

Sam Houston National Forest Roads Analysis Report Executive Summary

Introduction

A roads analysis can be conducted at various scales, ranging from the forest scale (this analysis) to smaller or project scale analyses. Since this Sam Houston National Forest (NF) analysis is a broad forest-scale analysis, individual roads were not analyzed; however, the forest roads system as a whole was reviewed. Site-specific road issues, concerns, and opportunities will be addressed during the smaller scale analysis of project proposals.

This forest-scale analysis addresses the public State, County, and Maintenance Level (ML) 3, 4, and 5 Forest Service roads. Maintenance Level 3, 4, and 5 Forest Service roads provide access for all types of public traffic from low-clearance passenger cars to large commercial vehicles. The ML-1 and ML-2 Forest Service roads and unclassified roads will be analyzed during subsequent site-specific project-scale planning. Maintenance Level 2 roads are suitable for use by only high-clearance vehicles and may be seasonally closed. Maintenance Level 1 roads are closed roads blocked to all vehicular traffic for a year or more.

A roads analysis makes no decisions nor does it allocate resources for specific purposes. It provides information for decision making by examining important issues related to roads. This analysis will help by providing information for proposed management actions that may be considered in subsequent project-scale analyses.

Key Analysis Findings

- The Sam Houston NF is an “urban” forest located close to the Houston metropolitan area.
- Most of the major roads on the forest roads¹ system already existed when federal land purchases for the Sam Houston NF began in 1935. Most of these major roads are under State or County jurisdiction and are open to public motorized traffic.
- All arterial and collector roads are in place.
- The Final Environmental Impact Statement (FEIS) for the 1996 Revised Land and Resource Management Plan (the *Plan*) states (p136):
“With State, County, and Forest Service routes, a transportation system now exists that meets the need for access into most areas... The current inventory contains all arterial and collector roads needed... However, some of these roads exist at a standard lower than needed to meet safety requirements and access needs...”
- Only 33 percent of the lands within the proclaimed Sam Houston NF boundaries are national forest lands. The national forest lands are scattered and interspersed among private lands and corporate timberlands.
- Only about one-fourth (29 percent) of the roads on the forest roads system addressed in this analysis are Forest Service roads.
- About one-half (50 percent) of the forest roads addressed in this analysis are State roads.
- About one-quarter (21 percent) of the forest roads addressed in this analysis are County roads.

¹ “Forest Roads” as defined in Title 23, Section 101 of the United States Code (23 U.S.C. 101), are any roads wholly or partially within, or adjacent to, and serving National Forest System lands and which are necessary for the protection, administration, and utilization of National Forest System lands and the use and development of its resources. (See Appendix L *Glossary* for definitions.)

- The County roads are important to the Forest Service. In 1974, the Forest Service first discussed road maintenance responsibilities with Montgomery, San Jacinto, and Walker Counties. A cooperative agreement concerning road maintenance was proposed. In 1977, the first cooperative agreements were signed by the counties.

The cooperative agreements cover both County roads and Forest Service roads. The current cooperative agreements cover 82 different roads.

The original agreements have been amended many times over the years and need to be updated to reflect the current road names, numbers and lengths. Some road names or numbers changed during the 9-1-1 initiative to name or number all roads for identification during emergency calls.

- Most of the ML-3, 4, and 5 Forest Service roads addressed in this analysis are:
 - ML-3 (suitable for low clearance passenger cars),
 - surfaced with crushed aggregate, and
 - Traffic Service Level C (slow flow) and D (single use).
- Roads that cross streams affect stream structure and water quality. Each stream crossing is a potential site for changing stream structure and introducing sediment and other contaminants.
- Generally, Forest Service roads are receiving inadequate road maintenance funds. The road maintenance funds available are only approximately 14 percent of the amount of the road maintenance funds needed to maintain the roads to the “objective” maintenance level standards. This indicates a big backlog of deferred road maintenance to bring ML-3, 4, and 5 Forest Service roads up to the established maintenance level standards.
- The numbers of people settling on private lands adjoining national forest lands is increasing with a corresponding increase in requests for road right-of-ways across national forest lands to access the private lands.

