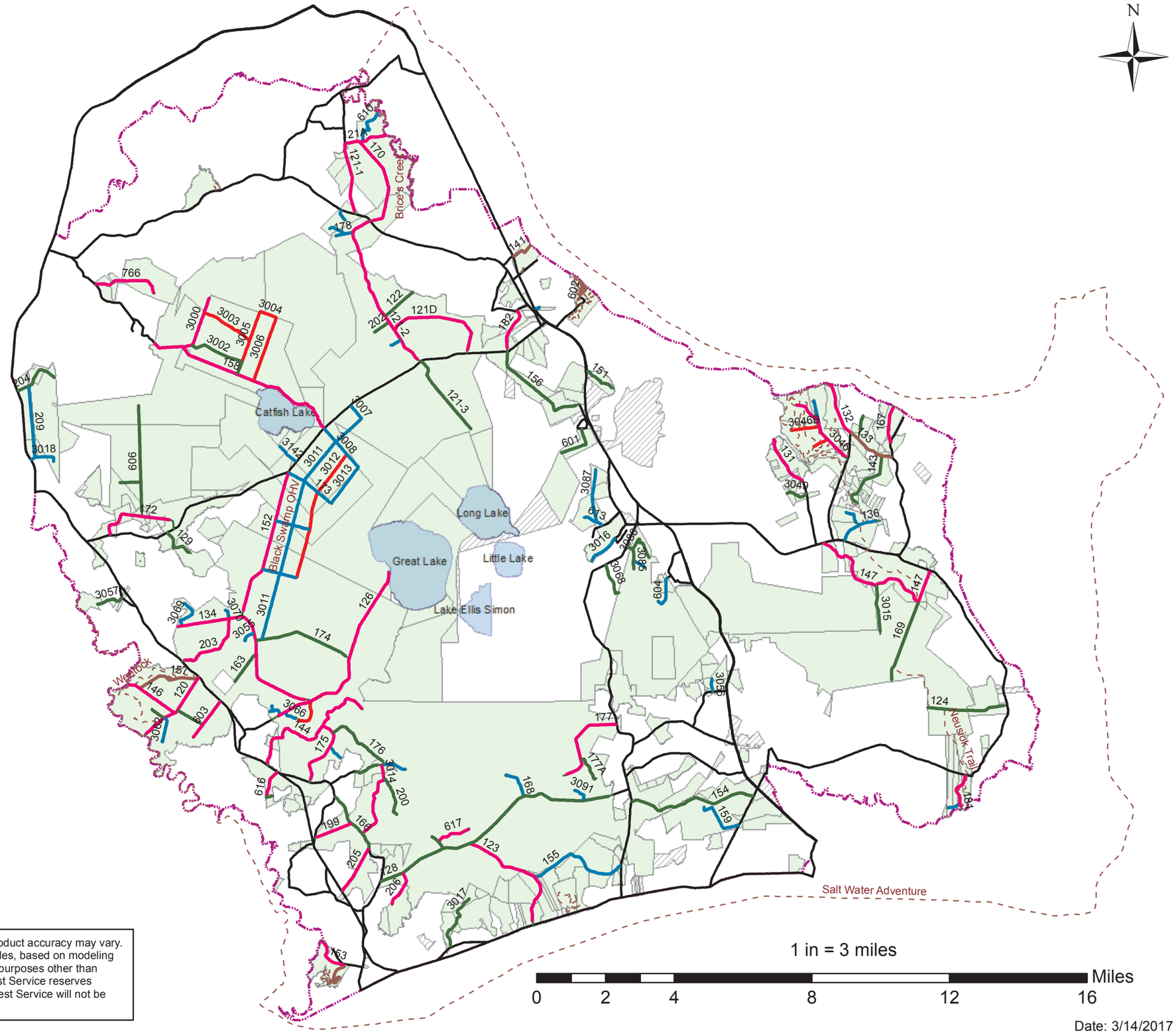
Waterbody

Owner Classification

- NON-Forest Service
- USDA Forest Service

Appendix A-2

Croatan National Forest Travel Analysis Project Existing Road Maintenance Levels



Legend

Operational Maintenance Level

- 1 - Basic Custodial Care (CLOSED)
- 2 - High Clearance Vehicles
- 3 - Suitable for Passenger Cars
- 4 - Moderate Degree of User Comfort
- 5 - High Degree of User Comfort
- Trail

