

MONITORING & EVALUATION REPORT
For 1997-1999
TABLE OF CONTENTS

Chapter	Page
Forest Supervisor's Certification	
Executive Summary	
I. Introduction	1
Purpose.....	1
Monitoring and Evaluation	2
Report Organization.....	2
II. Monitoring Results, Findings and Evaluations	2
Issue A. Ecosystem Condition, Health and Sustainability	3
Sub-Issue 1. Biodiversity	3
Vegetation Management.....	3
Cedar on Grasslands	4
Age Class	4
Regeneration Checks	5
Precommercial Thinning.....	7
Prescribed Fire	7
Species Restoration	8
Restoration of Storm-Damaged Areas.....	10
Red-cockaded Woodpecker (RCW) Midstory Vegetation Control....	11
Ecological Classification System (ECS) Report.....	13
Use in Windstorm Efforts	13
Old Growth Inventory.....	14
Bog Restoration.....	15
Management Indicator Species (MIS)	16
Plants	17
Habitat Community Management Indicators	21
Wildlife and Fish.....	25
Guilds and Habitat Constituents	33
Threatened and Endangered Species.....	35
Other Species of Concern	38
Sub-Issue 2. Forest Health.....	43
Air Quality	43
Integrated Pest Management	44
Other Mortality Events	56
Windstorm	56
Drought	57
Losses Due to Wildfires	58
Sub-Issue 3. Watershed Conditions	59
Assessment Team Report.....	59
Fireline Erosion Control.....	61
Long-Term Soil Productivity Study	61
Multi-use Trail Management on the Sam Houston NF.....	61

Table of Contents – (continued)

Chapter	Page
Oil Well Spills and Salt Water Discharge.....	62
Off-Road Vehicle (ORV) Closures.....	64
Prescribed Burning	66
Road Construction/Reconstruction	67
Road Obliteration.....	68
Stephen F. Austin State University (SFASU) Baseline Water Quality Study.....	68
SFASU Water Quality Monitoring Study in 1200-Meter Thinning Area	70
SFASU Water Quality Monitoring Study in a Southern Pine Beetle (SPB) Impacted Area	71
Soil Survey Acres and Soil and Water Improvement Accomplishments .	73
State Designated Impaired Streams	74
Streamside Management Zones.....	75
Ten Percent Roads and Trails Funds (TRTR) Accomplishments.....	76
Texas Forest Service (TFS) Best Management Practices (BMP) Results	77
Timber Sale Erosion Control Efforts.....	78
Vegetation Treatments.....	79
Watershed Restoration Work.....	80
Well Plugging.....	81
Windstorm Blowdown Monitoring Efforts.....	82
Issue B. Sustainable Multiple Forest and Range Benefits.....	83
Sub-Issue 1. Outdoor Recreation Opportunities.....	83
Visual Quality Objectives	84
Public Private Venture (PPV) Studies.....	84
Customer Card Summaries	85
Recreation Construction	86
Trail Work.....	86
Transportation Equity Act for 21st Century (TEA 21).....	87
Stephen F. Austin Experimental Forest Trail.....	87
Volunteer Time/Value	88
Recreation Use Trends	88
Shooting Area Closure and Sam Houston Opening	89
Off-road Vehicle (ORV) Closure	89
Fee Demo.....	89
Wildlife Management Area (WMA) Stamp Trend.....	90
Hunter Camps.....	91
Sub-Issue 2. Infrastructure.....	91
Transportation System.....	92
Dams	93
Roads Bridges and Major Culverts	93
Water and Wastewater Systems	94
Structures (FA&O and Recreation).....	94
Trails and Trail Bridges	94
Accessibility Changes	95
Sub-Issue 3. Human Influences.....	97
Population/Demographics of NFGT Counties	97

Table of Contents – (continued)

