

**Cherokee National Forest  
Nolichucky/Unaka Ranger District**

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# **Travel Analysis Process Report**

**Doe Mountain Assessment Area**

**August 2010**

## BACKGROUND

In August 1999, the Washington Office of the USDA Forest Service published Miscellaneous Report FS-643 titled Roads Analysis: Informing Decisions about Managing the National Forest Transportation System. The objective of roads analysis is to provide decision makers with critical information to develop road systems that are safe and responsive to public needs and desires, are affordable and efficiently managed, have minimal negative ecological effects on the land, and are in balance with available funding for needed management actions.

In January 2001, the agency published the Transportation Final Rule and Administrative Policy authorizing units to use, as appropriate, the road analysis procedure embodied in FS-643 to assist land managers making major road management decisions.

The Federal Register Notice (73 FR 74689) for the **final travel management directives** was published on December 9, 2008. The directives become effective January 8, 2009 (Forest Service Manual (FSM) 7700 – Travel Management). FSM 7703.25 changes the term “roads analysis” to “travel analysis”. Consequently, the terms are changed in this document to reflect the current direction unless there are references from previous documents using the term “roads analysis.”

These directives require that a travel analysis is conducted to inform decisions related to:

- a. Identification of the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System (NFS) lands per 36 CFR 212.5(b)(1).
- b. Designation of roads, trails and areas for motor vehicle use per 36 CFR 212.51.

## PROCESS

Travel analysis is a six-step process. The steps are designed to be sequential with the understanding the process may require feedback among steps over time as an analysis matures. The amount of time and effort spent on each step differs by project, based on specific situations and available information. The process provides a set of possible issues and analysis questions for which the answers can inform choices about travel management. Decision makers and analysts determine the relevance of each question, incorporating public participation as deemed necessary.

- Step 1. Setting up the Analysis
- Step 2. Describing the Situation
- Step 3. Identifying Issues
- Step 4. Assessing Benefits, Problems and Risks
- Step 5. Describing Opportunities and Setting Priorities
- Step 6. Reporting

The analysis is an integrated ecological, social, and economical approach to transportation planning that addresses both the existing and future transportation system

(USFS,1999a). This analysis follows the process outlined in the document “Roads Analysis: Informing Decisions About Managing The National Forest Transportation System,” (USFS, 1999a). *This is not a NEPA document*, but rather a site specific NFMA analysis for the Doe Project Area. This area encompasses approximately 20,189 acres of National Forest ownership within Compartments 0, 13-26, 39-41, 123. This NFMA analysis defines the existing and desired conditions of the transportation system, and opportunities are identified to move towards the desired condition.

This analysis provides a framework to identify travel related concerns and management opportunities that can be incorporated into subsequent projects being evaluated through the NEPA process. This analysis will assist in the decisions involving transportation systems in the Doe Project Area.

## **PRODUCTS**

The product of an analysis is a report for decision makers and the public that documents the information and analyses used to identify opportunities and set priorities for future national forest travel management. Included in the report is a map displaying the known transportation system for the analysis area, and the needs and opportunities for each road and trail, or segment of road or trail. A complete list of all the maps is included in Step 6. This report will:

- Identify needed and unneeded roads, trails, and areas for motor vehicle use;
- Identify road-associated environmental and public safety risks;
- Identify site-specific priorities and opportunities for transportation system improvements and decommissioning;
- Identify areas of special sensitivity or any unique resource values.

## **THIS REPORT**

This report documents procedure used for the Doe Assessment Area (wherever analysis area the travel analysis is referenced in this document, it corresponds to the Doe Assessment Area boundary). This report is a “living” document and reflects the conditions of the analysis area at the time of writing. The document can be updated as the need arises and conditions warrant. Any future updates will be reflected in the title (e.g., version 2.0).

# STEP 1 SETTING UP THE ANALYSIS

## PURPOSE AND PRODUCTS

The purposes of this step are to:

- Identify the geographic scale or scales for the analysis,
- Develop a process plan for conducting the analysis, and
- Clarify the roles of technical specialists and line officers in the team.

The products of this step are:

- A statement of the objectives of the analysis,
- A list of interdisciplinary team members and participants,
- A list of information needs, and
- A plan for the analysis.

## OBJECTIVES OF THE ANALYSIS

This analysis is specific to the project scale. Unless otherwise stated, the boundary for this analysis will match the Doe Project Area boundary (similar to the 6th field watershed). (See maps in Appendix A.)

This report analyzes the transportation system in the analysis area – including the system, temporary, and unauthorized roads, trails, and areas for motor vehicle use (see Step 2 for definitions). It will describe opportunities and set priorities; and some of these opportunities will be carried forward. Individuals from this Interdisciplinary team were utilized for the analysis as needed. At critical points, Line Officers established sideboards, identified issues, and summarized management recommendations.

## INTERDISCIPLINARY TEAM MEMBERS AND PARTICIPANTS

Member	Title	Role for Analysis
Terry Bowerman	District Ranger	
Vern Maddux	NZ NEPA coordinator/Silviculturist	Doe Analysis Team Leader
Gary Watson	Civil Engineering Technician	Analysis Team Leader
Tom Rowe	Forester	GIS Support
Joe McGuinness	Zone Wildlife Biologist	Team Consultant
Marcia Carter	Zone Fisheries Biologist	Team Consultant
Cheryl Summers	District Resource Manager	Team Consultant
Quentin Bass	Forest Archaeologist	Team Consultant
Jason Jennings	Forest Hydrologist	Team Consultant
Delce Dyer	Zone Landscape Architect	Team Consultant
Guy Street	Zone Fire Management Officer	Team Consultant

<b>Member</b>	<b>Title</b>	<b>Role for Analysis</b>
Jim Stelick	Zone Vegetation Management	Team Consultant
Scotty Myers	Zone Wildlife Technician	Team Consultant
Bill Woody	Wildlife Technician	Team Consultant
Frank Lege	Special Uses Program Manager	Team Consultant

The Cherokee National Forest’s Revised Land and Resource Management Plan (RLRMP) and amendment provide the management objectives, baseline information, and standards and guidelines to meet legal requirements. Additional information was obtained through field surveys, knowledge of forest personnel, and database queries. The analysis incorporates the best available scientific information as summarized in the document “Forest Service roads: a synthesis of scientific information” (USFS, 2001). This information was the foundation for determining impacts to different resources and identifying recommended management actions.

A Forest Wide Roads Analysis was completed in December 2002 (CNF RAP 2002). This analysis will tier to that document.

**INFORMATION NEEDS**

The data currently housed in the geographic information system (GIS) will be the information used for this analysis. Updates will be made as new information becomes available. Extensive GIS maps are needed for the various resource fields and are discussed in Step 2 and displayed in Appendix A.

**ANALYSIS PLAN**

Review of the document will occur on the Cherokee NF (Forest Service specialists); and, the report will be available for other Forests as well. Once finalized, the document will be available to the public if requested. It will be part of the administrative record for the NEPA document. The Doe Team conducted the analysis using GIS data, field data, and public involvement. The interdisciplinary (ID) team developed issues related to travel management and reviewed all the questions in Step 4 to determine which were applicable to the analysis area. In Step 5 the team brought together all the resource information and made recommendations and set priorities.

## **STEP 2 DESCRIBING THE SITUATION**

### **PURPOSE AND PRODUCTS**

The purpose of this step is to:

- Describe the existing transportation system in relation to current forest plan direction.

The products of this step are:

- A map or other descriptions of the existing transportation system defined by the current forest plan or transportation plan, and
- Basic data needed to address travel analysis issues and questions.

### **EXISTING TRANSPORTATION SYSTEM DESCRIPTION**

Most of the study area is on National Forest System land, and of the transportation system assessed in and near the boundary of this study area, the routes are roads that are National Forest System Roads (NFSRs) under the jurisdiction and maintenance of the Forest Service. There are approximately 24 miles of Forest Service jurisdiction roads within the analysis area. Many of the Forest Service roads (approximately 18 miles) are gated, vegetated, and closed seasonally or throughout the year. The NFSRs in the study area are in fair to good condition, but all could use more maintenance. Deferred maintenance needs exist for all the NFSRs.

There are no trails or areas for motor vehicle use in this area.

### **LAND AND RESOURCE MANAGEMENT PLAN EMPHASIS**

The Doe Assessment Area covers approximately 58,779 acres. Approximately 34% (20,189 acres) is National Forest ownership and 66% (38,590 acres) is privately owned. This acreage is contained within Management Area(s) 13.

This management area generally includes Iron Mountains, lands around Watauga Reservoir and eastward to the North Carolina border. The Appalachian Trail (A.T.) is located in this management area. The management area includes portions of the Big Laurel, Doe Creek, Stony Creek, North Indian Creek, Lower Watauga River, Elk River and Doe River 5<sup>th</sup> level watersheds. For a complete description of this management area and the watershed within, see the document labeled “Management Area Descriptions” on the CNF web page.

Management practices are designed to protect the Appalachian National Scenic Trail (A.T.) experience, preserve and strengthen the role of volunteers and volunteer organizations, provide opportunities for high quality outdoor recreation experiences, and provide for the conservation and enjoyment of the nationally significant scenic, historic, natural and cultural qualities of the land through which the A.T. passes. Lands adjoining the prescription area seen from the A.T.

will be managed for multiple use under the provisions of this plan, in a manner which will reasonably harmonize with and be complementary to the A.T. experience.

Doe Assessment Area 13 is allocated into the following Management Prescriptions:

<b>Prescription</b>	<b>Description</b>	<b>Total NFS Acres</b>
1.A	Wilderness	1969.71
1.B	Recommended Wilderness Study Area	2114.11
4.A	Appalachian Trail Corridor	1667.42
7.B	Scenic Byway Corridors - Suitable	2571.01
7.D	Concentrated Recreation Zone	164.97
7.E.2	Dispersed Recreation Areas - Suitable	4360.20
8.A.1	Mixed Successional Habitats - Suitable	2085.54
8.C	Black Bear Habitat Management - Suitable	2525.20
9.F	Rare Communities	94.47
12.A	Remote Backcountry Recreation – Few Open Roads	2636.26
	<b>Total National Forest Ownership Acres</b>	<b>20,189</b>

**1.A (10%) – Designated Wilderness – Pond Mountain/Big Laurel Branch**

The emphasis is to allow ecological and biological processes to progress naturally with little to no human influence or intervention, except the minimum impacts made by those who seek the wilderness as a special place offering opportunities to experience solitude and risk in as primitive surroundings as possible.

**1.B (11%) – Recommended Wilderness Study Area – Big Laurel Branch Addition**

Manage these areas to protect wilderness characteristics pending legislation as to their classification and provide for existing uses where compatible with protecting wilderness character.

**4.A (8%) – Appalachian Trail Corridor**

This prescription area consists of those lands mapped as the foreground area visible from the A.T. footpath, and—as designated on a case-by-case basis—associated trail shelters, overnight use sites, viewpoints, water sources and spur trails. Approximately 150 miles of the AT and 18 associated shelters and designated overnight-use sites lie within the CNF on the Nolichucky/Unaka and Watauga Ranger Districts.