Forest-Scale Recommendations and Opportunities

Providing for public safety; preserving roads with adequate surfacing, drainage, and maintenance; and protecting resources are the first priorities for road management. The following recommendations and opportunities were developed during this process.

1. Review and establish standard road construction designs, drawings, and specifications to implement the *Plan* Forest Wide (FW) 053 Standard, “Design and construct roads... to minimize siltation and maintain to provide surface drainage away from streams and into vegetated buffer strips or other filtering system.”
 - Consider establishing silt fencing specifications to protect streams from siltation during ground disturbing activities.
2. Road wing ditches concentrate water flows. The run-off from one wing ditch can combine with the run-off from other wing ditches to further concentrate water flows in natural drainages. On-the-ground inspections reveal that the run-off from road wing ditches can start and increase erosion where the run-off reaches stream banks. Review and establish standard road construction designs, drawings, and specifications to implement the *Plan* FW-053 Standard, “to provide surface water drainage away from streams and into vegetated buffer strips or other filtering system”. To reduce water flows and run-off from wing ditches, consider,
 - spacing wing ditches closer together,
 - reducing the run-off from wing ditches by constructing a “J” hook at the outlet end of wing ditches to slow water flow and provide for percolation in a settling basin, and
 - other actions as necessary.

3. Road plans and specifications designed to implement the *Plan* FW-053 Standard, “to provide surface water drainage away from streams and into vegetated buffer strips or other filtering system”, should be reviewed during pre-work conferences with contractors to ensure everyone is aware of the requirements.
4. Review and establish standard road construction designs, drawings, and specifications to implement the *Plan* FW-055 Standard, “Provide road... design and construction that allows unrestricted fish passage”, for appropriate streams. Culverts should be designed and installed to,
 - o provide for a natural stream bed substrate,
 - o not increase stream flow velocity to the rate that turbulence creates a cavity at the end of the culvert or erodes the stream banks, and
 - o not spread low stream flows to the point that the streams are no longer navigable by fish.

Consider partially burying oversized culverts.
5. Periodically review the cooperative road maintenance program and the current cooperative agreements for County roads with County Commissioners. County Commissioners are not always aware of the existing agreements.
6. Our review of the Forest Highways generated the following two recommendations.
 - o Forest Highway 207: The 2.9 mile segment of the old Dodge Road across private lands south of US-190 is no longer on the Walker County road system. It may be impassable to public use. The 5.0 mile segment of the old Dodge Road from US-190 south to FS 246 should be deleted from Forest Highway 207 and the FS 246 road should be added. This route change will provide interconnected Forest Highways open to public use between TX-150 and US-190.
 - o Consider adding the 16 miles of FM 2025 between Cleveland, TX and Coldspring, TX to the Forest Highways system. The addition of FM 2025 to the Forest Highways system would interconnect the Forest Highways on the eastern side of the Sam Houston NF.
7. Periodically inspect existing special use roads to ensure that road construction and maintenance practices protect forest resources and provide for public safety.
8. There are roads on the Sam Houston NF that,
 - o our records indicate are under County jurisdiction, but
 - o are no longer claimed as County roads by the County.