<u>Chapter</u>	<u>Page</u>
Population/Urbanization Issues Affecting National Forest Land Management.....	98
Water Supply	98
Trans-basin Water Transfer	99
Off-road Vehicles.....	100
Urban Interface.....	100
Wildwood and Bentwater Subdivisions	101
Grassland Ranchettes.....	101
Visitor and Resource Protection	102
Fire Management Implications	104
Prescribed Fire	104
Wildland Fire Suppression	105
Sub-Issue 4. Roadless Areas/Wilderness/Wild and Scenic Rivers.....	105
Roadless Areas	105
Wilderness	106
Wild and Scenic Rivers	106
Sub-Issue 5. Timber.....	107
Harvest Trends Information	108
Sub-Issue 6. Forage.....	113
Sub-Issue 7. Other Products.....	115
Fuelwood	115
Minerals	115
Sub-Issue 8. Heritage Resources.....	118
Issue C. Organizational Effectiveness	121
Sub-Issue 1. Economics	121
Budgets.....	121
Workforce.....	124
Sub-Issue 2. Evaluating New Information	126
III. Evaluation of Outcomes on the Land.....	127
IV. FY 2000 Action Plan	129

References Cited

Appendices

- A. List of Names and Positions of Report Preparers
- B. Amendments Made Since the *Forest Plan* Was Completed
- C. Status of Previous Action Plan
- D. Summary of Field Reviews & Other Administrative Activities
- E. Updated Research Information
- F. Responses to *Forest Plan* Appendix G Questions
- G. National Forest Management Act (NFMA) Checklist
- H. Age Class Tables by Timber Types
- I. Management Indicator Species Tables
- J. Red-cockaded Woodpecker (RCW) Graphs
- K. Air Graphics
- L. Bald Eagle Table
- M. Landbird Tables
- N. Acronym Listing

Table of Contents – (continued)

<u>Tables</u>	<u>Page</u>
Table 1 First Year Regeneration Checks	6
Table 2 Third Year Regeneration Checks	6
Table 3 Acres of Precommercial Thinning Conducted	7
Table 4 Prescribed Fire -Acres	8
Table 5 Longleaf/Shortleaf Pine Ecosystem Restoration Status.....	9
Table 6 Threatened, Endangered and Sensitive (TES) Habitat Status.....	9
Table 7 Slash Pine to Longleaf Pine Restoration	10
Table 8 Acres of Midstory Treatment	13
Table 9 Comparison of Stands 95 Years and Older in 1991 and 1999 by Forest Type.....	14
Table 10 Red-cockaded Woodpecker (RCW) Translocation and Augmentation (number of birds received) Summary by Translocation Season (September-January).....	27
Table 11 Deer Seen Per Transect-Deer Per 1,00 Acres	29
Table 12 Southern Pine Beetle (SPB) Spot Summary	45
Table 13 Soil Resource, Soil & Water Improvement Inventories and Accomplishments	74
Table 14 Stream Segments & Water Bodies Occurring on National Forest Lands that appear on the Draft 303(d) list for the State of Texas, dated January 14, 2000	75
Table 15 Ten Percent Roads & Trails Funds Accomplishments, 1998	76
Table 16 Ten Percent Roads & Trails Funds Accomplishments, 1999	77
Table 17 Comment Card Summary	85
Table 18 Wildlife Management Area (WMA) Trends.....	91
Table 19 State, County and Forest Service Miles of Roads	92
Table 20 Acres Harvested by Method of Cut.....	110
Table 21 Compartment Prescriptions.....	110
Table 22 Timber Volume Sold vs. Allowable Sale Quantity (ASQ) Volume (MMBF)	111
Table 23 Fuelwood Sales	115
Table 24 NFGT Minerals Budget, Returns to Counties, Number of Active Wells, Number of New Applications for Permits to Drill, Number of Seismic Permits Issued/Active, and Number Common Variety Mineral Permits.....	116
Table 25 Parcels & Acres Offered for Mineral Lease and Number of Parcels & Acres Leased 97-99	117
Table 26 Heritage Resource Accomplishments 97-99	118
Table 27 Comparison of Annual Forest Plan Budget Projects (for 1st Period) to Actual Allocations Received	122
Table F-1 Rural Development Grants Awarded in Texas	F-43
Table F-2 Pine & Hardwood Harvested National Forests in Texas (MMBF)	F-56

<u>Figures</u>	<u>Page</u>
Figure 1 Planned vs. Actual Prescribed Fire Acres	8
Figure 2 Navasota Ladies Tresses	19
Figure 3 Red-cockaded Woodpecker (RCW)	26
Figure 4 Bald Eagle Totals in Lower 48 States	36
Figure 5 American alligator, <i>Alligator mississippiensis</i>	37
Figure 6 Imported Fire Ant-National Distribution Map.....	46
Figure 7 The Spread of Africanized Honey Bees in Texas	47
Figure 8 Chinese Tallow.....	48
Figure 9 Kudzu along a Roadside.....	49
Figure 10 Water-Hyacinth in Bloom.....	49
Figure 11 Distribution of Water-Hyacinth in the U.S.	50
Figure 12 Hydrilla	51
Figure 13 Hydrilla Infestations in Texas, 1998.....	52
Figure 14 Giant Salvinia	53
Figure 15 Giant Salvinia (<i>Salvinia molesta</i>)	54