**7.B (13%) – Scenic Corridors/Sensitive Viewsheds**

The emphasis is on providing, through maintenance or restoration and design, high-quality scenery in sensitive recreational and travel way settings. Examples include areas adjacent to communities; areas around lakes, rivers, and streams; and areas viewed from State-designated byways and major travel ways that have a high traffic volume.

**7.D (<1%) - Concentrated Recreation Zone**

Concentrated Recreation Zones are managed to provide the public with a variety of recreational opportunities in visually appealing and environmentally healthy settings. Developed recreation areas, concentrated use areas, and areas of high density dispersed recreation activity are the

components of Concentrated Recreation Zones. Facilities are provided to enhance the quality of the recreational experience and/or to mitigate damage to the affected ecosystems. These areas also serve as "gateways" to the wide diversity of recreation opportunities on the CNF.

#### **7.E.2 (20%) – Dispersed Recreation Areas with Vegetation Management**

These areas receive moderate to high recreation use and are managed to provide a variety of dispersed recreation opportunities, improve the settings for outdoor recreation, and enhance visitor experiences, in a manner that protects and restores the health, diversity, and productivity of the land. They often serve as gateways between the national forest and local communities. Portions of these areas provide a sustained yield of timber products, however timber harvest practices are modified to recognize the recreational and aesthetic values of these suitable lands.

#### **8.A.1 (11%) – Mixed Successional Habitats**

This area emphasizes providing habitat for a variety of plant and animal populations associated with a mix of successional forest habitats, eastern wild turkey, and black bear. Management activities are designed to: (1) retain a forested canopy across at least 50% of the prescription area, (2) maintain or enhance hard and soft mast production, (3) provide a dispersed system of permanent and transitory openings, and (4) limit motorized access across the prescription area and control access during critical nesting and brood-rearing seasons.

#### **8.C (13%) – Black Bear Habitat Management**

This area emphasizes providing optimal habitat for black bears and other wide-ranging area sensitive species. Management activities are designed to: 1) provide a secluded and diverse habitat; 2) ensure adequate den sites, and 3) maintain hard and soft mast production.

#### **9.F (<1%) – Rare Communities**

Rare communities are assemblages of plants and animals that occupy a small portion of the landscape, but contribute significantly to plant and animal diversity. Rare communities, wherever they occur on the forest, are managed under this prescription to ensure their contribution to meeting goals for community diversity, endangered and threatened species recovery and providing habitat for sensitive and locally rare species.

### **DEFINITIONS (36 CFR 212.1)**

As mentioned above, the Federal Register published the Final Rule and Administrative Policy December 9, 2008; this established new definitions for road management on the National Forests. Listed below are the definitions that pertain to this report.

**Area.** A discrete, specifically delineated space that is smaller, and in most cases much smaller, than a ranger district (36 CFR 212.1).

**Designated Road, Trail, or Area.** An NFS road, an NFS trail, or an area on NFS lands that is designated for motor vehicle use pursuant to 36 CFR 212.51 on an MVUM (36 CFR 212.1).

**Forest Road or Trail.** A road or trail wholly or partly within or adjacent to and serving the NFS that the Forest Service determines is necessary for the protection, administration, and utilization of the NFS and the use and development of its resources (36 CFR 212.1).

**Forest Transportation Atlas.** A display of the system of roads, trails, and airfields of an administrative unit (36 CFR 212.1).

**Forest Transportation Facility.** A forest road or trail or an airfield that is displayed in a forest transportation atlas, including bridges, culverts, parking lots, marine access facilities, safety devices, and other improvements appurtenant to the forest transportation system (36 CFR 212.1).

**Forest Transportation System.** The system of NFS roads, NFS trails, and airfields on NFS lands (36 CFR 212.1).

**Forest Transportation System Management.** Travel planning, analysis, designation of roads, trails and areas for motor vehicle use, recordkeeping, scheduling, construction, reconstruction, maintenance, decommissioning, and other operations undertaken to achieve environmentally sound, safe, and cost-effective access for the use, enjoyment, protection, administration, and management of NFS lands.

**Highway-Legal Vehicle.** Any motor vehicle that is licensed or certified under state law for general operation on all public roads in the state. Operators of highway-legal vehicles are subject to state traffic law, including requirements for operator licensing.

**Jurisdiction Over a Forest Transportation Facility.** The legal right to control or regulate use of a forest transportation facility derived from title, an easement, an agreement, or other similar source.

**Motor Vehicle.** Any vehicle which is self-propelled, other than:

- a. A vehicle operated on rails; and
- b. Any wheelchair or mobility device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion and that is suitable for use in an indoor pedestrian area (36 CFR 212.1).

**Motor Vehicle Use Map (MVUM).** A map reflecting designated roads, trails, and areas on an administrative unit or a ranger district of the NFS (36 CFR 212.1).

**National Forest System Road.** A forest road other than a road which has been authorized by a legally documented right-of-way held by a state, county, or local public road authority (36 CFR 212.1).

**National Forest System Trail.** A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a state, county, or local public road authority (36 CFR 212.1).

**Non-Highway-Legal Vehicle.** Any motor vehicle that is not licensed or certified under state law for general operation on all public roads within the state. Operators of non-highway-legal

vehicles are subject to state requirements, if any, for licensing and operation of the vehicle in question.

**Private Road.** A road under private ownership authorized by an easement granted to a private party or a road that provides access pursuant to a reserved or outstanding right.

**Public Road.** A road under the jurisdiction of and maintained by a public road authority and open to public travel (23 U.S.C. 101(a)).

**Road.** A motor vehicle route over 50 inches wide, unless identified and managed as a trail (36 CFR 212.1).

**Road Construction or Reconstruction.** Supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a road (36 CFR 212.1).

**Road Decommissioning.** Activities that result in restoration of unneeded roads to a more natural state (FSM 7734).

**Road Maintenance.** Ongoing upkeep of a road necessary to maintain or restore the road in accordance with its road management objectives (FSM 7714).

**Road Subject to the Highway Safety Act.** An NFS road that is open to public use in a standard passenger car, including a road with access restricted on a seasonal basis and a road closed during extreme weather conditions or for emergencies, but which is otherwise open to public travel.

**Route.** A road or trail.

**Temporary Road or Trail.** A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road or a forest trail and that is not included in a forest transportation atlas (36 CFR 212.1).

**Trail.** A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail (36 CFR 212.1).

**Unauthorized Road or Trail.** A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas (36 CFR 212.1).

## **BASIC DATA NEEDS**

Basic data needs are listed below for the Doe Travel Analysis; these were data needed to adequately address the issues. Some of the data are displayed in this report, and other data was used to help answer questions in Step 4, but are located on file at the Nolichucky/Unaka Ranger District.

- GIS layer of existing transportation system.
- Road logs.

- GIS layer of wildlife cover types.
- GIS coverage and mapping of critical, unique or sensitive wildlife habitats.
- GIS map of potential unroaded areas (roads buffered ¼ mile).
- Classification of the transportation system by type and level of use, season of use and maintenance needs.
- Identification of illegal ORV use within the analysis area/garbage dumping sites.
- Mapping of wetlands, landforms, and ecological land types within the analysis area.
- Identification of wildlife species most at risk, whose viability is a concern.
- On-Forest wildlife monitoring data.
- Identification of wildlife habitat management needs facilitated by the existing transportation system.
- Identification of existing monitoring/inventory sites and the required roads necessary for access.
- An assessment of the degree of encroachment and proximity of transportation system to wetland areas, and the potential impacts is needed.
- The location of transportation system relative to riparian boundaries and the intersections that influence riparian vegetative communities.
- Vegetation inventory data.

## STEP 3 IDENTIFYING ISSUES

### PURPOSE AND PRODUCTS

The purpose of this step is to:

- Identify the key questions and issues affecting travel management, and
- Describe the origin of the issues.

The products of this step are:

- A summary of key travel-related issues, including their origin and basis, presented by general categories of environmental, socio-cultural and economic, and
- A description of the status of current data, including sources, availability, and methods of obtaining information.

### ISSUE SUMMARY

The following were identified as issues, by the interdisciplinary team, for this analysis.

#### **Issue 1 – Private Property/Special Use Access**

Private property access and special use permit access are issues in this analysis. They are factors in deciding the management of roads in all Management Prescriptions in the Doe Analysis area. Roads needed for access are retained on the road system.

#### **Issue 2 – Use of roads for wildfire suppression and prescribed burning.**

Existing system roads serve an important role in safe and efficient wildfire suppression operations. Timely access for suppression personnel and equipment is dependent upon an adequate road system.

Existing roads often serve as the primary control lines for wildfire suppression and prescribed burning. This allows for suppression with minimal ground disturbance and minimal exposure of personnel to hazards. In addition to wildfire suppression, system roads serve as the primary containment sources for the Zone's Hazardous Fuels Reduction.

#### **Issue 3 – Access for Vegetation Management**

Generally, the road network in the Doe Assessment Area was designed and built to facilitate vegetation management. Access is generally good, but small amounts of roading may be needed for future management.

#### **Issue 4 – Access/Use for Wildlife Management**

The transportation system, especially routes open to public traffic, can have adverse effects on wildlife. Many adverse impacts are the result of disturbance, illegal harvest, and habitat alterations caused by the transportation system. Controlling access, by gating roads, is an important tool for mitigating adverse impacts. Gated roads also provide benefits for wildlife when these areas are managed as linear wildlife openings or provide access to spot openings. Roads also facilitate and provide access for hunting and wildlife viewing opportunities. Maintaining un-roaded areas is crucial in order to provide wildlife with large contiguous blocks of un-fragmented habitat with low levels of disturbance. Controlling access, providing wildlife openings, and maintaining un-roaded areas were identified as important road issues for wildlife in the Doe Analysis Area. Access for improving and maintaining wildlife habitat is an important factor in managing wildlife population. Very limited access to manage wildlife was identified as an issue in the Doe analysis Area.

#### **Issue 5 – Recreation/Heritage Use**

The transportation system is important from a recreational standpoint for numerous reasons. It serves as the primary conduit for ingress/egress to the National Forest and the recreation zones. Recreation activities in the Doe Analysis Area include: horseback riding, fishing, hiking, camping, swimming, hunting, scenic driving, and many others. All of these recreational activities require a transportation system to access the recreation zones. Additionally from an administrative standpoint, the transportation system is a necessity for emergency response and maintenance of recreational zones and campgrounds.

#### **Issue 6 – Illegal ATV Use**

Illegal ATV use occurs across the Doe Analysis Area. Some areas are accessed from private land, and others are accessed from public roads. ATV's are driving on gated Forest Service roads, unauthorized roads, wildlife openings, and are creating new trails. This use causes erosion of soils, sedimentation to enter streams, and degradation of wildlife habitat. Controlling illegal ATV use was identified as an important road issue for aquatic and terrestrial resources and recreation in the Doe Analysis Area. Physical resources are impacted by unauthorized ATV trails to various degrees depending on trail location, amount of use, soil types and exposure. Impacts may include rutting, soil compaction, erosion, sedimentation, and loss of vegetation. Disturbance can remove the litter layer, organic layer, and expose mineral soil. This reduces water infiltration and increase over land flow and sediment movement. Forest Service system roads are also heavily used by riders to extend their riding experience. Exceeding the current maintenance level on NFSR can degrade the roads over time which increases the potential for impacts.