These roads usually provide access across national forest lands to adjoining private lands. These roads are usually under special use permit to the County, but provide access for the landowner(s). The special use permittee should be responsible for the road maintenance. If the permittee is the County, the road should be open to public use.
9. Review proposed special use road locations on-the-ground with interdisciplinary specialists as necessary for their recommendations on road location, construction, and maintenance requirements before approving special use permit. Implement the *Plan* MA-10b-38 Standard, “Authorize only one private access road per private tract, regardless of multiple ownership. Avoid committing national forest land as access to substitute for lack of internal access to private land due to poor sub-division planning or uncooperative neighbors...”
10. Road maintenance funding is not always sufficient to maintain roads to desired standards. Review and establish road maintenance practices to effectively and efficiently use limited road maintenance funds and to protect resources from road maintenance impacts, such as,
 - o road maintenance practices to prevent undue disturbance of ditches.
11. Establish guidelines to better manage the motor-grader blading of road surfaces and ditches to prevent the unnecessary disturbance of stabilized soils. Review and establish road maintenance practices to better prevent sedimentation of streams.
12. Provide cost-effective temporary bridge options to cross streams to isolated tracts.
13. Collect and establish a reference library of information on road maintenance and construction pertaining to mitigating impacts on resources.

14. Provide training on road maintenance and construction practices that mitigate impacts on resources.

5.2.2 Project-Scale Recommendations and Opportunities

Although sub-forest scale issues are not addressed in detail in this report, the following list of issues may need to be reviewed during site-specific analyses. This is not an all-encompassing list; generally other issues pertaining to individual roads may arise during project-scale analyses.

5.2.2.1 General

1. The forest roads stream crossings should be inventoried during site-specific project-scale analyses to identify stream sedimentation and fish passage problems. This includes State, County, and Forest Service road stream crossings on the forest roads system.
2. Identify forest roads that,
 - o need resurfacing, reconstruction, or relocation to provide for public safety, protect forest resources, or provide for anticipated traffic associated with project proposals,
 - o consistently contribute sediment to streams at stream crossings, and
 - o have stream crossing structures that prohibit fish passage.
3. Cooperate with Counties,
 - o to maintain, resurface, or reconstruct County roads to provide for public safety, protect forest resources, or provide for anticipated traffic associated with project proposals,
 - o to construct and maintain drainage ditches to minimize stream sedimentation and to provide surface drainage away from streams and into settling basins, vegetated buffer strips, or other filtering systems,
 - o to repair or reconstruct stream crossings that prohibit fish passage,
 - o to assist counties in maintenance, resurfacing, or reconstruction of roads through cost-share agreements, and
 - o to seek funds such as Capital Improvement or Road & Trail Deposit Funds (10 Percent Funds) to assist counties in road maintenance, resurfacing, and reconstruction.
4. Identify roads under Forest Service jurisdiction that provide access for rural communities, residences, or private inholdings; serve as school bus or mail routes; or have other features that require regular and emergency maintenance. The roads may be more appropriately managed under State or County jurisdiction by public agencies with adequate road maintenance expertise, personnel, and equipment.
 - o Consider transferring the roads to the State or County.
5. Road maintenance funding is not always adequate to maintain roads to desired standards. Identify ways to reduce road maintenance costs, such as,
 - o Are there roads appropriate for transfer to the County or the State?
 - o Are there roads where the maintenance level can be reduced?
 - o Are there roads which are no longer needed and can be decommissioned?
6. Review RMOs for FS roads.
 - o Are road maintenance levels appropriate for current and anticipated traffic?
 - o Are special resource considerations appropriate?
7. Review the GIS location and INFRA data for ML-1 and ML-2 FS roads.
 - o Are roads needed for current and future access?
 - o Are roads no longer needed for public use or to manage forest resources?
 - Plan to decommission and obliterate such FS roads.
8. Locate and assess unclassified roads.
 - o Are unclassified roads needed for current and future access?
 - o Are unclassified roads no longer needed for public use or to manage forest resources?
 - Plan to decommission and obliterate such roads.

9. Identify road right-of-ways needed to access national forest lands.
 - o Pursue the acquisition of permanent right-of-ways.
 - o Pursue the acquisition of temporary right-of-ways where,
 - access will not be needed again in the future, and
 - a permanent right-of-way can not be acquired.
10. Inventory and evaluate FS road signs.
 - o Install signs that provide for public safety and meet established standards.
11. Due to the 9-1-1 initiative to name or number all roads for identification during emergency calls, check the current County road names, numbers, and lengths against,
 - o current cooperative agreements, and
 - o GIS and INFRA road data.
 Update cooperative agreements as necessary.