Table of Contents – (continued)

<u>Figures</u>	<u>Page</u>
Figure 16 Texas and Louisiana Locations of Giant Salvia in 2000	55
Figure 17 Extensive Storm Damage on the Sabine National Forest.....	56
Figure 18 Resource Damage Caused by Off-highway Vehicles (OHVs), Angelina National Forest, May, 1997.....	65
Figure 19 Universally Accessible Trail on the SFA Experimental Forest, October 8, 1997	88
Figure 20 Universally Accessible Fishing Decks on the FDR 215 Bridge at Stubblefield Recreation Area, Sam Houston National Forest (NF), 1997	95
Figure 21 Universally Accessible Vault Toilet, Black Creek Lake Recreation Area, Lyndon B. Johnson (LBJ) National Grasslands (NG)	96
Figure 22 Illegal Dumping on the National Forests & Grasslands in Texas	102
Figure 23 Vandalism of the Aldridge Sawmill Historic Site on Angelina NF, Eligible and Nominated For Inclusion on the National Register of Historic Places (photo taken February 8, 1998)	104
Figure 24 Canoeist on the Neches River.....	107
Figure 25 Annual Timber Volume Sold	112
Figure 26 Cattle Grazing on the National Grasslands in Texas	114
Figure 27 Volunteers Processing Artifacts, Passport in Time Project Near Neches Bluff, Davy Crockett NF, April 1997	119
Figure 28 Passport in Time Project Near Neches Bluff, Davy Crockett NF, April 1997.....	120

FOREST SUPERVISOR'S CERTIFICATION

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

The 1996 Revised Forest Land and Resource Management Plan for the National Forests and Grasslands in Texas (the *Plan*) is sufficient to guide forest management for FY 2000 and 2001, unless ongoing monitoring and evaluation identify further need for change.

Any amendments or revisions to the *Plan* will be made using the appropriate National Environmental Policy Act (NEPA) procedures.

/s/ Ronnie Raum
RONNIE RAUM
Forest Supervisor

9/15/00
Date

EXECUTIVE SUMMARY

The 1996 Revised Forest Land and Resource Management Plan (the *Plan*) for the National Forests and Grasslands in Texas (NFGT) was developed during a period when federal agency budgets had experienced significant growth for a number of years and was based on the premise that Congress would rely heavily on an aggregation of forest planning direction to allocate funds to the Forest Service. Therefore, the *Plan* anticipated aggressive implementation of projects that would quickly make progress toward the envisioned desired future conditions (DFCs). However, shortly after enactment of the *Plan*, several events occurred that dramatically altered what projects the NFGT could implement and the level of funding that the Forest would receive. The August 14, 1997 timber management injunction issued by federal district court decree halted most existing and many future timber sales. Concurrently, the Congress turned its attention to balancing the federal budget. As a result, the appropriations to the agency were severely curtailed when the Congress emphasized a smaller government. Together, these events resulted in reduced funding to the NFGT.

These events have limited our ability to fully implement the *Plan*. Without complete implementation, it is impossible to accurately monitor total progress toward the intended results and DFCs. In the areas where the Forest has been able to implement actions in accordance with Plan direction, the report findings demonstrate that the NFGT is making some progress toward the DFCs, and is concentrating its efforts toward achieving the Chief's Natural Resource Agenda of watershed health and restoration, sustainable forest management, national forest roads, and recreation.

There is a general aging trend throughout the forest, both in pine and hardwood species, as almost two-thirds of the forest now exceeds 60 years of age. Overall health of the forests continues to be a major concern and management practices such as prescribe burning and thinning are the only tools currently available to achieve the *Plan* goal to manage for long-term sustainability of diverse ecological systems. We are using an improved Ecological Classification System (ECS) to guide decisions for the restoration of ecological processes emphasizing the naturally occurring fire-dependent longleaf and shortleaf pine ecosystems.