## STATUS OF CURRENT DATA

The roads in the analysis area are in the GIS system, and their condition/status is current as of the spring of 2008. The road number, name, length, and other data are detailed in **Table 1** below.

### **System Roads** (From INFRA)

#### **NFSR's**

#166, #298, #4123, #4441, #4442, #6015, #6054, #41231, #60151, #60161, #60162, #60191, #60202, #60391, #602101, #4441A, CH53

#### **Public Roads:**

CH1389, CH1394, CH1396, CH2458, CH2459, CH2613, CH60201, CH741, CH7412, TN167, TN67, US 19E, US321, US421

#### **Unauthorized Roads**

Field inventories were conducted to locate unauthorized roads and trails in the Doe Assessment Area. From this inventory, a grouping of the different types of unauthorized roads was made. The groupings are explained in *Table 4*. There are 9 unauthorized roads of varying lengths to consider.

OR1- OR9 are existing roads presently being used and will be managed as shown in *Table 4*.

Table 1

Table1. Doe Assessment Area Roads - Current Condition March 2009											
ROAD #	BMP	EMP	NAME	MILEAGE IN WATER SHED	Miles of road within 100' of stream	Status (as defined by Travel Management Rule)	JURISDICTION	SYSTEM	ROUTE STATUS	OBJ ML	REMARKS
<b>SYSTEM ROADS:</b>											
166	0	0.42	BUCK RIDGE TOWER	0.77		Closed	P	P -	EX	2	
	0.42	1.3					FS	NFSR		1	
298	0	0.5	SINK MOUNTAIN	2.21	0.11	Yearlong Open	FS	NFSR	EX	5	
	0.5	2.21								5	
4123	0	0.71	PONDER ROAD	0.71	0.11	Closed	FS	NFSR	EX	2	
41231	0	0.55	MOODY STRIP	1.07		Closed	FS	NFSR	EX	2	
4441	0	0.85	DYE LEAF	1.38	0.52	Closed	FS	NFSR	EX	2	
4441A	0	0.4	DYE LEAF SPUR A	0.34	0.11	Closed	FS	NFSR	EX	2	
4442	0	0.45	AVERY BRANCH	0.40	0.04	Closed	FS	NFSR	EX	2	
6015	0	0.94	STOUT BRANCH	3.00	0.80	Closed	FS	NFSR	EX	4	
	0.94	1.35								4	
	1.35	2								2	
	2	2.6								2	
	2.6	3								2	
60151	0	0.98	STOUT BR SPUR	0.97	0.28	Closed	FS	NFSR	EX	1	
60161	0	0.325	MACK BRANCH	0.33	0.29	Closed	FS	NFSR	EX	2	
	0.325	1.42									
60162	0	0.15	POLLY BRANCH	0.13		Closed	FS	NFSR	EX	2	
60191	0	3	CAMPBELL HOLLOW	2.45	1.58	Closed	FS	NFSR	EX	2	
	0	2					C	C -		4	

<b>Table1. Doe Assessment Area Roads - Current Condition March 2009</b>											
<b>ROAD #</b>	<b>BMP</b>	<b>EMP</b>	<b>NAME</b>	<b>MILEAGE IN WATER SHED</b>	<b>Miles of road within 100' of stream</b>	<b>Status (as defined by Travel Management Rule)</b>	<b>JURISDICTION</b>	<b>SYSTEM</b>	<b>ROUTE STATUS</b>	<b>OBJ ML</b>	<b>REMARKS</b>
60202	2	2.7	CRESS BRANCH	2.52	0.10	Closed	FS	NFSR	EX	1	
602101	0	0.6	GOUGE TRACT	1.22	0.61	Seasonal Open	FS	NFSR	EX	2	
60391	0	0.76	GREGG BRANCH	0.76	0.45	Closed	FS	NFSR	EX	2	
6054	0	0.23	SHADY GAP	2.36	0.27	Closed	FS	NFSR	EX	2	
	0.23	1.8								2	
	1.8	2.75								1	
CH53	0	0.47	CROSS MOUNTAIN	3.30	0.23		C	C-	EX	4	
	0.47	3.33					FS	NFSR		4	
	3.33	3.68					C	C-		4	
<b>UNAUTHORIZED ROADS:</b>											
<b>EX. ROAD #</b>	<b>BMP</b>	<b>EMP</b>	<b>Proposed Name &amp; Number</b>	<b>MILEAGE IN WATER SHED</b>	<b>Miles of road within 100' of stream</b>	<b>Status (as defined by Travel Management Rule)</b>	<b>OBJ_M L</b>	<b>JURISDICTION</b>	<b>SURFACE_TYPE</b>	<b>SYSTEM</b>	<b>REMARKS</b>
OR1	0	0.07	Oliver Hollow 1	0.07		open	2	FS	NAT	NFSR	
OR2	0	0.08	Oliver Hollow 2	0.08		open	2	FS	NAT	NFSR	
OR3	0	0.11	Oliver Hollow 3	0.11		open	2	FS	NAT	NFSR	
OR4	0	0.14	Mack Branch Spur	0.14		Closed	2	FS	NAT	NFSR	
OR5			Henry Stout Branch								County Road

<b>Table1. Doe Assessment Area Roads - Current Condition March 2009</b>											
ROAD #	BMP	EMP	NAME	MILEAGE IN WATER SHED	Miles of road within 100' of stream	Status (as defined by Travel Management Rule)	JURISDICTION	SYSTEM	ROUTE STATUS	OBJ ML	REMARKS
OR6	0	0.27	Horseshoe Cove HomeOwners Assn.	0.27		Closed	4	PVT	BIT	NFSR	Private Road across R.O.W.
OR7	0	0.29	Butler Bridge Lake Access	0.29		Closed	2	FS	NAT	NFSR	Access to Bridge Pier
OR8	0	0.08	Roan Creek Bridge Lake Access	0.08	0.08	open	0	FS	NAT	NFSR	Decommission
OR9			East Fork Dugger								County Road
<b>COUNTY &amp; STATE ROADS:</b>											
CH1389	0	1.37	GREGG BRANCH	1.39			C	C-	EX	5	
CH1394			Not In Infra								
CH1396	0	2.65	PLEASANT VALLEY	0.67			C	C-	EX	5	
CH2458	0	2.24	CAMPBELL	4.20			C	C-	EX	5	
	2.24	3.96								4	
	3.96	4.07								5	
CH2459	0	1.91	SPEAR-SLABTOWN BR.	4.93			C	C-	EX	5	
	1.91	2.77								3	
	2.77	4.05								4	
	4.05	4.76								5	
CH2613			Not In Infra								Not in Infra
CH60201			Not In Infra								Not in Infra
CH741	0	0.94	BUNTONTOWN	10.40			C	SH-	EX	4	
	0.94	10.53								4	
CH7412		3.51	DUNCAN HOLLOW	3.12			C	C-	EX	4	

Table1. Doe Assessment Area Roads - Current Condition March 2009											
ROAD #	BMP	EMP	NAME	MILEAGE IN WATER SHED	Miles of road within 100' of stream	Status (as defined by Travel Management Rule)	JURISDICTION	SYSTEM	ROUTE STATUS	OBJ ML	REMARKS
TN167	0	8.13	DOEVILLE-MTN. CITY	3.18			S	SH -	EX	5	
	8.13	21.03								5	
TN67	0	1.29	ELIZABETHTON HWY.	15.94			S	SH -	EX	5	
	1.29	8								5	
	8	8.75								5	
US19E	0	3.63	ROAN MTN.HWY.	0.46			S	SH -	EX	5	
	3.63	9.18								5	
	9.18	16.92								5	
US321	14.75	21.94	BOONE HWY.	6.10			S	US -	EX	5	
	21.94	23.24								5	
	23.24	27.27								5	
US421	0	8.63	DANIEL BOONE TRAIL	6.93			S	US -	EX	5	
	8.63	14.2								5	
	14.2	18.02								5	
	18.02	23.57								5	
	23.57	23.87								5	
	23.87	24.91								5	
	24.91	29.51								5	
29.51	31.64	5									

## **STEP 4 ASSESSING BENEFITS, PROBLEMS, AND RISK**

### **PURPOSE AND PRODUCTS**

The purpose of this step is to:

- Assess the various benefits, problems, and risks of the current transportation system and whether the objectives of Forest Service policy and forest plans are being met.

The products of this step are:

- A synthesis of the benefits, problems, and risks of the current transportation system,
- An assessment of the risks and benefits of entering any unroaded areas, and
- An assessment of the ability of the road system to meet management objectives.

### **CURRENT TRANSPORTATION SYSTEM BENEFITS, PROBLEMS, AND RISKS**

The following section is a series of questions and answers that assess benefits, problems, and risks of the current transportation system and its ability to meet the objectives stated in the Forest Land Management Plan. The questions are from Forest Service publication FS-643, *Road Analysis: Informing Decisions About Managing the National Forest Transportation System*. Table 2 provides documentation for the travel analysis process in Step 4.

Although the questions specifically address the road system, in answering the questions, the transportation system was considered.

**Table 2. Documentation for Roads Analysis Process Step 4.**

<b>Question Number</b>	<b>Addressed in Analysis?</b>	<b>Rationale For Questions Not Addressed</b>
EF (1)	Yes	
EF (2)	Yes	
EF (3)	Yes	
EF (4)	Yes	
EF (5)	Yes	
AQ (1)	Yes	
AQ (2)	Yes	
AQ (3)	Yes	
AQ (4)	Yes	
AQ (5)	Yes	
AQ (6)	Yes	
AQ (7)	Yes	
AQ (8)	Yes	
AQ (9)	Yes	
AQ (10)	Yes	
AQ (11)	Yes	
AQ (12)	Yes	
AQ (13)	Yes	
AQ (14)	Yes	
TW (1)	Yes	
TW (2)	Yes	
TW (3)	Yes	
TW (4)	Yes	
EC (1)	Yes	
EC (2)	Yes	
EC (3)	Yes	
TM (1)	Yes	
TM (2)	Yes	
TM (3)	Yes	
MM (1)	Yes	
RM (1)	Yes	
WP (1)	Yes	
WP (2)	Yes	
WP (3)	Yes	
SP (1)	Yes	
SU (1)	Yes	
GT (1)	No	Addressed in Forest RAP
GT (2)	No	Addressed in Forest RAP
GT (3)	No	Addressed in Forest RAP
GT (4)	No	Addressed in Forest RAP
AU (1)	Yes	
AU (2)	Yes	
PT (1)	Yes	
PT (2)	Yes	
PT (3)	Yes	
PT (4)	Yes	
UR (1)	Yes	
UR (2)	Yes	
UR (3)	Yes	

**Table 2. Documentation for Roads Analysis Process Step 4.**

<b>Question Number</b>	<b>Addressed in Analysis?</b>	<b>Rationale For Questions Not Addressed</b>
UR (4)	Yes	
UR (5)	Yes	
RR (1)	Yes	
RR (2)	Yes	
RR (3)	Yes	
RR (4)	Yes	
RR (5)	Yes	
PV (1)	Yes	
PV (2)	Yes	
PV (3)	Yes	
PV (4)	No	Addressed in Forest RAP
SI (1)	No	Addressed in Forest RAP
SI (2)	No	Addressed in Forest RAP
SI (3)	No	Addressed in Forest RAP
SI (4)	No	Addressed in Forest RAP
SI (5)	No	Addressed in Forest RAP
SI (6)	No	Addressed in Forest RAP
SI (7)	No	Addressed in Forest RAP
SI (8)	No	Addressed in Forest RAP
SI (9)	No	Addressed in Forest RAP
SI (10)	No	Addressed in Forest RAP
CR (1)	No	Addressed in Forest RAP

**Ecosystem Functions and Processes (EF)**

***EF (1): What ecological attributes, particularly those unique to the region, would be affected by roading of currently unroaded areas?***

Any roading into currently unroaded areas would have effects to ecological attributes. However, most of the Doe area is similar to much of the northern part of the Cherokee, and does not have unique ecological attributes. The effects of roading would be similar to the effects of roads in those similar areas. Unique areas that do exist are generally already within Prescription Areas that discourage road-building.