5.2.2.2 Specific

12. An assessment of road stream crossings identified the following problems on the Sam Houston NF (see Appendix J for more site specific information):
 - o Road: 200 Location: 1.6 mi from Road 207
Problem: Unclog 24" culvert and rehab gullies formed from wing ditches
 - o Road: 200 Location: 2.5 mi from Road 207
Problem: Control road ditch drainage
 - o Road: 200 Location: 3.6 mi from Road 207
Problem: Replace 24" culvert with bridge or arch culvert
 - o Road: 200 Location: Boswell Creek
Problem: Replace culvert with larger buried culvert or arch culvert.
 - o Road: 204 Location: Peach Creek south of Road 248
Problem: Replace 24" culvert with larger buried culvert on proper grade and control road drainage.
 - o Road: Old Road off Road 204 Location: Tributary of Peach Creek
Problem: Block old road and rehabilitate stream crossing and channel
 - o Road: 206A Location: Briar Creek
Problem: Decommission segment of old road at stream crossing
 - o Road: 207 Location: 0.5 mi southeast of Road 200
Problem: Replace rusted 36" culvert and control road drainage
 - o Road: 207 Location: 0.9 mi southeast of Road 200
Problem: Replace rusted 36" culvert and control road drainage
 - o Road: 207 Location: Hopkins Branch
Problem: Replace 36" culvert with larger buried culvert on proper grade and control road drainage
 - o Road: 207 Location: 2.2 mi southeast of Road 200
Problem: Control road drainage with wing ditches and rehabilitate gullies
 - o Road: 207 Location: 2.5 mi southeast of Road 200
Problem: Control road drainage with wing ditches and rehabilitate gully
 - o Road: 207A Location: 2.9 mi from Road 207
Problem: Control road drainage with wing ditches and rehabilitate gullies.
 - o Road: 207A Location: Pea Creek
Problem: Replace 60" culvert with larger partially buried culvert and divert road drainage away from streamcourse.
 - o Road: 208 Location: 0.45 mile northwest Road 215
Problem: Replace 2' culvert with larger culvert on proper grade.
 - o Road: 208 Location: 0.7 mile northwest Road 215
Problem: Replace 2' culvert with larger culvert on proper grade and rehabilitate gullies.
 - o Road: 208 Location: 0.9 mile northwest Road 215
Problem: Replace 18" culvert with larger culvert on proper grade.