Protection of soil and water resources is emphasized in all management activities. This is evidenced by the Texas Forest Service's evaluation that, through voluntary compliance with their Best Management Practices (BMPs), the NFGT consistently obtains Good to Excellent ratings from monitoring of logging operations on NFS lands. Additionally, inspections by Texas Forest Service professionals of salvage logging operations on two sites on the Sam Houston National Forest (NF) found that compliance with BMPs was above and beyond the State's guidelines; there was no water quality impact; fire hazard was reduced, and forest health conditions were improved by removal of potential bark beetle breeding material.

Erosion control requirements in timber sale contracts are effective and administered well, although some conditions beyond our control such as drought or heavy rainstorms, can adversely affect the results of erosion control work. To further ensure satisfactory and effective erosion control, the Forest established the following post sale requirements: conduct post erosion control work inspections, especially after severe weather, to promptly correct any deficiencies found; make a final inspection report approximately one year after completion of any erosion control work; and identify the responsible party for taking action to correct deficiencies found.

Watershed restoration projects are being conducted on the Caddo and Lyndon B. Johnson Grasslands. These include gully restoration, pond construction, gully plugging and revegetation work in areas where accelerated erosion from past agricultural practices is occurring. Although there are still many areas in need of this type work, progress is being made in restoring the areas to their original grasslands state.

The Forest is currently assessing alternatives for restoring over 100,000 acres damaged by a major windstorm in February 1998. Through the NEPA process, an Environmental Impact Statement (EIS) is being developed that will restore these acres for the future health and sustainability of the forest, as well as providing suitable habitat for numerous wildlife species, including the endangered RCW.

Managing for Threatened and Endangered species known to inhabit the NFGT is also a major management goal, especially for the RCW. Since 1988, RCW management has been in accordance with a Comprehensive Plan developed at the direction of U. S. District Judge Robert Parker as part of an injunction involving management practices on the National Forests in Texas.

The NFGT continues to prioritize obtaining and maintaining current baseline data to monitor populations of plant and animal species. Although constrained budgets and smaller work forces hinder efforts to conduct precise counts of every species, the Forest has demonstrated a sincere commitment to obtaining the data to accurately inventory Management Indicator Species (MIS). Through cooperative endeavors with other state and federal agencies and universities, we are obtaining the most up-to-date information available as to numbers of MIS and occurrences of plant species on the NFGT.

The NFGT provide a wide range of outdoor recreation opportunities. These public lands are valued by a major segment of the population who are placing increasing demands for varied recreational pursuits. Many changes and modifications have been made at NFGT facilities to make them more accessible to visitors. A major challenge facing the NFGT is to accommodate the changing needs and demands for amenities and a variety of recreational facilities in a time when work forces and budgets are decreasing. We will continue to explore alternatives to accommodate those demands, and provide the quality recreation experience the public wants. Off-road vehicle use is one area that is especially challenging from the standpoint of managing this growing use, while assuring protection of the resources and natural characteristics of the forests.

The Forest has made progress in inventorying physical structures on the four national forests and two national grasslands, and entering the information into a database that will help prioritize projects to maintain and upgrade roads, bridges, buildings and recreation structures. A major effort has been made to respond to direction by the Chief of the Forest Service that all field units conduct condition surveys on many Forest Development Roads during FY 1999 and FY 2000. Existing roads on the NFGT are being reviewed through transportation studies and road management objectives are being documented. Road condition surveys have resulted in more accurate inventories of existing roads. Also during FY 1997-1999, road reconstruction and decommissioning have been emphasized. We will continue to focus on appropriate management of the Forest transportation system, and address, as much as budget allocations allow, the existing backlog of maintenance needs.

We foresee the need to analyze the monitoring section of the *Plan* to determine those few critical items that will most effectively identify effects of management activities on the land.

In summary, we believe that to the extent we have been able to implement the 1996 *Plan*, satisfactory progress is being made toward the desired future conditions envisioned in the *Plan*. We will continue to maintain the necessary emphasis toward those DFCs and to address the concerns of the District Court on the issues involved in the current injunction.

MONITORING & EVALUATION REPORT FOR 1997-1999

Chapter I. Introduction

Purpose

Management of the National Forests and Grasslands in Texas (NFGT) is guided by direction outlined in the *1996 Revised Land and Resource Management Plan (LRMP) for the NFGT* (referred to as the *Plan* throughout this document). The *Plan* was prepared to comply with the National Forest Management Act (NFMA) and numerous other environmental laws that contain specific direction for management of the national forests and grasslands and production of goods and services from these federally managed public lands.