Road System Type

- Forest Road
- Municipal

Ranger District

- Croatan Ranger District

Waterbody

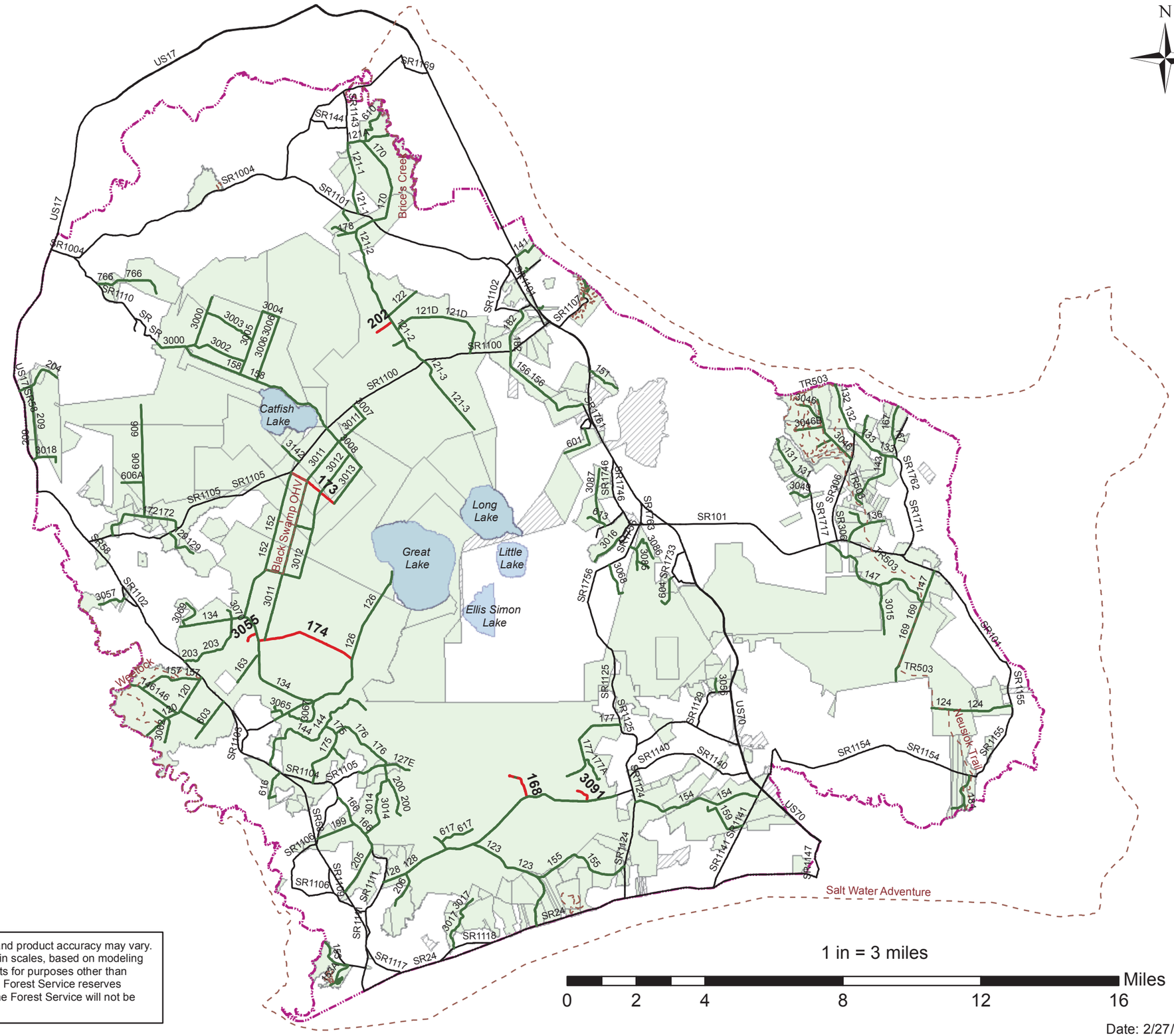
Owner Classification

- NON-Forest Service
- USDA Forest Service

Date: 3/14/2017

Appendix B

Croatan National Forest
Travel Analysis Project
Likely Needed -
Likely Not Needed Roads



Legend

Road Assessment

- Likely Needed
- Likely Not Needed

System Type

- Forest Service Road
- Municipal Road
- Trail

Ranger District

- Croatan Ranger District

Waterbody

Owner Classification

- NON-Forest Service
- USDA Forest Service

The Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. They may be: developed from sources of differing accuracy, accurate at only certain scales, based on modeling or interpretation, incomplete while being created or revised, etc. Using GIS products for purposes other than those for which they were created, may yield inaccurate or misleading results. The Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. The Forest Service will not be liable for any activity involving this information.

Date: 2/27/2017

Appendix C – Motor Vehicle Use Map

The following link will launch the most recent MVUM for the Croatan National Forest.

http://www.fs.usda.gov/main/nfsnc/maps-pubs

Appendix D – Benefits and Risks of Existing Road System

Table D1: Risk and Benefits Categories Considered in the Analysis

Risk	Benefit
Fire Suppression	Recreation
Rare Species and Habitats	Social
Heritage Resources	Resource Management
Public Safety	Fire Management
Aquatic Biota Vulnerability	Traffic Volume
Wildlife Risk	Other
Maintenance Cost Risk	

Scoring and Rating

The Croatan National Forest IDT analyzed each NFS road for the individual risks and benefits listed in Table D-1. This analysis generated a high, medium or low rating for each criterion. These numeric ratings were combined to generate a summary risk and benefit ranking for each road.

There are seven risk criteria and six benefit criteria for each road analyzed. Scores were based on a point system in which a high rating yielded 2 points, a medium rating yielded 1 point and a low ranking yielded 0 points. The Fire Management benefit and Maintenance Cost risk are two exceptions to this scoring system. These criteria have a four point scoring system where 3 is very high, 2 is high, 1 is medium and 0 is low. This yields a Risk score range from 0 to 15 and a Benefit score range from 0 to 13.

Table D2: Current Risk and Benefit Assessment of NFS Roads on the Croatan NF

Criteria		Miles of Roads					Total Miles
Benefit	Risk	ML-1	ML-2	ML-3	ML-4	ML-5	
H	L	0	0.34	0	50.36	3.13	53.83
H	M	0	0	0	8.60	7.08	15.67
H	H	0	0	0	0	0	0
M	L	5.16	20.15	45.06	28.00	3.40	103.79
M	M	0	0	1.06	0	0	1.06
M	H	0	0	0	0	0	0
L	L	2.70	15.03	2.69	0	0	20.41
L	M	0	0	0	0	0	0
L	H	0	0	0	0	0	0
Totals		**7.86**	**35.52**	**48.81**	**86.96**	**13.61**	**192.76**

Appendix E – Maintenance Costs of Existing Road System and Recommended Minimum Road System (MRS)

Table E1: Annual Cost of Maintaining the Existing Croatan National Forest Roads and Bridges

Objective ML	Miles by Operational ML	Unit Mtce Cost	Total Annual Rd Mtce Cost	Number of Bridge Replacements (next 10 years)	Average Bridge Replacement Cost	Total Replacement Cost	Average Annual Cost of Bridge Replacements	Avg Annual Rd & Bridge Mtce Cost
1	7.9	$10	$79	0	$110,000	$0	$0	$79
2	35.5	$100	$3,550	0	$120,000	$0	$0	$3,550
3	48.8	$2,600	$126,880	0	$125,000	$0	$0	$126,880
4	86.9	$3,560	$309,364	1	$150,000	$150,000	$15,000	$324,364
5	13.6	$4,160	$56,576	0	$150,000	$0	$0	$56,576
Totals	**192.7**		**$496,449**			**$150,000**	**$15,000**	**$511,449**
Fixed Cost Totals (Overhead + Bridge Inspections)								**$32,771**
Grand Total								**$544,220**

Table E2: Annual Cost of Maintaining the Croatan National Forest Recommended Minimum Roads System including Bridges (Excluding Overhead and Bridge Inspections)