Project specific effects of any new roads proposed would be analyzed in the respective environmental analysis.

***EF (2): To what degree do the presence, type, and location of roads increase the introduction and spread of exotic plant and animal species, insects, diseases, and parasites? What are the potential effects of such introductions to plant and animal species and ecosystem function in the area?***

Exotic plants represent the greatest threats. Any additional permanent roading would provide opportunities for existing exotic plants to spread. Most existing exotics in the area are associated with disturbance.

***EF (3): To what degree do the presence, type, and location of roads contribute to the control of insects, diseases, and parasites?***

The presence of roads in drivable condition is crucial for accessing areas to treat and control the spread of insects, diseases and parasites, particularly hemlock woolly adelgid.

***EF (4): How does the road system affect ecological disturbance regimes in the area?***

Timber management roads provide avenues for needed ecological disturbance in order to promote forest health and improve wildlife habitat. Historically, roads have not increased the incidence of arson fires, but are used as fire control lines. This results in fire patterns being governed by the location of roads.

***EF (5): What are the adverse effects of noise caused by developing, using, and maintaining roads?***

Maintaining roads during hunting season may scare the game and have an adverse effect on hunting. There would be no other adverse effects of noise.

**Aquatic, Riparian Zone, and Water Quality (AQ)**

***AQ (1): How and where does the road system modify the surface and subsurface hydrology of the area?***

The roads have three primary effects on hydrologic processes. They intercept rainfall directly on the road surface and cut banks, and intercept subsurface water moving down the hillslope; they concentrate flow, either on the surface or in an adjacent ditch or channel; and they divert or re-route water flow from paths that it would otherwise take if the road were not present. Roads can affect peak streamflows depending upon the size of the watershed involved. In extreme cases they can capture or re-route water, dewatering a small stream. As a general rule, however, roads extend the drainage network of a watershed and result in quicker flood peaks. In the Doe Project Area, roads constitute a small proportion of the land surface and have relatively insignificant effects on peak flow. Roads do not appear to alter annual water yields within the watershed.

**Recommendation** – Surface drainage can be improved by additional aggregate surfacing, additional drainage dips, cross drain culverts, berms and outsloping. These mitigation measures can reduce the impacts associated with the roads, including effects to surface and subsurface hydrology and erosion/sediment rates.

***AQ (2): How and where does the road system generate surface erosion?***

By their nature, all native or aggregate surfaced roads will generate some surface erosion. The amount depends on factors such as soil type, road surface type, road gradient, road prism, the spacing and effectiveness of drainage structures, traffic use, and maintenance activity. Sandy textured soils in the project area are particularly prone to water erosion when exposed to disturbance on moderate to steep slopes. The extent of surface erosion occurring on road cutbanks depends on the steepness, slope length, soil type, and vegetative cover. Road ditches concentrate water flow which generates surface erosion and also increase sediment delivery to streams from road surfaces and road cutbanks. Ditches and culverts that are blocked create

surface erosion issues by diverting water flow onto road surfaces. Roads open to public use provide a continual opportunity for surface erosion, but effective mitigation described in AQ1 will limit surface erosion. Any road opened and used for commercial use (such as logging traffic), would result in an increased potential for surface erosion, but reconstruction or maintenance activities associated with this kind of use would mitigate erosion during use and result in a road with less erosion potential after its use. Surface erosion would also be a concern on any newly constructed permanent or temporary road until the road is closed and re-vegetated or otherwise stabilized with mitigation measures.

***AQ (3): How and where does the road system affect mass wasting?***

Mass wasting is generally not a problem in the analysis area. Fill slope failure is primarily related to areas where concentrated surface water is turned off of roadbeds at relief culverts and turnouts or where uncontrolled surface drainage spills over fill slopes. Inadequate sized culverts or plugged culverts may blowout during high flow periods and initiate soil slides. Proper sizing and location of drainage culverts can reduce this potential, as well as, armoring the outfall areas associated with drainage structures, as needed. Road cutbanks propose a problem in steep areas where soils are coarse in texture, shallow, and where unstable colluvium material occurs.

***AQ (4): How and where do road-stream crossings influence local stream channels and water quality?***

There is an estimation of 62 stream crossings found on FS lands within the analysis area. This estimation is based partially on field survey and partially on evaluation of maps and other information. These crossings represent direct interaction of roads and streams and serve as a primary conduit for road-related erosion and storm drainage to reach streams. Road-stream crossings can physically change the alignment of stream channels for short distances. Long-term contributions of sediment into streams can result in geomorphic changes to channel alignment and substrate condition. Increases in storm runoff associated with roads can also result in channel alignment and substrate changes such as downcutting.

In most cases culverts have more of an influence on stream channels and water quality than do bridges or bottomless culverts. Culverts concentrate and accelerate water flow causing soil displacement to occur at the outfalls and cause stream banks to undercut. Over time the stream channel adjusts to the change in flow by becoming deeper and/or wider for a short distance below the culvert. Piping occurring under or around culverts is usually a minor source of sediment; however, high sediment loading can occur from a culvert blowout due to piping. Blowouts can also occur from plugged culverts. Road surfacing, eroded materials and pollutants are usually deposited into streams by ditches that empty directly into streams at road-stream crossings.

**Recommendations-** Create ditch turnouts so that ditchlines do not empty directly into stream channel, repair or replace culverts that are not functioning properly.

***AQ (5): How and where does the road system create potential for pollutants, such as chemical spills, oils, deicing salts, or herbicides, to enter surface waters?***

A variety of road jurisdictions and surface types occur within the analysis area. These vary from native-surface woods roads to large Federal highways. Chemical pollutants such as accidental spills, oils, deicing salts and herbicides are more likely to be associated with paved county, state and federal roads than the typical aggregate surface Forest Service road. On national forest lands within this analysis area there is little concern that roads may contribute to chemical pollution of streams.

***AQ (6): How and where is the road system "hydrologically connected" to the stream system? How do the connections affect water quality and quantity (such as the delivery of sediments and chemicals, thermal increases, elevated peak flows)?***

The road system is connected to streams at stream crossings, roadside ditches that empty directly into streams, drainage turnouts, and at some locations, by road surfaces that lie adjacent to streams and direct runoff and sediment from roadbed/fill surfaces to streams. Stream crossings and insloped roads with drainage ditches are the principle means of hydrologic connectivity within the analysis area. Hydrologic connectivity can result in an increase in the density of streams in the landscape, and as a consequence, change the amount of time required for water to enter a stream channel (Gucinski et. al, 2000). This hydrologic change can alter the timing of peakflows and can alter the shape of a watershed's hydrograph. Based on studies of small watersheds, however, the effect of roads on peak flow is detectable but relatively modest for most storms (Gusinski et. al, 2000). The primary consideration (on national forest lands) of hydrologic connectivity on water quality is the input and transport of sediment (See AQ (1) and AQ (4))

**Recommendations-** - Create ditch turnouts so that ditchlines do not empty directly into stream channel. Determine roads where ditchlines may be eliminated and other types of water control structures such as coweeta dips may be use.

***AQ (7): What downstream beneficial uses of water exist in the area? What changes in uses and demand are expected over time? How are they affected or put at risk by road-derived pollutants?***

The analysis area is a portion of the Watauga River basin, which includes Watauga Lake, Doe Creek, Roan Creek and many other streams and drainages. The majority of stream in this analysis area originating on national forest converge into Doe Creek and the Watauga River. Doe Creek from river mile 0.0 to origin supports wild trout fisheries, and provides fishing opportunities for regional and local residents. Designated uses also include, fish and aquatic life, livestock watering and wildlife, irrigation source, and recreation Use classification from Roan Creek below the confluence of Doe Creek include Domestic water source, industrial water source, fish and aquatic life, livestock watering and wildlife, irrigation source, recreation, and trout reproduce in this stream naturally. Doe Creek tributaries support small wild trout fisheries and provide limited fishing opportunities for local residents. The Watauga River from river mile 25.8 to 55.1 is considered to be a domestic and industrial water source, supports fish and aquatic life, is used for recreation, livestock watering and wildlife, irrigation source, and trout reproduce naturally in this river(TDEC 2008). Watauga Lake provides abundant fishing opportunities. Recreation uses will likely increase and the fishing demand in the area can be expected to remain the same in the future. The demand for industrial and domestic water supply should increase. Forest Service roads in this area do contribute to sediment entering into streams, however sediment amounts are considered minimal compared to sediment derived from private lands.

Accelerated sediment delivery from roads may adversely affect fish and other aquatic organisms in the streams and lake. Fish or other aquatic organism passage may be affected at road crossings (See AQ10).

***AQ (8): How and where does the road system affect wetlands?***

There are no known locations where the road system is affecting wetland conditions or function.

***AQ (9): How does the road system alter physical channel dynamics, including isolation of floodplains, constraints on channel migration, and the movement of large wood, fine organic matter, and sediment?***

The road system can alter physical channel dynamics by increasing runoff and sediment delivery to affected streams. Sediment entering streams can reduce pool depths and contribute to changes in channel substrate (i.e. embeddedness). Stream crossings can retard or prohibit the movement of large woody debris, fine organic matter and sediment. Areas located within the riparian corridor tend to isolate the floodplain associated with streams and impede or prevent natural channel migration.

***AQ (10): How and where does the road system restrict the migration and movement of aquatic organisms? What aquatic species (i.e. fish and amphibians) are affected and to what extent?***

No road crossings are known to restrict the movement of aquatic organisms in the Doe Analysis area. Culverts that would restrict movement are either on private land or high up in the watershed where aquatic organisms would not be impacted. No aquatic species are affected to any extent.