The NFMA provides for amending or revising forest plans periodically based upon needs that are identified through an ongoing monitoring program. The NFMA and its implementing regulations specify a five-year monitoring report. However, the Chief of the Forest Service recently required an annual report of monitoring for each forest plan. These annual reports are to document results of information gathered and evaluated during the previous year and should include the following elements: (1) *Report on the forest plan implementation, effects and results*; (2) *Document compliance with legal requirements for land and resource management monitoring*; and (3) *Identify needs for change in forest plans due to resource limitations or concerns of the public*.

This Monitoring and Evaluation report covers a three-year period (1997-1999.) Since adoption of the *Plan* in June 1996, the NFGT has been unable to implement significant portions of that *Plan* due to Federal District Court rulings and injunctions. Specifically the NFGT has been required to manage the Red-cockaded Woodpecker (RCW), an endangered species, in accordance with prescriptive measures mandated by the court in 1988 and a broad prohibition on timber management handed down in August 1997. (Although not germane to *Plan* implementation for FY 97-99, the NFGT is under yet a third injunction issued in 1999 that prohibits certain RCW habitat projects from being implemented.)¹ Therefore, most monitoring activities have focused on the issues before the court, and portions of the *Plan* not yet fully implemented will not be documented in specific detail in this report.

¹ Injunction by U.S. District Judge Richard A. Schell in response to Sierra Club, Texas Committee on Natural Resources (TCONR) vs. U.S.D.A. Forest Service (USFS) and Sierra Club, TCONR vs. USFS.

Monitoring and Evaluation

Monitoring and Evaluation is intended to assess progress in implementing the *Plan* and whether projects designed to implement the *Plan* are achieving the Desired Future Condition (DFC) envisioned for the NFGT when the *Plan* was developed. The *Plan's* monitoring and evaluation is not rigorous scientific research, nor was it intended to be. That level of research is not necessary for evaluating *Plan* implementation. *Plan* monitoring and evaluation is the tool that allows us to gauge the level of production of goods and services the *Plan* originally anticipated, and ultimately to determine if projects and activities are executed according to project design and associated National Environmental Policy Act (NEPA) documents, and whether mitigation measures are preventing or minimizing undue environmental hazards. Monitoring can be as simple as personal observations by trained personnel, or as complex as complete chemical analysis of water samples.

Report Organization

This report is divided into chapters developed to address issues and sub-issues identified in a Regional Office (R.O.) letter of instruction dated December 17, 1999 and topics identified by the NFGT Leadership Team. The December letter contained guidance for consistency across the Region in reporting on forest plan implementation and natural resource monitoring and evaluation.

Each issue and sub-issue identified by the R.O. and the NFGT Leadership Team include specific topics that explain various elements of NFGT management and/or conditions on the ground. Chapter I, the Introduction, explains the monitoring and evaluation process; Chapter II provides specific subject and on-the-ground information containing monitoring results and findings. Chapter III contains an evaluation of all issues; and Chapter IV is an Action Plan developed to address areas where changes are needed, either by change in management direction or *Plan* amendment. Appendices in the back of this report provide further material to assist the reader in gaining a more comprehensive understanding of the status of monitoring and inventorying on the NFGT. Additional information is incorporated through references.

Chapter II. Monitoring Results, Findings and Evaluations

Monitoring results and findings are discussed in this chapter in an "issue" format. Issue (A) *Ecosystem Condition, Health and Sustainability* explains elements of biodiversity, forest health, and watershed conditions; (B) *Sustainable Multiple Forest and Range Benefits* provides information on outdoor recreation opportunities, infrastructure, human influences, roadless areas, wilderness, wild and scenic rivers, timber, forage, other forest products, and heritage resources; and (C) *Organizational Effectiveness* describes economic facts and evaluates new information that is pertinent to management of the NFGT.

Issue A. Ecosystem Condition, Health and Sustainability

Forest Service Manual 2060 defines “ecosystem” as a complete interacting system of organisms and their environment. While management of the entire ecosystem has always been a guiding principle for the USFS, a formal policy of “ecosystem management” was adopted on June 4, 1992 that applies to national forests, grasslands and research programs. Ecosystem classification and mapping at multiple geographic scales became a tool and scientific basis to plan for and implement ecosystem management.