Objective ML	Miles by Operational ML	Unit Mtce Cost	Total Annual Rd Mtce Cost	Number of Bridge Replacements (next 10 years)	Average Replacement Cost	Total Replacement Cost	Average Annual Cost of Bridge Replacements	Avg Annual Rd & Bridge Mtce Cost
1	54.3	$10	$543	0	$110,000	$0	$0	$543
2	30.7	$100	$3,070	0	$120,000	$0	$0	$3,070
3	36.3	$2,600	$94,380	0	$125,000	$0	$0	$94,380
4	19.2	$3,560	$68,352	0	$150,000	$0	$0	$68,352
5	35.5	$4,160	$147,680	1	$150,000	$150,000	$15,000	$162,680
Totals	**176.0**		**$314,025**			**$150,000**	**$15,000**	**$329,025**
Fixed Cost Totals (Overhead + Bridge Inspections)								**$32,771**
Grand Total								**$361,796**

Appendix F – Comparison of Existing and Recommended MRS (Miles by ML)

Table F1: Existing vs. Recommended Minimum Road System ML Miles

Operational Maintenance Level	Existing Road System Miles (Operational ML)	Minimum Road System Suggested Miles (Objective ML)	Change +/-	Comments
1	7.9	54.3	+46.4	Significantly reduces maintenance costs
2	35.5	30.7	-4.8	Many existing ML2 roads moved to ML1
3	48.8	36.3	-12.5	Many existing ML3 roads moved to ML2
4	86.9	19.2	-67.7	ML4 roads moved to ML3 and ML5 roads moved to ML4.
5	13.6	35.5	+21.9	25% reduction in ML5 mileage
Unneeded	0	6.5		Roads decommissioned
Totals	**192.7**	**176.0**	**-16.7**	Total change of 18.6 miles includes roads to be considered for changes in maintenance responsibility and roads to be decommissioned

Appendix G – Chief's Letter of Direction

File Code: 2300/2500/7700 **Date:** March 29, 2012
Route To:

Subject: Travel Management, Implementation of 36 CFR, Part 202, Subpart A (36 CFR 212.5(b))

To: Regional Foresters, Station Directors, Area Director, IITF Director, Deputy Chiefs and WO Directors

This letter is to reaffirm agency commitment to completing a travel analysis report for Subpart A of the travel management rule by 2015 and update and clarify Agency guidance. This letter replaces the November 10, 2010, letter on the same topic.

The Agency expects to maintain an appropriately sized and environmentally sustainable road system that is responsive to ecological, economic, and social concerns. The national forest road system of the future must continue to provide needed access for recreation and resource management, as well as support watershed restoration and resource protection to sustain healthy ecosystems.

Forest Service regulations at 36 CFR 212.5(b)(1) require 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. In determining the minimum road system, the responsible official must incorporate a science-based roads analysis at the appropriate scale. Forest Service regulations at 36 CFR 212.5(b)(2) require the Forest Service to identify NFS roads that are no longer needed to meet forest resource management objectives.

Process

Travel analysis requires a process that is dynamic, interdisciplinary, and integrated with all resource areas. With this letter, I am directing the use of the travel analysis process (TAP) described in Forest Service Manual 7712 and Forest Service Handbook (FSH) 7709.55, Chapter 20. The TAP is a science-based process that will inform future travel management decisions. Travel analysis serves as the basis for developing proposed actions, but does not result in decisions. Therefore, travel analysis does not trigger the National Environmental Policy Act (NEPA). The completion of the TAP is an important first step towards the development of the future minimum road system (MRS). All NFS roads, maintenance levels 1-5, must be included in the analysis.

For units that have previously conducted their travel or roads analysis process (RAP), the appropriate line officer should review the prior report to assess the adequacy and the relevance of their analysis as it complies with Subpart A. This analysis will help determine the appropriate scope and scale for any new analysis and can build on previous work. A RAP completed in accordance with publication FS-643,

"Roads Analysis: Informing Decisions about Managing the National Forest Transportation System," will also satisfy the roads analysis requirement of Subpart A.

Results from the TAP must be documented in a **travel analysis report**, which shall include:

- A map displaying the roads that can be used to inform the proposed action for identifying the MRS and unneeded roads.
- Information about the analysis as it relates to the criteria found in 36 CFR 212.5(b)(1).

Units should seek to integrate the steps contained in the Watershed Condition Framework (WCF) with the six TAP steps contained in FSH 7709.55, Chapter 20, to eliminate redundancy and ensure an iterative and adaptive approach for both processes. We expect the WCF process and the TAP will complement each other. The intent is for each process to inform the other so that they can be integrated and updated with new information or where conditions change. The travel analysis report described above must be completed by the end of FY 2015.

The next step in identification of the MRS is to use the travel analysis report to develop proposed actions to identify the MRS. These proposed actions generally should be developed at the scale of a 6th code sub watershed or larger. Proposed actions and alternatives are subject to environmental analysis under NEPA. Travel analysis should be used to inform the environmental analysis.

The administrative unit must analyze the proposed action and alternatives in terms of whether, per 36 CFR 212.5(b)(1), the resulting road system is needed to:

- Meet resource and other management objectives adopted in the relevant land and resource management plan;
- Meet applicable statutory and regulatory requirements;
- Reflect long-term funding expectations;
- Ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance.

The resulting decision identifies the MRS and unneeded roads for each sub watershed or larger scale. The NEPA analysis for each sub watershed must consider adjacent sub watersheds for connected actions and cumulative effects. The MRS for the administrative unit is complete when the MRS for each sub watershed has been identified, thus satisfying Subpart A. To the extent that the sub watershed NEPA analysis covers specific road decisions, no further NEPA analysis will be needed. To the extent that further smaller-scale, project-specific decisions are needed, more NEPA analysis may be required.

A flowchart displaying the process for identification of the MRS is enclosed with this letter.

Timing

The travel analysis report **must be completed by the end of FY 2015**. Beyond FY 2015, no Capital Improvement and Maintenance (CMCM) funds may be expended on NFS roads (maintenance levels 1-5) that have not been included in a TAP or RAP.

Leadership

The Washington Office lead for Subpart A is Anne Zimmermann, Director of Watershed, Fish, Wildlife, Air and Rare Plants. Working with her on the Washington Office Steering Team are Jim Bedwell, Director of Recreation, Heritage, and Volunteer Resources, and Emilee Blount, Director of Engineering. I expect the Regions to continue with the similar leadership structures which have been established.