***AQ (11): How does the road system affect shading, litterfall, and riparian plant communities?***

No concern.

***AQ (12): How and where does the road system contribute to fishing, poaching, or direct habitat loss for at-risk species?***

The road system contributes to the ease of public fishing in Watauga Lake. Access for fishing provides opportunities for poaching, but the road system does not necessarily increase poaching of fish. Direct habitat loss for at-risk species from the road system is unlikely.

***AQ (13): How and where does the road system facilitate the introduction of non-native aquatic species?***

The road system facilitates introduction of non-native aquatic species used for bait fishing in Watauga Lake. However, these introductions would take place even if the roads were removed.

***AQ (14): To what extent does the road system overlap with areas of exceptionally high aquatic diversity or productivity or areas containing rare or unique aquatic species or species of interest?***

No streams with exceptionally high diversity or productivity occur in the watershed. No rare or unique aquatic species occur.

## **Terrestrial Wildlife (TW)**

### ***TW (1): What are the direct effects of the road system on terrestrial species habitat?***

For smaller species of wildlife; such as salamanders, and invertebrates, roads can act as barriers to movement. However, road banks also can provide habitat for these types of wildlife, particularly for some salamanders. Night time surveys along Forest Service road cuts revealed a considerable amount of salamanders in burrows along road banks.

Roads are the center of human disturbance. Species such as bear, bobcat, and turkeys tend to avoid these areas, during periods of human activity. However, closed roads are utilized as travel routes and hunting and foraging areas. Seeded roads are highly sought after in early spring as these are the first to green up. Water that collects in road ruts is utilized by bats, frogs, salamanders, and other wildlife species.

### ***TW (2): How does the road system facilitate human activities that affect habitat?***

The road system allows access for habitat management activities (timber harvest, prescribed burning, wildlife opening maintenance). It also serves as sites for illegal activities, such as garbage dumping, take-off places for off-road driving, creating unauthorized roads, and creating new dispersed campsites. The road system is extremely limited in the Doe Analysis Area, limiting management to improve terrestrial wildlife habitat.

### ***TW (3): How does the road system affect legal and illegal human activities (including trapping, hunting, poaching, harassment, road kill, or illegal kill levels)? What are the effects on wildlife species?***

Roads provide means for humans to disperse throughout the area easily. The road system allows for greater utilization of the area for both legal and illegal activities. The greatest impacts to wildlife are from increased human disturbance. However, the road system is very limited and does not provide much opportunity for these activities.

### ***TW (4): How does the road system directly affect unique communities or special features in the area?***

No concern.

## **Economics (EC)**

### ***EC (1): How does the road system affect the agency's direct costs and revenues? What, if any, changes in the road system will increase net revenue to the agency by reducing cost, increasing revenue, or both?***

## **COSTS/REVENUES**

**Direct costs** to the agency include road maintenance costs due to motor vehicle use and any needed restoration or protection costs to stabilize roads near resources such as streams.

Road maintenance costs fit into two categories:

- **Annual Maintenance.** Work performed to maintain serviceability, or repair failures during the year in which they occur. Includes preventive and/or cyclic maintenance performed in the year in which it is scheduled to occur. Unscheduled or catastrophic failures of components or assets may need to be repaired as a part of annual maintenance.

This amount will vary depending on the road's operational maintenance level which is the maintenance level currently assigned to a road considering today's needs, road condition, budget constraints, and environmental concerns. It defines the level to which the road is currently being maintained.

- **Deferred Maintenance.** Maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period. When allowed to accumulate without limits or consideration of useful life, deferred maintenance leads to deterioration of performance, increased costs to repair, and decrease in asset value. Deferred maintenance needs may be categorized as critical or noncritical at any point in time. Continued deferral of noncritical maintenance will normally result in an increase in critical deferred maintenance.

A critical need is a requirement that addresses a serious threat to public health or safety, a natural resource, or the ability to carry out the mission of the organization.

The objective maintenance level is the maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns. The objective maintenance level may be the same as, or higher or lower than, the operational maintenance level.

The operational maintenance level is the maintenance level currently assigned to a road considering today's needs, road condition, budget constraints, and environmental concerns. It defines the level to which the road is currently being maintained.

Table 3 shows the amount of funding needed for annual and deferred maintenance to maintain the roads to their objective maintenance levels and the actual annual and deferred maintenance expenditures (CMRD) in the study area.

Expenditures have decreased due to decreased funding. It is hard to predict future funding, but the trend in recent years is a decrease in road maintenance funding.

The need to provide forest visitors with safe and environmentally friendly roads seems to have become an important issue to many legislators. This concern may reverse the recent downward trend.

When funding is below the amount needed, priorities are set concerning which roads will have which maintenance activities (grading, brushing, gravel, etc.) performed.

Consideration is given to changing the objective maintenance level if a reduction in funds continues, e.g. maintenance level 3 (suitable for passenger car) is changed to maintenance level 2 (high clearance vehicles). Also, funds other than those specifically designated for road maintenance (CMRD) are often available for road maintenance. These include K-V Trust Fund - Special Legislation (CWK2), Legacy Roads & Trails (CMLG), Vegetation Management (NFVW), Wildlife Management (NFWF), Recreation Fee Revenue Program (FDFD), road maintenance deposits from timber purchasers, road permits that require the user to perform maintenance.

The road system provides for potential revenues to the agency in the following ways:

- Timber sales
- Recreation use fees
- Fees for special use and road use permits:

Presently, direct costs exceed direct revenues, but many resource management targets could not be met or would cost more to accomplish without the current road system, so reducing the number of roads and/or reducing the amount of maintenance on roads could result in a net decrease in revenue. For example, roads that provide access to areas for prescribed burns which are needed to reduce hazardous fuels.

## **CHANGES**

Changes to the road system that could increase net revenue:

- Manage the suitable timber base that can be accessed by existing roads and/or new roads that are low cost and would not harm resources. Any new classified roads would likely have an objective maintenance level of 1 or 2 which reduce the long-term funding needs. New roads would be built to reduce annual maintenance costs. This would be done by the construction features including broad-based dips and the stabilization of the roadbed with gravel or vegetation. Some of the costs associated with this include planning, design, and contract administration. The forest would collect road maintenance deposits from the purchasers and/or the purchaser would perform the necessary maintenance on roads not open to the public. It could also provide an opportunity to perform deferred maintenance work on roads open to the public if the work is also needed to accommodate log trucks. Such work would be done so that long-term impacts of a road to adjacent resources are reduced.
- Close roads to motor vehicle use by the public. This could require the following costs: planning, enforcement, and mitigating unacceptable environmental effects such as sedimentation from roads adjacent to streams. Possible consequences of closure: decreases in revenues from commodities such as timber (if road is no longer used to access timber), recreation fees, and other services such as special-use permits. Reduced maintenance costs and reductions in costs to mitigate unacceptable environmental effects would likely increase in net revenues. Some roads were built prior to FS ownership and were considered “public” access with an established historical use. Changes that prevent the public from using roads that they feel they have a “right” to use could increase costs

to the agency due to the need for enforcement of the closure and an increase in the amount of time spent responding to complaints.

- Decommissioning is the demolition, dismantling, removal, obliteration and/or disposal of a deteriorated or otherwise unneeded road, including necessary cleanup work. Decommissioning would be done so that the road no longer needs maintenance. Costs include planning, monitoring, repairing or mitigating any unacceptable impacts to resources, and the actual decommissioning work. Possible consequences include decreases in revenues from commodities such as timber, recreation fees, and other services such as special-use permits. This work would reduce maintenance costs and reduce costs to mitigate any unacceptable impacts to resources. This work could make some areas harder to access for resource management which could increase costs.
- Encourage individuals who use Forest Service roads to access private land to form homeowner associations and/or to approach the county road department to maintain those roads. This would reduce the agency's road maintenance cost.
- Maintain some or all of the maintenance level 3 or 4 roads as maintenance level 2 roads. The maintenance level 3 & 4 roads in this area are:

<b>ROAD NAME</b>	<b>ROAD NO.</b>
Sink Mountain	# 298

***EC (2): How does the road system affect priced and non-priced consequences included in economic efficiency analysis used to assess net benefits to society?***

The management of the road system involves decisions to build new roads, reconstruct roads, perform maintenance on some roads and not others, decommission roads, or temporarily close them if they are no longer needed or are causing resource damage.

Construction of new roads, although improving access to the area (a benefit to some), may diminish the desired natural and remote character associated with the area and would reduce its passive use value to some visitors.

Passive use values include features society values simply because they exist without actually using them or they expect them to be preserved for others to use and enjoy (a scenic landscape, wilderness, or an endangered plant or animal). They are also features valued for preservation (cultural resources and historic sites).

Decommissioning and/or closing roads may be necessary to meet budget and funding constraints or to prevent resource damage, but may diminish access to areas that are important to certain users of forest resources. People with a strong attachment to a place, activity, or road may consider it a loss in value unless they are willing and able to find, and adapt, to substitute experiences.

The road users that contribute the most significant economic benefits are those who visit the area for recreation-related activities such as:

**Driving for pleasure**

Road #298 Sink Mountain is popular for sightseers going to the Sink Mountain Boat Ramp..

**Hunting**

All the roads listed above provide access for hunting on foot.

**Hiking/ Mountain Biking**

Road #298 provides access to trail #603 Old Homestead.  
 County Road: Cross Mountain Road provides access to trail #54 Iron Mountain Trail.  
 State Highway 421 provides access also to trail #53.

**Fishing**

Road #298 provides access to Sink Mountain Boat Ramp.  
 Road #4123 provides fishing access to Watauga Lake.

**Wildlife viewing**

The open roads listed above are used by visitors for this activity

**Special use areas**

The roads listed below are used by permittees and visitors to access the permitted sites.

SUP #	SUP Name	SUP Brief	Roads that access SUP	Necessary Roads	
				In Place	Adequate
5995	Dry run Utility District	Water transmission	SR 167	x	x
4020	Embarq (see map in SUP folder)	Telephone line	CH50, FDR39,4123,2607, SR167, US321,19E	x	x
WAT 4222-01	Horseshoe Cove Homeowners Assoc.	Private Road Easement	SR67	x	x
5895	Dan Livorsi	Marina	CR741	x	x
4030	Mountain Electric Coop	Powerline	SR91; Cross Mountain Rd.	x	x
5023-01	Shady Gap Water Association	Spring	FDR53	x	x
5345	Howard Simerly	Spring/Waterline	SR91; John Alfred Loop	x	x
5472	L. D. Simerly	Domestic Water Supply	SR67	x	x
4033	Skyline Telephone Membership Corp	Telephone line	US 421	x	x

WAT 13?	Trestle and Tailrace Fly Fishing, Inc.	Outfitter Guide	US321, FSR50, CR67	x	x
WAT 250	TVA Powerline	Powerline	US321	x	x
WAT246	TVA Powerline	Powerline	Parallels US 19E	x	x

Visiting historical sites/areas

Roads listed are not known to be used for visiting historical sites/areas

Based on the activities that the road system accommodates, the following consequences are realized:

Priced:

- Sale of commodities such as timber
- Less cost due to convenient access for research, inventory, and monitoring
- Road development and maintenance
- Liability
- Maintenance of trails and recreation-related sites
- Fire suppression
- Resource management
- Control of invasive species
- Mitigation of resource damage from roads

Non-priced:

- Resource protection such as fire suppression, wildlife and watershed management to preserve the “passive” value that the public assigns to natural resources.
- Access to public land and its resources
- Noise and air pollution
- Water quality
- Fish habitat
- Effect of road density on wildlife
- Litter

Typically, the road system increases the value of both priced and non-priced commodities, because without access these items have less value or cost more to obtain. The most notable exception to this is commodities that have an intrinsic value because they are difficult to access, such as a wilderness or areas with low road densities.