Planning and analysis scales are developed within a hierarchical framework of ecological units from global, continental, and regional ecoregions to subregions, then landscapes and land units. Project planning can be by forest, area-wide planning and watershed analysis consisting of thousands to hundreds of acres down to the land unit or landtype phase consisting of hundreds to less than ten acres.

To promote the goal of ecosystem health and sustainability of the national forests, rangelands and watershed, the NFGT emphasizes improving and protecting watershed conditions, increasing the amount of habitat to sustain viable populations of all native species and support desirable levels of selected species, and increasing the amount of forests and rangelands restored and maintained at a healthy condition with reduced risk and damage from fires, insects, diseases and invasive species.

The major components of Ecosystem Condition, Health and Sustainability are addressed in the following sub-issues.

Sub-Issue 1. Biodiversity

Biodiversity, as defined by NFMA, requires that forests and grasslands “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area...” Biodiversity is to be maintained over landscapes, stands and maintained for more uncommon species, while also managing and protecting native species. The Forest Leadership Team identified *Vegetation Management*, *Management Indicators*, and *Threatened and Endangered Species* as topics that are components of biodiversity that can be measured on the NFGT.

Vegetation Management

Grasslands

Plan goals for grassland ecosystem management on the Lyndon B. Johnson (LBJ) and Caddo National Grasslands (NGs), and specifically vegetation management on the grasslands, are to improve long-term soil productivity and halt accelerated erosion; provide opportunity for grazing and other environmentally sensitive commodity production while maintaining a predominantly natural appearing landscape, clean water,

long-term soil productivity, and habitat for threatened, endangered, or sensitive species of plants and animals; and provide a sustainable yield of forage based on the productive potential that is compatible with multiple use objectives.

Watershed scale analyses are being conducted to determine site-specific vegetation objectives. One such analysis for the Denton Creek watershed on the LBJ NG was completed in June 1999, and another analysis for the Ladonia Unit of the Caddo NG is currently underway. The results of these analyses are providing direction to move the vegetation resource toward the desired future condition. Changes in the vegetation management program include, for example, an increase in prescribed burning and removal of encroaching eastern red cedar to restore and improve native prairie and cross timber vegetation, decrease of time livestock grazing occurs on the NGs, increased deferment from grazing to allow rangeland vegetation to recover, improvement of the infrastructure (fences, water tanks, etc.) to manage livestock grazing, additional inventories for sensitive plant species, and increased monitoring of the vegetation resource at large.

Cedar on Grasslands

Eastern red cedar is an encroaching species on the Caddo and LBJ NGs. Environmental analyses of treatment options began in FY 1997 and were completed in FY 1998. The cedars are being mechanically removed by the use of a bobcat shear and chainsaws to enhance the tall grass prairie and oak woodland ecological region. In FY 1999 these methods were employed on 250 acres, thus encouraging reversion of these areas back to a grassland landscape interspersed with woodlands.

Forests

Vegetative characteristics of and/or management practices applied to the four proclaimed National Forests in Texas help measure biodiversity and monitor progress made to achieve *Plan* DFCs.

The following sections discuss those characteristics and practices.

Age Class

Extensive timber harvesting and subsequent regeneration took place early in the 20th century and is very evident on the NFGT today. A majority of the forest dates back to this time period, as can be easily seen in the age classes present today. A comparison of age classes between 1992 (the baseline year used in *Plan*

development) and 2000 was made to determine what changes have occurred during this time period. The comparison is in table format in the back of this report (see the tables in **Appendix H**), and entails six different tables as follows: age classes by forest type, forest age classes by vegetation group, age classes by forest type as listed in Continuous Inventory of Stand Conditions (CISC) and grouped as pine, pine-hardwood, hardwood-pine, and hardwood; each of these groupings was examined in terms of total forested acres and suitable acres only. Suitable acres are defined as those acres suitable for timber management and therefore do not include grassland ecosystems [Management Area (MA) 3], streamside management zones (MA 4), wilderness (MA 7), research natural areas (MA 8a), protected river and stream corridors (MA 8b), scenic areas (MA 8c), natural heritage areas (MA 8d), special bottomland areas (MA8e), cultural heritage areas (MA 8f), developed recreation sites (MA 9a), minimally developed recreation sites (MA 9b), administrative use sites (MA 10a), special use permit sites (MA 10b), and the Stephen F. Austin State University (SFASU) Experimental Forest (MA 11). Ten-year age classes were used beginning with age zero and extending to over 100 years of age. Close examination of these tables reveals a general aging trend throughout the forest. For example, the table of age classes by forest type as listed in CISC (grouped as pine, pine-hardwood, hardwood-pine, and hardwood) shows that in 1992 there were 8,639 acres of pine 101 years old or older (1.6 percent of the forest), and by 2000 that number had risen to 20,290 acres (3.9 percent of the forest). A similar trend is seen in the hardwood stands, which rose from having 9 percent of the total hardwood forest in the 101 year-old and older age class to having 13 percent in this age class.