Your leadership and commitment to this component of the travel management rule is important. Together, we will move towards an ecologic, economic, and socially sustainable and responsible national road system of the future.

/s/ James M. Pena (for):
LESLIE A. C. WELDON

Deputy Chief, National Forest System

Appendix H – Southern Region Expectations

Sub-Part "A" Travel Analysis (TAP)

Southern Region Expectations Revised to align with 2012 Chief's Letter

A. **Background.** During the period 2005 - 2010 the National Forests of the Southern Region successfully completed **Sub-Part "B"** (Designation of Roads, Trails and Areas for Motor Vehicle Use) Travel Analysis. The result was a set of Motor Vehicle Use Maps (**MVUMs**) which prescribe the Forest Service roads that allow traffic; and in doing so it also prohibited cross-country travel by off-highway vehicles (OHVs). Forests are now beginning work on **Sub-Part "A"** (Administration of the Forest Transportation System) Travel Analysis to identify the **minimum road system** needed for safe and efficient travel and for the protection, management and use of NFS lands; **and also to identify roads no longer needed to meet forest resource management objectives.**

TAP analysis identifies risks and benefits of individual roads in the system, but especially **cumulative effects and affordability of the entire system**. Consideration is given to the access needed to support existing Forest Plans, and for informing future Forest Plans and resulting projects. TAP is intended to identify opportunities to assist managers in addressing the unique ecological, economic and social conditions on the national forests and grasslands.

B. **Agency Direction.** Sub-Part "A" Travel Analysis is required by the 2005 Travel Management Rule (36 CFR 212.5). Forest Service Manual 7712 and Forest Service Handbook 7709.55 Chapter 20 provides 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 also 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. These other analyses and procedures include Watershed Analysis Framework and mapping; Recreational Framework planning and analyses; and forest-wide planning under the new Planning Rule. This document (**Southern Region Expectations**) supplements the national direction for Sub-Part "A" TAPs developed for the Southern Region.

C. **Geographic Scale.** Like smaller scale road analyses (RAPS) that have been underway at the project level, TAPs consider economic, environmental and social effects of roads. Analysis at the smaller project scale, however, does not adequately address cumulative effects and affordability. The Chief's letter requires that proposed NEPA actions be informed by work at the 6th order HUC watershed as a minimum. **Southern Region Expectations** are for a Unit TAP at the District level or equivalent; and since budgets are generally allocated to the Forest level, District analyses are not considered complete until all other Districts on the same Forest are also complete and have been integrated to create a Forest Scale TAP. As projects which involve travel (road) decisions are subsequently proposed on a unit, additional project level analysis will be required in advance of associated NEPA decisions only if the proposal varies substantially from the Unit Scale TAP covered by it. The purpose would be to show any additional impact on cumulative effects and affordability.

D. **Process, Review and Approval.** Forest IDTs are expected to conduct analyses, with guidance and review by the Regional Office TAP Review Team (members listed below). Standard boilerplate, spreadsheets and Executive Summary format will be developed by the Review team for incorporation into the TAP reports. Final review will be by the Forest Supervisor, indicating that the analyses comply with national and regional direction. Upon completion of the last District TAP on a Forest, the Forest Supervisor needs to submit a forest-wide Executive Summary and verify that the cumulative results meet the expectations defined in this guidance.

The Regional TAP Review Team consists of Team Leader Paul Morgan (Engineering), Emanuel Hudson (Biological and Physical Resources), Mary Hughes Frye (Recreation), Paul Arndt (Planning) and various other ad hoc members as needed.

They will submit their review comments to the TAP Steering Team prior to officially conveying them to the Forest. The Steering Team will be responsible for overall direction and oversight of the process. This team consists of Randy Warbington, TAP

Steering Team Lead and Director of Engineering, Dave Schmid, Director of Biological and Physical Resources, Chris Liggett, Director of Planning, and Ann Christensen, Director of Recreation as well as George Bain, Forest Supervisor on the Chattahoochee Oconee NF's and Steve Bekkerus, Regional Legislative Affairs Specialist.

E. **Information Systems.** Analysis will be based upon field-verified spatial data (GIS, or Geographic Information System road and trail layers), and official tabular data (from I-Web, the corporate Forest Service data base) as applicable. ARC Map products will be included as a part of all completed Unit Scale TAPs, and will be provided to the Regional Office TAP review team as a part of the final TAP report.

F. **Access.** As prescribed by 16USC532 the Forest Roads and Trails Act TAPs should identify an adequate system of roads and trails to provide for intensive use, protection, development, and management of National Forest System lands. As such, they should address user safety and environmental impacts, and provide for an optimum balance of access needs and cost. Roads, trails and bridges that are unsafe and where unacceptable risks cannot be eliminated or mitigated due to a lack of funding should be identified for closure or possible decommissioning. Unneeded, temporary and unauthorized routes should be identified for possible decommissioning. TAPs should support current Forest Plan direction and anticipate future Forest Plan analysis needs, as well as Recreational Framework planning and analyses. As unit scale TAPs are completed, associated MVUMs must be reviewed. After appropriate NEPA decisions are made to implement TAP recommendations, future MVUM revisions need to be revised to assure that they are in agreement with those decisions.

G. **Environmental.** One major analysis component of the TAPs is impact of the road system on water quality. In those cases where high road densities on National Forest lands are a major factor in causing watersheds to be at risk or impaired, some roads should be identified for decommissioning in order to reduce the impacts and change the classification. Also, it should be recognized that some existing roads are poorly located and should be eliminated, while some new roads might be needed to replace them and provide essentially equivalent access in better locations, generally farther away from live streams or wetlands. The Watershed Condition Framework should inform each unit's travel analysis. An overriding objective for all roads should be

compliance with provisions cited in National Best Management Practices for Water Quality Management on National Forest System Lands, April 2012.

While a reduction in maintenance levels may be a desired option for cost reduction, it is not an appropriate strategy when it results in more environmental impacts. Similarly, changes in recreational use should be considered, especially for roads that cannot be maintained to standard and which may begin to attract challenge-oriented four-wheelers that create even further impacts on the environment and on the road.