The type of experience society desires in the study area and its associated value depends in large part on whether or not there are roads, their density, their condition, and whether or not they are open to motor vehicle use. The consequence may be a net benefit or a cost depending on what value the public assigns to the type of experience they desire.

Road management activities that benefit some members of society by enhancing their quality of life, may negatively impact resources that other members value for their quality of life. These may include impacts to resources such as soil, water, habitat, scenic beauty, or a reduction in value that people assign to an area such as limited accessibility or solitude. Public input is

needed to provide information to evaluate the tradeoffs being considered and will help assign “value” to non-priced consequences.

***EC (3): How does the road system affect the distribution of benefits and cost among affected people?***

The accessibility to resources in the study area is important to the local economy and commerce associated with forest visitors also has an economic influence on Johnson County of Tn., cities of Mountain City and Hampton and the communities of Butler, Doeville, Elk Mills and Shady Valley in Tn. Since counties do not collect property taxes on federal land, activities that generate other tax revenue such as sales tax are beneficial to the community.

Forest roads are the primary means of access to forest resources. Changes to the road system and/or in road management can affect long-established access and use patterns, lifestyles, recreation activities, forest resource-related businesses, the collection of forest products, fire suppression, and the distribution of recreational opportunities available to users. These effects can change the distribution benefits and costs for all users.

Construction, maintenance, or decommissioning of roads in the area is not likely to have a significant long-term impact on the economic benefits derived from recreation activities unless there is a significant reduction in the total mileage of roads that provide access for this use.

The road system distributes the following economic benefits to businesses of various sizes as well as individuals:

- Income from the sale of gas, food, lodging, supplies, and souvenirs.
- Employment under Government contracts for:
  - road maintenance
  - control of invasive species
  - vegetation management
  - trail maintenance
  - watershed management
  - fire suppression
  - maintenance of recreation sites

The road system creates different benefits and costs to people who use vehicles for travel within the area than to visitors who travel on foot or by other non-motorized methods. For those who choose non-motorized forms of transportation, the economics of the road system may cost more in terms of aesthetic values, air and noise pollution, and conflicts with motorized vehicle use.

Reduced road mileage and/or maintenance can lead to unbalanced recreation opportunities among users and directly affect the distribution of economic benefits and costs to the region. Closing roads would limit or eliminate access to those who are unable or unwilling to walk long distances and could increase the cost of resource removal, which usually requires mechanized equipment. This could have economic impacts for the local communities, which may depend on convenient access for employment opportunities.

In contrast, improved road access can increase the efficiency and effectiveness of fire-suppression activities, but can also contribute to an increase in the number of human-caused fires

in the area. Closing or restricting roads to minimize traffic could be a benefit by reducing fires and keeping the road in a condition that facilitates use by fire fighting equipment.

State and county roads between communities affect how the benefits and costs associated with use of the area are distributed beyond the immediate communities.

As previously stated in EC (2), the type of experiences and their associated values are dependent upon whether or not there are roads, how the roads are managed, and the desires of the user groups or individual. This may be a benefit or a cost depending on what value the public assigns to the type of experience they desire.

### **Commodity Production - Timber management (TM)**

***TM (1): How does road spacing and location affect logging system feasibility? TM (2): How does the road system affect managing the suitable timber base and other lands? TM (3): How does the road system affect access to timber stands needing silvicultural treatment?***

Transportation planning has been a key component of timber sale planning in this area. Most of the transportation network has been built for and through timber sales so the system serves the timber resource well. Planning has considered future needs as well as immediate sale needs. Timber sales may require the construction of roads, and/or the addition of existing roads, or sections of roads, to the Forest Road System. Overall, there should be no net increase in open road densities.

### **Commodity Production - Minerals Management (MM)**

***MM (1): How does the road system affect access to locatable, leasable, and salable minerals?***

N/A. No locatable, leasable and salable minerals.

### **Commodity Production - Range Management (RM)**

***RM (1): How does the road system affect access to range allotments?***

N/A. No range allotments.

### **Commodity Production - 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?***

Road access is adequate within this analysis area to build, maintain, operate and monitor any structures associated with present and future water uses.

***WP (2): How does road development and use affect water quality in municipal watersheds?***

The analysis area is a portion of the Watauga River basin, which includes Doe Creek, Roan Creek, and many other streams and drainages. Forest Service roads in this area do contribute to Doe Travel Analysis Report

sediment entering into streams, however sediment amounts are considered minimal compared to sediment derived from private lands. The effects of roads on water quality within the analysis area are considered in Questions AQ (1) – AQ (9).

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

No hydroelectric power generation facilities other than a transmission line are located within this analysis area. The road system is adequate to provide access to the transmission line.

**Commodity Production - Special Forest Products (SP)**

***SP (1): How does the road system affect access for collecting special forest products?***

There are a few permits let for rhododendron, grapevine, and firewood. The classified road system is adequate to meet demand for special forest products in this area.

**Special-Use Permits (SU) Maybe this can be summarized?**

***SU (1): How does this road system affect managing special-use permit sites (concessionaires, communication sites, utility corridors, and so on)?***

The roads necessary to manage special use permits are in place and adequate in this assessment area.

**General Public Transportation (GT)**

***GT (1): How does this road system connect to public roads and provide primary access to communities?***

Addressed in the Forest RAP.

***GT (2): How does the road system connect large blocks of land in other ownership to public roads (ad hoc communities, subdivisions, in holdings, and so on)?***

Addressed in the Forest RAP.

***GT (3): How does the road system affect managing roads with shared ownership or with limited jurisdiction (RS 2477, cost-share, prescriptive rights, FLPMA easements, FRTA easements, DOT easements)?***

Addressed in the Forest RAP.

***GT (4): How does the road system address the safety of road users?***

Addressed in the Forest RAP.

**Administrative Uses (AU)**

***AU (1): How does the road system affect access needed for research, inventory, and monitoring?***

The current road system is more than adequate for these uses. Also, is utilized for bird, bat, salamander, butterfly, snail and botanical surveys.

***AU (2): How does the road system affect investigative or enforcement activities?***

The road provides opportunities for road blocks, drop-off points, surveillance activities, and patrolling. The existence of the road creates the need for more law enforcement.

**Protection (PT)**

***PT (1): How does the road system affect fuels management? PT (2): How does the road system affect the capacity of the Forest Service and cooperators to suppress wildfires? PT (3): How does the road system affect risk to firefighters and to public safety?***

Roads, both classified and unauthorized, are often used as firebreaks and control lines for prescribed burns and wildfire control. Using roads as firebreaks can be a particularly effective, efficient and low cost method of addressing the issues of wildfire hazards, and in the management of fuels. Most roads are adequate for firefighting equipment to travel on and some communities are using roads as firebreaks as part of their community planning. Closed and gated classified roads may need minimal dozer work to be utilized for equipment movement; this lessens the risk to firefighters and the public. Roads can also be used by arsonists to set fires.

***PT (4): How does the road system contribute to airborne dust emissions resulting in reduced visibility and human health concerns?***

Doe Project Area roads and other open roads do get dusty, but traffic is generally light enough for it not to be a major visibility hazard.

**Recreation – Unroaded Recreation (UR)**

***UR (1): Is there now or will there be in the future excess supply or excess demand for unroaded recreation opportunities? UR (2): Is developing new roads into unroaded areas, decommissioning of existing roads, or changing the maintenance of existing roads causing substantial changes in the quantity, quality, or type of unroaded recreation opportunities? UR (3): What are the adverse effects of noise and other disturbance caused by developing, using, and maintaining roads, on the quantity, quality, and type of unroaded recreation opportunities? UR (4): Who participates in unroaded recreation in the areas affected by building, maintaining, and decommissioning roads? UR (5): What are these participants' attachments to the area, how strong are their feelings, and are alternative opportunities and locations available?***

The Doe Watershed Assessment Area is approximately 16,963 acres in size and is located in

Management Area 11 and 13 which provide a wide variety of Management Prescriptions for Roaded- Natural to Semi-primitive Non-motorized Recreation Opportunities. A goal in CNF's RLRMP is to "manage areas to provide 'backcountry' (semi-primitive motorized and non-motorized/remote) recreation experiences that are generally not available on other land ownerships." Private lands in the Doe Watershed Study Area are heavily roaded. Un-roaded recreation opportunities are currently available on public lands within and adjacent to the analysis area. Specifically Roan and Doe Mountains, and sections of the Appalachian and Iron Mountain Trail corridor's within the watershed study area the Big Laurel Branch and Pond Mountain Wildernesses are to the west and south of the analysis area.

Developing new roads in areas currently unroaded will diminish those areas' intrinsic unroaded characteristics. Decommissioning existing roads could increase the unroaded characteristics. Significantly lowering maintenance levels of existing roads (i.e., into non-motorized trails for horses, bicycles, or hiking) would increase the area's non-motorized characteristics. Significantly raising maintenance levels of existing roads could diminish the remote character by potentially bringing more people and vehicles more frequently into the backcountry but would also provide better access for visitors participating in non-motorized recreation activities. Visitors using the unroaded portions of this study area are generally two groups: (1) hunters who use roads to access the backcountry and then leave their vehicles to traverse the forest on foot and (2) hikers seeking the unroaded setting along the Appalachian National Scenic Trail (A.T.). There are few similar alternatives for thousands of through-hikers travelling the A.T. from Georgia to Maine; noise, changes to existing scenic integrity and increased development provide constant threats to the remote primitive experience along the Trail. There are other opportunities for hunting in adjacent forest lands, though probably not as convenient for local people using these lands as their "backyards."

### **Recreation - Road Related Recreation (RR)**

***RR (1): Is there now or will there be in the future excess supply or excess demand for roaded recreation opportunities? RR (3): What are the adverse effects of noise and other disturbances caused by building, using, and maintaining roads on the quantity, quality, or type of roaded recreation opportunities? RR (4): Who participates in road-related recreation in the areas affected by road building, changes in road maintenance, or road decommissioning? RR (5): What are these participants attachments to the area, how strong are their feelings, and are alternative opportunities and locations available?***

Public land ownership in this area is interspersed in large tracts of privately-owned and inhabited land. There are a number of miles of country roads throughout the area. Forest Service lands in this study area are generally managed for dispersed recreation opportunities; each enclave of public land includes few to moderate miles of roads. Visitors using forest roads in this area are mostly hunters and people driving the backcountry for pleasure. Visitors are generally a local audience traveling near their "back yards," a few miles from their property. The remote nature of the public lands in the area, with few or a moderate number of forest roads, provides a sense of remoteness and solitude for people in vehicles. Increasing the number of roads and/or their current maintenance levels would diminish the backcountry character of the area but may also provide better access for visitors participating in non-motorized recreation activities within the watershed assessment area.