- Road: 208 Location: 1.5 miles northwest Road 215
Problem: Rehabilitate wing ditch and construct wing ditches.
- Road: 208 Location: 2.0 miles northwest Road 215
Problem: 2' culvert creating impoundment above culvert with large drop below culvert outlet.
- Road: 208 Location: 4.0 miles northwest Road 215
Problem: Good example of 42" corrugated arch culvert installation.
Road drainage ditch downcutting and forming gully.
- Road: 208 Location: 4.7 miles northwest Road 215
Problem: 18" culvert on too steep a grade causing gully.
- Road: 215 Location: 0.3 mile northeast Road 208
Problem: Replace 5' culvert with larger partially buried culvert.
Control road drainage and rehabilitate gullies.
- Road: 217 Location: Big Creek
Problem: Locate and control sources of turbidity in watershed upstream.
- Road: 217 Location: Little Creek
Problem: Divert road ditch drainage away from streamcourses.
- Road: 221 Location: 0.5 miles north of Road 217
Problem: Replace 36" culvert with larger partially buried culvert and divert road drainage away from streamcourse.
- Road: 221 Location: 1.0 miles north of Road 217
Problem: Replace 36" culvert with larger partially buried culvert and divert road drainage away from streamcourse.
- Road: 221 Location: 1.55 miles north of Road 217
Problem: Replace 32" culvert with larger partially buried culvert and divert road drainage away from streamcourse.
- Road: 221 Location: 1.9 miles north of Road 217
Problem: Replace double 36" culverts with larger partially buried culverts and divert road drainage away from streamcourse.
- Road: 223 Location: 0.8 mile from Road 213
Problem: Replace 18" culvert with larger partially buried culvert
- Road: 223 Location: 0.6 mile from Road 213
Problem: Replace 36" culvert with larger partially buried culvert and divert road drainage away from streamcourse.
- Road: 223 Location: 0.4 mile from Road 213
Problem: Construct and reconstruct wing ditches to divert road drainage away from streamcourse.
- Road: 223 Location: 0.7 mile from Four Notch Road
Problem: Replace 48" culvert with larger partially buried culvert and divert road drainage away from streamcourse.
- Road: 223 Location: 0.9 mile from Four Notch Road
Problem: Replace 48" culvert with larger partially buried culvert and divert road drainage away from streamcourse.
- Road: 228F Location: On branch of Neblett's Creek
Problem: 48" culvert prevents fish passage.
- Road: 261 Location: On branch of East Fork San Jacinto River
Problem: Replace double 64" culverts with larger partially buried culverts and divert road drainage away from streamcourse.
- Road: 262 Location: At end of road at East Fork San Jacinto River
Problem: 24" culvert blocked.
- Road: FM 1791 Location: Caney Cr about 0.4 mile south Road 208
Problem: 30" culvert prevents fish passage. Control road drainage and rehabilitate road ditch gullies. Discuss with TXDOT representatives.
- Road: FM 1791 Location: Caney Cr about 2.1 mile south Road 208
Problem: Widening of stream channel causing drainage problems.

- Road: FM 1791 Location: Caney Cr about 2.4 mile south Road 208
Problem: Concrete bridge failing. Discuss with TXDOT representatives.
- Road: FM 2025 Location: Hickman Branch
Problem: Construct wing ditches to divert road drainage away from streamcourse and repair collapsing wing wall.
- Road: FM 2666 Location: Tarkington Bayou
Problem: Construct wing ditches to divert road drainage away from streamcourse.
- Road: FM 2666 Location: West of FS 217A
No problem. Good example of a wing ditch on a Farm-to-Market road.

15. INFRA Data indicates the following roads under Forest Service jurisdiction are maintained by the County.

- Consider transferring these roads to the County if the roads,
 - are heavily used by public traffic, or
 - are thru roads which,
 - connect State or County roads with other State or County roads, or
 - access residential areas.

Table 1. FS Roads Maintained by the County (SHNF).

ROAD NUMBER	ROAD NAME	LENGTH (Miles)	COUNTY	ML
204	Caney Creek	2.5	Montgomery	3
204A	Dunlap	0.8	Montgomery	3
204E		0.4	Montgomery	3
2043	Little Sam Forest	0.6	Montgomery	3
2045	Bear Canyon	0.3	Montgomery	3
206	Phelps	2.0	Walker	3
208	County Line	1.5	Walker	3
209	Farris	0.3	Montgomery	3
212	Scotts Ridge	1.2	Montgomery	5
2135	Flamingo Lake	0.5	Montgomery	3
219A	Perry Williams	1.3	Montgomery	3
224	Corral	1.7	Montgomery	3
246	Watergate	0.8	Walker	3
274	Mercy	1.8	San Jacinto	4

Additional issues, as discussed in the report, were identified and should be addressed during the National Environmental Policy Act (NEPA) analysis for proposed projects as necessary.

The goal of this project was to update the Sam Houston NF Transportation Atlas and develop information that provides a broad framework for managing the forest road system. The recommendations and opportunities will provide a guide for future site-specific analyses of project proposals.