H. **Financial.** Units should consider all expected sources of funding available to maintain the road system to appropriate standards (based upon 3 year history and current trends), and include all costs that are required to comply with applicable BMPs for their maintenance. Include associated bridge maintenance as well, and replacement costs for those routes which include bridges that are deficient or expected to need major work in the next ten year period. Identify and account for fixed costs (program management, fleet, etc.) when analyzing financial feasibility. Ultimately units must balance the costs of maintaining the identified system such that the recommendation will not result in accrual of deferred maintenance on roads and bridges once the TAP is implemented (i.e. there should be a zero balance between anticipated maintenance revenue and anticipated maintenance cost on an annual basis).

The focus of this analysis should not be primarily on disinvestment, i.e. just reducing passenger car roads to high clearance roads in order to meet funding constraints. Roads receiving minimal maintenance have the high likelihood, at least those roads located relatively low in the watershed, of creating additional siltation impacts.

They can also have unintended consequences for recreation management. Therefore a better strategy might be to identify roads not required for current operations but which might be needed at some time in the future for seasonal or intermittent closure, or **"storage".** Other strategies might include scheduling maintenance over a two to three year cycle on less used roads, adding seasonal restrictions, identifying roads to transfer to state or local jurisdiction, and identifying unneeded roads for possible decommissioning. Total mileage of high clearance roads should not generally increase over the amount in the current system unless it is determined that there has been substantial maintenance level "creep" over the years and therefore a substantial increase in high clearance roads is warranted. It is expected, however, that the number of roads identified to be placed in storage will generally increase from the current level.

Finally it should be noted that similar to the road system, the trail system is also over-committed to be managed within its maintenance budget. Therefore, unless maintenance funding is verified to be available over the long-term, it is not acceptable to identify roads for conversion to trails; the more appropriate options would be storage or decommissioning, depending upon future need.

I. **Public Involvement and NEPA** (National Environmental Protection Act) **Requirements.** Unit scale TAPs are not NEPA decisions; they are analyses intended to inform future projects regarding affordability and cumulative effects. These projects, depending upon the specific impacts, will generally require NEPA decisions prior to implementation. The public will need to be provided opportunities for comment on TAP recommendations near to the time that that actual projects are being proposed. This would be expected to include a broad spectrum of participation by citizens, other agencies, and tribal governments as appropriate.

J. Products. All final products to be posted on an internal website or on the "O" drive available for access by other Forests and the Regional Office. The final product should consist of the following items:

1) A **Travel Analysis Report** summarizing the process the results of all analyses conducted;
2) A map showing the entire Road System, ML 1-5, and delineating potential unneeded roads;
3) **A list of roads that are proposed for transfer to another jurisdiction and whether acceptance by that jurisdiction is likely within the next three years;**
4) A tabular **summary of issues, benefits and risks** for each road in the system. (Although not included in this write-up an example format is available and will be provided to each unit as they begin work on their TAP);
5) A spreadsheet identifying available maintenance funding and expected costs for applying **affordable operational maintenance levels** and associated **BMPs** (best management practices) to the road system to result in **a financial strategy that balances funding and costs** such that no deferred maintenance will accrue if fully implemented; and
5) Signature sheets with dates, indicating preparation and review officials, **and Review by the Forest Supervisor**.

Appendix I

Croatan National Forest Hydrologic Unit Classification (HUC) Level 6

N

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Little Lake
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03020106030070

Legend

- HUC Level 6

System Type

- Forest Service Road
- Municipal Road
- Trail

Ranger District

- Croatan Ranger District
- Waterbody

Owner Classification

- NON-Forest Service
- USDA Forest Service

The Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. They may be: developed from sources of differing accuracy, accurate at only certain scales, based on modeling or interpretation, incomplete while being created or revised, etc. Using GIS products for purposes other than those for which they were created, may yield inaccurate or misleading results. The Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. The Forest Service will not be liable for any activity involving this information.