***RR (2): Is developing new roads into unroaded areas, decommissioning existing roads, or changing maintenance of existing roads causing significant changes in the quantity, quality, or type of roaded recreation opportunities?***

Visitors using forest roads in this area are generally seeking a backcountry experience with a sense of remoteness and solitude. Adding new roads in currently unroaded areas would increase access into portions of the backcountry and could provide a roaded yet remote experience for forest users, but would diminish those areas' unroaded characteristics. Carefully-planned decommissioning of some existing roads, lowering maintenance levels of some existing roads and converting some roads into trails while increasing maintenance levels (or at least routine and regular maintenance) of select roads could continue, and enhance, the remote backcountry roaded experience.

### **Passive-Use Value (PV)**

***PV (1): Do areas planned for road entry, closure, or decommissioning have unique physical or biological characteristics, such as unique natural features and threatened or endangered species? PV (4): Will road construction, closure, or decommissioning significantly affect passive-use value?***

The primary social demand for roads in the analysis area is access for viewing scenery, hunting, fishing, hiking and dispersed camping adjacent to the road system.

The road system is used by all groups of people. Changes in road management including closing or decommissioning of any of the roads would have the same effect on all groups of people including minorities and different cultures.

***PV (2): Do areas planned for road construction, closure, or decommissioning have unique cultural, traditional, symbolic, sacred, spiritual, or religious significance?***

It is possible that areas planned for road construction, closure, or decommissioning may affect areas of unique cultural, traditional, symbolic, sacred, spiritual, or religious significance. However, no such areas have been identified at this time.

***PV (3): What, if any, groups of people (ethnic groups, subcultures, and so on) hold cultural, symbolic, spiritual, sacred, traditional, or religious values for unroaded areas planned for road entry or road closure?***

It is possible that groups of people (ethnic groups, subcultures, and so on) hold symbolic, spiritual, sacred, traditional, or religious values for unroaded areas planned for road entry or road closure. However, no such values have been identified at this time.

### **Social Issues (SI)**

***SI (1): What are people's perceived needs and values for roads? How does road management affect people's dependence on, need for, and desire for roads? SI (2): What are people's perceived needs and values for access? How does road management affect people's dependence on, need for, and desire for access? SI (3): How does the road system affect***

*access to paleontological, archaeological, and historical sites? SI (4): How does the road system affect cultural and traditional uses (such as plant gathering, and access to traditional and cultural sites) and American Indian treaty rights? SI (5): How are roads that are historic sites affected by road management? SI (6): How is community social and economic health affected by road management (for example, lifestyles, businesses, tourism industry, infrastructure maintenance)? SI (7): What is the perceived social and economic dependency of a community on an unroaded area versus the value of that unroaded area for its intrinsic existence and symbolic values? SI (8): How does road management affect wilderness attributes, including natural integrity, natural appearance, opportunities for solitude, and opportunities for primitive recreation? SI (9): What are the traditional uses of animal and plant species within the area of analysis? SI (10): How does road management affect people's sense of place?*

Addressed in Forest Wide RAP

### **Civil Rights and Environmental Justice (CR)**

*CR (1): How does the road system, or its management, affect certain groups of people (minority, ethnic, cultural, racial, disabled, and low-income groups)?*

Addressed in Forest Wide RAP

## **ABILITY OF THE TRANSPORTATION SYSTEM TO MEET OBJECTIVES**

To meet the objective of determining needed and unneeded roads (minimum road system needed), trails, and areas for motor vehicle use, each route segment was examined to determine its uses. These uses are displayed on Table 4 below.

## **STEP 5 DESCRIBING OPPORTUNITIES AND SETTING PRIORITIES**

### **PURPOSE AND PRODUCTS**

The purpose of this step is to:

- compare the current transportation system with what is desirable or acceptable, and
- describe options for modifying the road system that would achieve desirable or acceptable conditions.

### **PROBLEMS AND RISKS POSED BY THE CURRENT ROAD SYSTEM**

#### **Overall Priorities for Doe Assessment Area**

The priorities listed below in the table and in the site-specific descriptions are prioritized by resource area. The Team analyzed the individual resource priorities in order to develop larger, overall priorities for the assessment area. These priorities are:

1. Address all High and Medium Forest Service roads identified for Water Quality.
2. Access for Vegetation Management.
3. Close or restrict access in key wildlife habitat areas.
4. Address blocking all High and Medium Illegal OHV.

#### **Road Maintenance Needs**

During the course of completing maintenance surveys of the Forest Service roads within this assessment area, a large amount of data was gathered on maintenance needs on the FS roads open to motor vehicle use. Data on roads closed to motor vehicle use is based on random sampling. Condition surveys were also completed on unauthorized roads that have the potential to be added to the system. Table 3 lists the work needed.

Table 3. Road Work Needed in Doe Assessment Area														
ROAD #	NAME	LENGTH	OBJ_ML	ANNUAL COSTS	DEFERR ED COSTS	MACHINE GRADE	GRAVEL	DITCH	PAVE	BRUSH	BRIDGE MAINT.	CULVER TS	SURFACE TYPE	REMARKS
<b>SYSTEM ROADS:</b>														
166	BUCK RIDGE TOWER	0.42	2	79	1,890								NAT	Adjust mi. in watershed. Can find no ROW.
		0.88	1	165	3,960									
298	SINK MOUNTAIN	0.5	5	3,450	4,850	X	X	X		X	X	X	AGG	
		1.71	5	11,799	16,587									
4123	PONDER ROAD	0.71	2	133	3,195	X	X	X		X		X	AGG	ROW. 0.132 Mi. TO FS
41231	MOODY STRIP	0.48	2	90	2,160		X			X		X	NAT	Decommission upper end of loop. Has existing ROW. Duplicate Gate @ Pav.
4441	DYE LEAF	0.85	2	160	3,825		X	X		X			AGG	
4441A	DYE LEAF SPUR A	0.4	2	75	1,800		X	X		X			IMP	
4442	AVERY BRANCH	0.45	2	85	2,025		X						AGG	ROW access to NF.
6015	STOUT BRANCH	0.94	4	6,486	9,118								BST	Fix linear event "Quad" in Infra.
		0.41	4	2,829	3,977									
		0.65	2	122	2,925		X				X		AGG	
		0.6	2	113	2,700								NAT	
		0.4	2	75	1,800									
60151	STOUT BR SPUR	0.98	1	184	4,410		X			X	X		IMP	
60161	MACK BRANCH	0.325	2	61	1,463					X			AGG	Decommission from 0.325 to EMP. Change to Mtc Level 2
60162	POLLY BRANCH	1.095	0											
60162	POLLY BRANCH	0.15	2	28	675					X			IMP	
60191	CAMPBELL HOLLOW	3	2	564	13,500		X	X		X		X	IMP	Need Special Use Permit from Utility.
60202	CRESS BRANCH	2	4	13,800	19,400								BST	
		0.7	1	132	3,150								IMP	
602101	GOUGE TRACT	0.6	2	113	2,700		X	X		X		X	AGG	Update ATM in Infra to show Open Seasonal. Add county portion to GIS and Infra. Route properly.
60391	GREGG BRANCH	0.76	2	143	3,420								NAT	Private ROW
6054	SHADY GAP	0.23	2	43	1,035								IMP	
		1.57	2	295	7,065		X				X		NAT	Decommission last 0.07 mi.
		0.95	1	179	4,275									
CH53	CROSS MOUNTAIN	0.47	5	3,243	4,559			X	X	X		X	BST	Decision pending transfer to county.
		2.86	5	19,734	27,742			X	X	X		X	BST	
		0.35	5	2,415	3,395			X	X	X		X	BST	
<b>UNAUTHORIZED ROADS:</b>														
OR1	Oliver Hollow 1	0.07	2				x							add to system #602501
OR2	Oliver Hollow 2	0.08	2				x							add to system #602502
OR3	Oliver Hollow 3	0.11	2				x							add to system #602503
OR4	Mack Branch Spur	0.14	2							X				Powerline access. Add to System. Special use needed. #60161A

Table 3. Road Work Needed in Doe Assessment Area														
ROAD #	NAME	LENGTH	OBJ_ML	ANNUAL COSTS	DEFERR ED COSTS	MACHINE GRADE	GRAVEL	DITCH	PAVE	BRUSH	BRIDGE MAINT.	CULVERTS	SURFACE TYPE	REMARKS
OR5	Henry Stout Branch													County Maintained
OR6	Horseshoe Cove HomeOwners Assn.	0.27	4											Add to system. #602004 Private ROW.
OR7	Butler Bridge Lake Access	0.29	2				x							add to system. #602003
OR8	Roan Creek Bridge Lake Access	0.08	0											Decommission
OR9	East Fork Dugger													County Maintained

## **OPPORTUNITIES FOR TRAVEL MANAGEMENT**

Table 4 summarizes recommendations in response to the issues identified in Step 3 and the questions answered in Step 4. A more detailed narrative follows the table, and priorities are listed above. Maps are included in Appendix A to assist in tracking the recommendations. Each specialist identified recommendations based on how the transportation system affected their resource; therefore, conflicting recommendations may exist between resource areas due to differing needs.