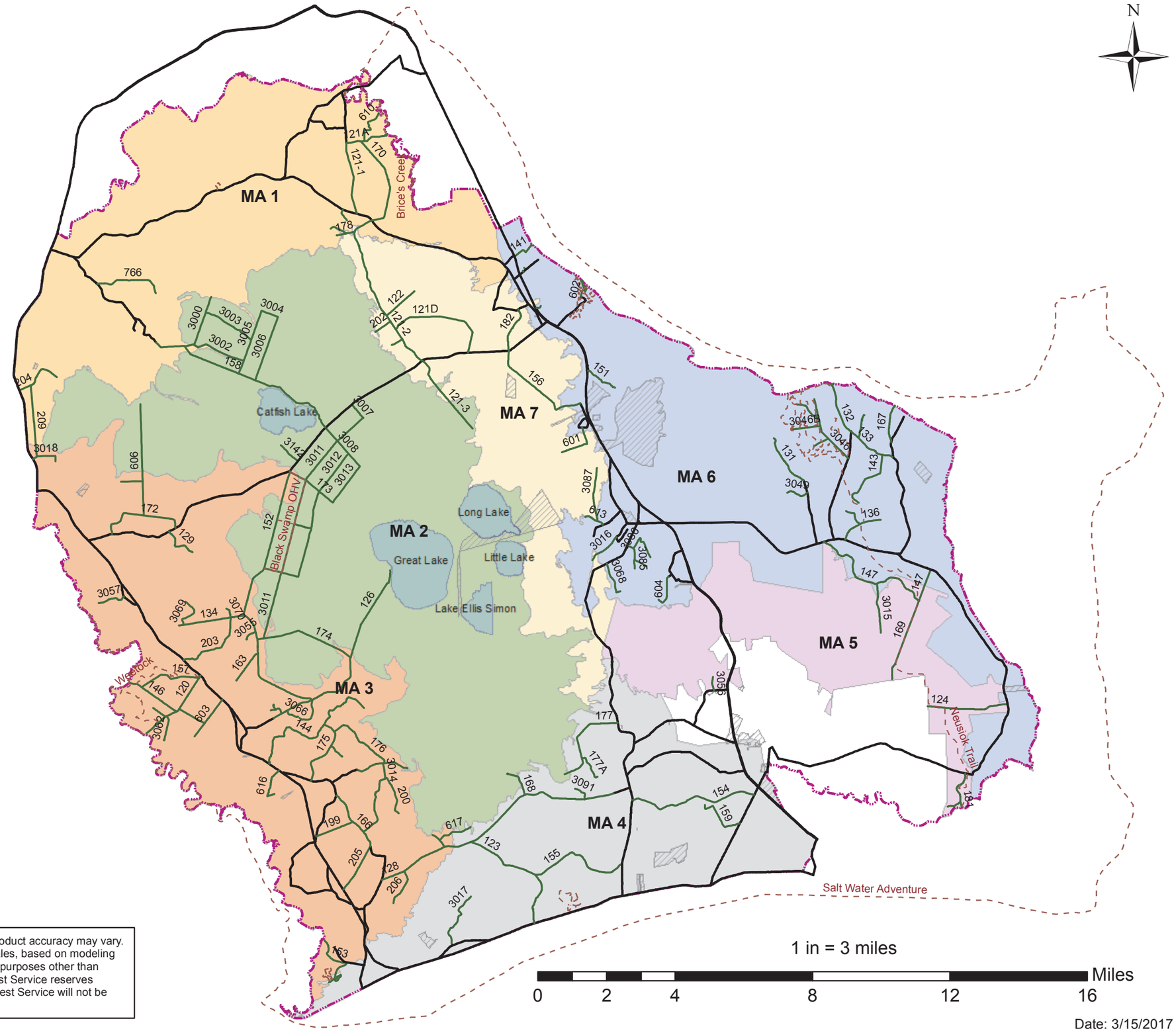
1 in = 3 miles

0 2 4 8 12 16 Miles

Date: 2/27/2017

Appendix J

Croatan National Forest Travel Analysis Project Management Areas



Legend

Road System Type

- Forest Road
- Municipal
- Trail

Ranger District

- Croatan Ranger District

Waterbody

Owner Classification

- NON-Forest Service

Management Area

- MA 1
- MA 2
- MA 3
- MA 4
- MA 5
- MA 6
- MA 7

Date: 3/15/2017

Appendix K – Current Road System Benefits, Problems, and Risks

In 2003, the Interdisciplinary Team (IDT) assessed various benefits, problems, and risks of the road system. Resource specialists concentrated on project specific issues. The current IDT should refer to the 2003 Forest-Scale Roads Analysis Project (RAP) for the Croatan National Forest. The Forest-scale RAP provides a broad framework for managing all the Croatan National Forest road resources and addresses project specific issues and explains how and where these issues are pertinent in the Croatan National Forest TAP boundary. This report is not meant to be a stand-alone document.

For resource specialists' responses to the following road-related analysis questions, please refer to the 2003 Forest-scale RAP for the Croatan National Forest and also to the 2016 TAP report. Table references in the following text refer to tables within the 2003 Forest-scale RAP:

Ecosystem Functions and Processes (EF)

PROBLEM – Natural areas and rare plant species may be impacted by road management strategies based on the level of road maintenance and the methods of road closure. Road closure methods may impact those rare plants that have become a part of the "road ecosystem", or restrict required access into natural areas. Road systems or networks generally impact surrounding ecosystems in a negative way. Since rare plants, including a federally endangered species, most often occur at the boundaries of established ecosystems, the probability of adverse impacts along existing roads is greatest where road corridors cross these ecotones. Ecotones have been mapped as part of the GIS for the Croatan National Forest.

RISK – As traffic volumes increase on the existing road system, there is increased risk of dispersing roadside weeds and introducing different types of pollution or chemical spills into natural areas and/or into rare plant habitats. New construction has the most obvious impact on natural areas and rare plant species.

BENEFIT – Some roads provide necessary access to both rare plant sites and natural areas. Additionally, some plants are dependent on the conditions that roads provide.

Aquatic, Riparian Zone, and Water Quality (AQ)

No issue was identified for aquatic, riparian zone and water quality. The most visible impacts to the hydrologic systems on the Croatan National Forest are historically ditched portions of the pocosin. Sometimes these ditches are related to roads through the pocosin, but most often are related to prior agriculture use of the pocosin. The forest roads that occur through the pocosin are well established and provide the only access across the forest. Additionally, due to the flat

topography, the roads minimally impact the aquatic and riparian systems, as well as water quality.

Terrestrial Wildlife (TW)

PROBLEM - Roads and related activities may cause several problems for wildlife found on the Croatan National Forest. Roads degrade the quality of suitable habitat through fragmentation. Roads facilitate direct mortality of wildlife through motor vehicles and hunters (both legal hunting and poaching). Black bears are the predominant species impacted by habitat fragmentation, and mortality from direct contact with vehicles. Roads may also increase disturbance during critical breeding seasons of the red-cockaded woodpecker and the eastern wild turkey. Red-cockaded woodpeckers have been found to adapt to the presence of low use roads. However, disturbance introduced along public roads can result in wild turkey nest abandonment.

BENEFIT –Closed roads may benefit some wildlife species such as the eastern wild turkey, white-tailed deer, and northern bobwhite quail if the roads are maintained as linear wildlife openings. However, having the openings behind closed roads limits easily accessed wildlife viewing opportunities, which is in high demand.

RISK – Without road closures, both seasonal and permanent potential exists for a decrease in habitat availability and suitability for black bear and deer, disruption of RCW nesting and breeding, decline in successful turkey nesting, as well as a decline in hunting experience due to road traffic and noise.

Economics (EC)

PROBLEM - Road maintenance costs on the Croatan National Forest are higher than for most Forest Service system roads in North Carolina due to rapid vegetation growth and the higher amount of gravel needed to counteract the unstable base of organic soils. Annually the total cost to maintain the road system is approximately $127,600.00 (Table 2). The amount of gravel surfacing often exceeds 8” compared to 4” or less on most roads maintained on the National Forests in North Carolina. The designed gravel thickness has to be maintained or rapid deterioration of the road surface can result, often in a matter of weeks. Until several years ago road maintenance funds were supplemented with dollars generated by the timber sale program. These dollars mainly went into replacing gravel on collector and arterial roads. Appropriated maintenance funds – approximately $100,000/year (without reductions for overhead, etc.) – now cover more of this gravel replacement and results in low use roads receiving much less attention. Many roads that have not been adequately maintained due to a

lack of funds have now deteriorated to a point where only 4 wheel drive vehicles can travel on them. Several of these roads are important fire protection routes that will need major reconstruction to accommodate fire equipment.

RISK – Lack of required maintenance will result in further degradation causing roads to be unsafe and impassable. This will restrict access for fire operations potentially increasing the risk of large-scale, uncontrolled wildfire.

PROBLEM – Restricting access on the Croatan National Forest is needed to manage road usage and maintain the conditions of certain essential roads. Access on public roads is in high demand during the 2 ½ month deer hunting season. However, use is extremely low on many roads when it is not hunting season. Opportunities exist for seasonal closings of roads to enhance wildlife habitat while also providing seasonal hunting opportunities. Cost of controlling access and making needed improvements to existing gates exceeds $150,000. The method of gating roads has been preferred since it still allows administrative access, and provides a mechanism for seasonal closures. Unfortunately, approximately 30 % of existing gates are not effectively preventing access. An additional 35 to 40 illegal access points need gates and/or ditches. Preventing vehicles from circumnavigating closure devices and entering Forest Service land through private property is difficult due to the flat terrain. Gates are often extensively damaged, and many need to be replaced.

BENEFIT – Restricting access is a tool to manage the road system in a way that provides balance between public access and resource protection. Using gates allows for flexibility in opening and closing roads, and provides access for required fire operations.

RISK – Lack of gating, or not replacing damaged and ineffective gates or other access-control devices, will increase resource damage and encourage further destruction of methods used to control access.

Commodity Production – Timber Management (TM)

No issue was identified pertaining to commodity production. The existing road system adequately provides access for silvicultural treatments, and any potential special forest products or mineral permits.

Range Management (RM)

No range allotments are on the Croatan National Forest. The Croatan National Forest does not currently have any grazing permits.

Water Production (WP)

WP (1): How does the road system affect access, constructing, maintaining, monitoring, and operating water diversions, impoundments, and distribution canals or pipes?
There are no reported or known impacts from the use or maintenance of the road system.

WP (2): How does road development and use affect the water quality in municipal watersheds?
Municipal water is sourced from wells. There are no reported or known impacts from the use or maintenance of the road system.

WP (3): How does the road system affect access to hydroelectric power generation?

No hydroelectric power generation occurs on the Croatan National Forest.

Special – Use Permits (SU)

No issue was identified related to the administration of special use permits. The existing road system provides adequate access, and no problems currently exist with the roads providing that access.

General Public Transportation (GT)

PROBLEM - Traffic on roads throughout the Croatan National Forest is increasing as the surrounding population increases. Use patterns continue to mirror the changes in recreational use of the forest. A higher cost is associated with accommodating more commuter traffic as well as recreational traffic on Forest Service roads.

RISK - The population of surrounding communities is growing. The number of high-density neighborhoods adjacent to the Croatan National Forest has significantly increased during the past 10 years and will continue to increase. As road maintenance dollars decrease, and road use increases, the level at which roads are maintained will decline and along with it the safety of road users.

BENEFIT – People living in smaller communities are able to access other, more populated areas via the road system on the Croatan National Forest. Many popular, through roads on the forest are used to shorten travel distances.

PROBLEM – Due to the strong feelings that exist about prescriptive rights for traditional use of many roads, addressing problems with open roads is difficult. Roads have been managed specifically to accommodate these traditional uses. Examples include restricted road rights-of-way that allow for private access only, and roads that are only open during hunting season.

RISK – If these types of road uses are continued, they will either lack the required and expected maintenance, or other roads needing maintenance will be neglected.

Administrative Uses (AU)

PROBLEM – Due to the lack of law enforcement officers assigned to the Croatan National Forest (currently there is only one), providing adequate coverage on the entire road system is almost impossible. Coverage is especially needed on the extensive array of dead end roads, which have been identified as focal points for illegal trash dumping, illicit parties, and unregulated shooting. Cooperative agreements with local law enforcement provide limited additional coverage, but the coverage is still inadequate for the size of the forest, miles of road, and the high number of people who use the Forest. Since additional funds to hire new law enforcement officers are generally unavailable, reducing the number of open roads, especially those that have been chronically misused, would assist in law enforcement efforts by reducing access.

RISK – If roads are not closed effectively, misuse will continue to occur and, more than likely, escalate causing more law enforcement problems.

Protection (PT)

BENEFIT - The open road network is generally deemed beneficial to prescribed fire and wildfire suppression efforts, with some roads more critical than others.

PROBLEM – In many cases these critical roads have not received adequate maintenance and can only be accessed with 4-wheel drive vehicles; some are not accessible at all. Additionally, although roads are essential for providing access for fire operations, arson fires are often started along these same corridors.

RISK – Roads required for fire access continue to degrade while maintenance is deferred because of budgetary constraints. If these roads are not maintained, access will continue to decrease and fire operations will be further impacted.

Recreation – Road Related (RR)

PROBLEM – Unregulated shooting associated with target practice and hunting is a public safety threat as well as a disturbance to other forest users and wildlife. Potential environmental hazards also exist from high concentrations of lead. Shooting along roads that are adjacent to high-density housing when the housing is not visible is extremely dangerous. Additionally, roadside hunting occasionally occurs within 500 feet of every developed recreation site on the Forest.

RISK – If unregulated shooting continues at the current level or increases, the possibility of being hit by a stray bullet increases, as well as an increase in the disturbance to other forest users, especially during hunting seasons. Increases in lead concentrations may also pose future environmental risks.

PROBLEM – Increases in the wild turkey population stimulated interest in turkey hunting. However, human-induced disturbances reduce the quality of the wild turkey recreational hunting experience and most turkey hunters avoid areas with high noise levels.

RISK – If access to the forest stays at the current level or expands, the recreational hunting experience will be negatively impacted.

BENEFIT – Access provides more opportunity to recreational hunters.

PROBLEM – Designated OHV routes are currently deteriorated and are only passable by 4-wheel drive vehicles. Even 4-wheel drive use is impossible on many of these routes except during very dry conditions.

RISK – Continued use of the routes, without maintenance actions, will cause more degradation and less access for OHVs.

BENEFIT – Recreational OHV riding is a popular activity, and routes that provide this opportunity are beneficial.

PROBLEM - Unauthorized OHV riding is occurring on over 70 miles of unclassified roads and trail corridors. Many of these routes occur in the southern portion of the Croatan National Forest, where sandy soils provide challenging riding conditions. Unfortunately, these areas also have the highest occurrence of rare plant and animal species. Often, these are dead-end routes in remote areas and have a high incidence rate of unregulated shooting and illegal trash dumping.