**Table 4**

Table 4. Summary of Road Recommendations by Issues (Y or N answers)																		
ROAD #	BMP	EMP	NAME	WITHIN 100' OF STREAM ?	ROUTE _STAT_ US	CLOSURE DEVI CE	OBJ_ML	JURIS DICTI ON	SURF ACE_ TYPE	SYSTEM	MILEAGE IN WATERS HED	Private Access	WildFire Suppress ion Use	Recreatio n/Heritag e Use	Wildlife / Fish Mgmt	Veg Manage ment	Environ mental Risk	Recommendation to be considered
<b>SYSTEM ROADS:</b>																		
166	0	0.42	BUCK RIDGE TOWER		EX		2	P	NAT	P - NFSR	0.77	Y	Y	Y	N	?	?	Adjust mi. in watershed. District may want to get ROW
	0.42	1.3					1	FS										
298	0	0.5	SINK MOUNTAIN	0.11	EX		5	FS	AGG	NFSR	2.21	N	Y	Y	Y	Y	N	
	0.5	2.21					5											
4123	0	0.71	PONDER ROAD	0.11	EX		2	FS	AGG	NFSR	0.71	N	Y	Y	Y	Y	N	ROW. 0.132 Mi. TO FS
41231	0	0.55	MOODY STRIP		EX		2	FS	NAT	NFSR	1.07	N	Y	Y	Y	Y	N	Decomission upper end of loop. Has existing ROW. Duplicate Gate @ Pav.
4441	0	0.85	DYE LEAF	0.52	EX		2	FS	AGG	NFSR	1.38	N	Y	Y	N	Y	N	
4441A	0	0.4	DYE LEAF SPUR A	0.11	EX		2	FS	IMP	NFSR	0.34	N	Y	Y	N	Y	N	
4442	0	0.45	AVERY BRANCH	0.04	EX		2	FS	AGG	NFSR	0.40	N	Y	Y	N	Y	N	ROW access to NF.
6015	0	0.94	STOUT BRANCH	0.80	EX		4	C	BST	C -	3.00	Y	Y	Y	Y	Y	N	Fix linear event "Quad" in Infra.
	0.94	1.35																
	1.35	2																
	2	2.6					FS	AGG	NFSR									
	2.6	3																
60151	0	0.98	STOUT BR SPUR	0.28	EX		1	FS	IMP	NFSR	0.97	N	Y	Y	Y	Y	N	
60161	0	0.33	MACK BRANCH	0.29	EX		1	FS	AGG	NFSR	1.28	N	Y	Y	Y	N	N	Decomission from 0.33 to 1.42. Change to Mtc Level 2
	0.33	1.42					1											
60162	0	0.15	POLLY BRANCH		EX		2	FS	IMP	NFSR	0.13	N	Y	Y	N	Y	N	
60191	0	3	CAMPBELL HOLLOW	1.58	EX		2	FS	IMP	NFSR	2.45	N	Y	Y	Y	N	Y	Need Special Use Permit from Utility.
60202	0	2	CRESS BRANCH	0.10	EX		4	C	BST	C -	2.52	Y	Y	Y	N	N	Y	
	2	2.7					1	FS	IMP	NFSR								
602101	0	0.6	GOUGE TRACT	0.61	EX		2	FS	AGG	NFSR	1.22	N	Y	Y	Y	Y	N	Update ATM in Infra to show Open Seasonal. Add county portion to GIS and Infra. Route properly.
60391	0	0.76	GREGG BRANCH	0.45	EX		2	FS	NAT	NFSR	0.78	Y	Y	Y	N	Y	Y	Private ROW
6054	0	0.23	SHADY GAP	0.27	EX		2	FS	IMP	NFSR	2.36	N	Y	Y	N	Y	N	Decomission last 0.07 mi.
	0.23	1.8																
	1.8	2.75																
CH53	0	0.47	CROSS MOUNTAIN		EX							Y	Y	Y	Y	Y	N	Decision pending transfer to county.
	0.47	3.33																
	3.33	3.68																
<b>UNAUTHORIZED ROADS:</b>																		
ROAD #	BMP	EMP	PROPOSED NAME & NUMBER	WITHIN 100' OF STREAM ?	ROUTE _STAT_ US	CLOSURE DEVI CE	OBJ_ML	JURIS DICTI ON	SURF ACE_ TYPE	SYSTEM	MILEAGE IN WATERS HED	Private Access	WildFire Suppress ion Use	Recreatio n/Heritag e Use	Wildlife / Fish Mgmt	Veg Manage ment	Environ mental Risk	Recommendation to be considered
OR1	0	0.07	Oliver Hollow 1									Y	Y	Y	Y	Y	N	add to system #602501
OR2	0	0.08	Oliver Hollow 2									Y	Y	Y	Y	Y	N	add to system. #602502
OR3	0	0.11	Oliver Hollow 3									Y	Y	Y	Y	Y	N	add to system. #602503
OR4	0	0.14	Mack Branch Spur									N	Y	Y	N	N	Y	Powerline access. Add to System. Special use needed. #60161A
OR5	0		Henry Stout Branch									?	?	?	?	?	?	County Maintained
			Horseshoe Cove									Y	Y	N	N	N	N	Add to system. #602004
OR6	0	0.27	HomeOwners Assn.															Private ROW.
OR7	0	0.29	Butler Bridge Lake Access									N	N	Y	Y	N	?	add to system. #602003
			Roan Creek Bridge Lake															
OR8	0	0.08	Access									N	N	Y	Y	Y	?	Decommission
OR9	0		East Fork Dugger									?	?	?	?	?		County Maintained

**Table 4 (cont)**

Table 4. Summary of Road Recommendations by Issues (Y or N answers)																			
ROAD #	BMP	EMP	NAME	WITHIN 100' OF STREAM ?	ROUTE _STAT US	CLOSURE DEVI CE	OBJ_ML	JURIS DICTI ON	SURF ACE_ TYPE	SYSTEM	MILEAGE IN WATERS HED	Private Access	WildFire Suppress ion Use	Recreatio n/Heritag e Use	Wildlife / Fish Mgmt	Veg Management	Environ mental Risk	Recommendation to be considered	
<b>COUNTY &amp; STATE ROADS:</b>																			
CH1389	0	1.37	GREGG BRANCH		EX		5	C	BST	C -	1.39								
CH1394			Not In Infra																
CH1396	0	2.65	PLEASANT VALLEY		EX		5	C	BST	C -	0.67								
CH2458	0	2.24	CAMPBELL		EX		5	C	BST	C -	4.20								
	2.24	3.96					4												
	3.96	4.07					5												
CH2459	0	1.91	SPEAR-SLABTOWN BR.		EX		5	C	BST	C -	4.93								
	1.91	2.77					3		AGG										
	2.77	4.05					4												
	4.05	4.76					5		BST										
CH2613			Not In Infra																
CH60201			Not In Infra																
CH741	0	0.94	BUNTONTOWN		EX		4	C	BST	SH -	10.40								
	0.94	10.5					4												
CH7412		3.51	DUNCAN HOLLOW		EX		4	C	BST	C -	3.12								
TN167	0	8.13	DOEVILLE-MTN. CITY		EX		5	S	BST	SH -	3.18								
	8.13	21					5												
TN67	0	1.29	ELIZABETHTON HWY.		EX		5	S	BST	SH -	15.94								
	1.29	8					5												
	8	8.75					5												
US19E	0	3.63	ROAN MTN.HWY.		EX		5	S	BST	SH -	0.46								
	3.63	9.18					5												
	9.18	16.9					5												
US321	14.8	21.9	BOONE HWY.		EX		5	S	BST	US -	6.10								
	21.9	23.2					5												
	23.2	27.3					5												
US421	0	8.63	DANIEL BOONE TRAIL		EX		5	S	BST	US -	6.93								
	8.63	14.2					5												
	14.2	18					5												
	18	23.6					5												
	23.6	23.9					5												
	23.9	24.9					5												
	24.9	29.5					5												
29.5	31.6	5																	

## **RECOMMENDATIONS**

See Table 4.

## **NEPA ANALYSIS NEEDS**

Many opportunities identified in this report can be incorporated into the Doe EA process. If there are some opportunities identified that will not be incorporated into the EA, they will require a site-specific NEPA analysis in the future when the decision is made to implement them (activities other than maintenance and administrative decisions).

## **STEP 6 REPORTING**

### **PURPOSE AND PRODUCTS**

The purpose of this step is to:

- report the key findings of the analysis.

The products of this step are:

- a report including maps, analyses, and test documentation of the travel analysis, and
- maps that show the data and information used in the analysis, and the opportunities identified during the analysis.

### **REPORT**

This report will be reviewed by the Cherokee NF, and shared with other offices in the Forest Service that are also working on travel analysis. This report is available to the public if requested, and will be part of the Doe project file.

### **CONCLUSION**

The existing classified road system in the Doe Project Area plays a vital role in the facilitation of forest management and providing access for public needs. The key opportunities identified in this analysis include improving the overall situation by removing current roads that provide no benefit to the public or the Forest Service and adding sections of road that can be an advantage to both.

**MAPS**

Map 1: Transportation Map

## REFERENCES

Gucinski, Hermann; Furniss, Michael J.; Ziemer, Robert R.; Brookes, Martha H. 2001. Forest roads: a synthesis of scientific information. Gen. Tech. Rep. PNWGTR-509. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 103 p.

USFS 1999a: Roads Analysis: informing decisions about managing the National Forest Transportation System. USDA Forest Service Washington Office FS-643, August 1999.

USDA Forest Service. 2004. Revised Land and Resource Management Plan for the Cherokee National Forest. Cleveland, Tennessee.

Cherokee National Forest Roads Analysis Report (CNF RAP) December 2002.

### Attachments

- 1 Road Grouping
- 2 Road Classifications
- 3 Road Management Objective (RMO)

## Doe Road Grouping

### System Roads

#### NFSR's

#166, #298, #4123, #4441, #4442, #6015, #6054, #41231, #60151, #60161, #60162, #60191, #60202, #60391, #602101, #4441A, CH53

#### Public Roads:

CH1389, CH1394, CH1396, CH2458, CH2459, CH2613, CH60201, CH741, CH7412, TN167, TN67, US 19E, US321, US421

### Unauthorized Roads

Field inventories were conducted to locate unauthorized roads in the Doe Assessment Area. From this inventory, a grouping of the different types of unauthorized roads was made. The groupings are explained in *Table 4*. There are 9 unauthorized roads of varying lengths to consider.

OR1- OR9 are existing roads presently being used and will be managed as shown in *Table 4*.

#### Unauthorized Roads Legend:

OR: Old Road, Used  
OUT: Outlaw Unplanned Road  
WL: To Wildlife Opening

### Uninventoried roads coming from private land

These roads will be identified as illegal, unauthorized roads and dealt with on a case-by-case basis as they are discovered.

## Attachment 2

### Road Classifications in Current Use

Functional Class	Traffic Service Level	Maintenance Level
<p><b>Arterial:</b> Provides service to large land areas. Connects with other arterials or public highways.</p> <p><b>Collector:</b> Serves smaller land areas than arterials. Connects arterials to local roads or terminal facilities.</p> <p><b>Local:</b> Single purpose road. Connects terminal facilities with collectors or arterials.</p>	<p><b>A:</b> Free flowing, mixed traffic; stable, smooth surface; provides safe service to all traffic.</p> <p><b>B:</b> Congested during heavy traffic, slower speeds and periodic dust; accommodates any legal-size load or vehicle.</p> <p><b>C:</b> Interrupted traffic flow, limited passing facilities, may not accommodate some vehicles. Low design speeds. Unstable surface under certain traffic or weather.</p> <p><b>D:</b> Traffic flow is slow and may be blocked by management activities. Two-way traffic is difficult, backing may be required. Rough and irregular surface. Accommodates high clearance vehicles. Single purpose facility.</p>	<p><b>Level 1</b> Closed more than 1 year.</p> <p><b>Level 2</b> High-clearance vehicles.</p> <p><b>Level 3</b> Passenger vehicles— surface not smooth.</p> <p><b>Level 4</b> Passenger vehicles— smooth surface.</p> <p><b>Level 5</b> Passenger vehicles—dust free; possibly paved.</p>

Road Management Objectives are to:

- Establish the specific intended purpose of a road based on management needs as determined through land and resource management planning;
- Contain operation and maintenance criteria for existing roads; and
- Contain design criteria and operation and maintenance criteria for new roads.