RISK – Continued use of these unauthorized, user-created routes will further degrade sensitive habitats and expand OHV use into currently unused areas.

Cultural and Heritage (CH)

There are no paleontological, archeological, or historic site concerns related to road system use and management on the Croatan National Forest.

Social Issues (SI)

PROBLEM – The Wilderness experience generally expected by users may be reduced based on a combination of factors. These factors include traffic noise, traffic visibility, and an increase in

access for other users to the areas surrounding the Wilderness. However, the type of wilderness found on the Croatan National Forest generally does not support high recreational use, and therefore the impacts to the wilderness experience are minimal.

BENEFIT - Some of the roads that access portions of the Wilderness, or which are adjacent to the Wilderness, provide necessary access for staging fire suppression equipment and personnel.

RISK – No risks exist at this time.

PROBLEM - Illegal disposal of trash on the Croatan National Forest has been an historical problem. Due to the flat topography and close proximity to urban and suburban areas, the Forest atmosphere is conducive to illegal trash dumping. Dead end roads and roads with gates not visible from the main access routes are favorite areas for dumping. The southwest portion of the District is impacted the most, probably due to lower traffic volumes and thus less chance of being caught. Some larger sites occur very close to County transfer stations. When these stations are closed, trash intended for the county sometimes ends up on Forest Service land.

RISK - The illegal trash sites on the Forest are continuing to be used and new sites are being created each year. With the amount of trash accumulating each year, the problems of clean up are compounded. Additionally, the cleanup of materials deemed “hazardous” continues to be more and more complicated and expensive.

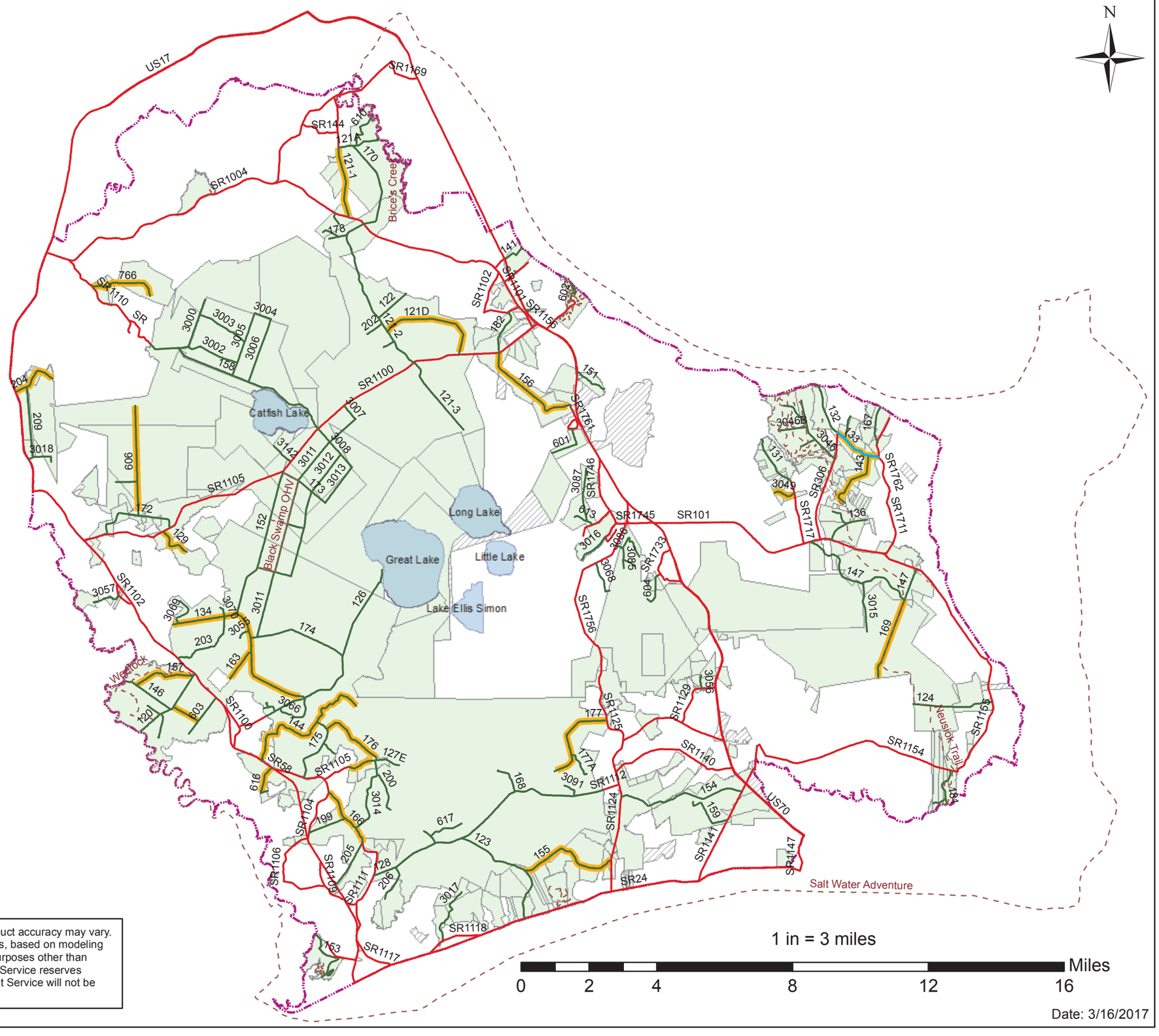
Please also refer to the Environmental and Social issues section of the Croatan National Forest 2016 TAP report.

Civil Rights and Environmental Justice (CR)

No issue was identified related to civil rights and environmental justice. The existing road system provides adequate access to surrounding communities, and no problems currently exist between how roads are managed and what these communities expect.

Appendix L

Croatan National Forest Open Roads Recommended for Seasonal Closure



Legend

System Type

- Forest Service Road
- Municipal Road
- Trail

Road Management

- Open Road - Recommend for Seasonal Closure

Ranger District

- Croatan Ranger District

Waterbody

Owner Classification

- NON-Forest Service
- USDA Forest Service

1 in = 3 miles

0 2 4 8 12 16 Miles

Date: 3/16/2017

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