Regeneration Checks

A review of NEPA documents and project plans indicates that no even-aged regeneration harvests have exceeded the size limits stated in the *Plan* (see FW-198, p. 78 of the *Plan*). There were only 755 acres of even-aged regeneration (clearcut and seedtree) harvested in FY 1997-1999.

Stocking surveys are done in both natural and artificial regeneration areas after the first and third growing season. The stocking surveys show an estimated number of stems per acre of the desired species. The CISC and Plantation Evaluation and Performance (PEP) databases are updated to reflect the results of these surveys.

Stands that need regeneration treatments are tracked through the CISC forest stand database. The PEP database is used to monitor planting stocking success for all planted stands. Use of these databases indicates that for the period 1997-1999 there were no stands that failed to meet the five-year stocking requirement under the NFMA.

First and third year regeneration checks are used to determine if regeneration of desired tree species is being achieved. Whenever these checks reveal stands that are not being adequately regenerated, an evaluation is done to determine what measures are needed to achieve satisfactory stocking. In some cases additional site preparation is needed, and in other cases only replanting is necessary. For the reporting period, first year checks averaged 63 percent survival. Trees planted in 1998 were adversely affected by the summer drought of 1998. None of the acres planted in 1998 met minimum stocking standards in the 1999 first year check. These acres will be replanted in 2000.

Third year checks averaged 96 percent survival of desired tree species for the period of 1997-1999. These are trees that were initially planted during the period from 1994-1996.

Table 1
First Year Regeneration Checks

Fiscal Year	Acres Examined	Acres Meeting Minimum Stocking Standards	Percent Meeting Minimum Stocking Standards
1997	405	405	100 %
1998	367	358	98%
1999	448	0	0%
TOTALS	1,220	763	63%

Table 2
Third Year Regeneration Checks

Fiscal Year	Acres Examined	Acres Meeting Minimum Stocking Standards	Percent Meeting Minimum Stocking Standards
1997	1,616	1,542	95%
1998	1,013	994	98%
1999	305	278	91%
TOTALS	2,934	2,814	96%

Precommercial Thinning

Precommercial thinning is a treatment commonly applied to overcrowded young stands that have developed from dense natural regeneration. Precommercial thinning treatments have been conducted over 2,326 acres during the 1997-1999 period. These treatments are done, when necessary, within naturally-regenerated stands and plantations after the third-year regeneration check and before trees reach commercial size (generally around age 15). Planted stands that also include natural seedlings receive this treatment to reduce the risk of pine bark beetle attack due to high pine stocking levels, and to redistribute diameter growth to residual trees for earlier sawtimber production.

Table 3

Acres of Precommercial Thinning Conducted

Fiscal Year	Precommercial Thinning Acres
1997	1,282
1998	628
1999	416
TOTALS	2,326

Prescribed Fire

Prescribed fire is a tool used to manage fire-dependent communities and ecosystems, reduce hazardous fuel accumulations, control brownspot disease in young longleaf pine stands, prepare sites for regeneration, and improve forage, range and wildlife habitat (including threatened and endangered species habitat). The number of acres burned annually depends largely upon having suitable weather conditions. A number of weather factors such as drought, rainfall amount and duration, days since rain, wind speed and direction, transport winds aloft, relative humidity, as well as fuel moisture, size and amount are considered in prescribed fire planning and operations. Prescribed burning to improve threatened and endangered species habitat was done on 11,395 acres for the 1997-1999 period. This treatment promotes open understories for RCW flyways in recruitment and replacement stands and within adjacent stands for foraging activity. The following provides a breakdown of information concerning all types of prescribed burning done in FY 97-99.

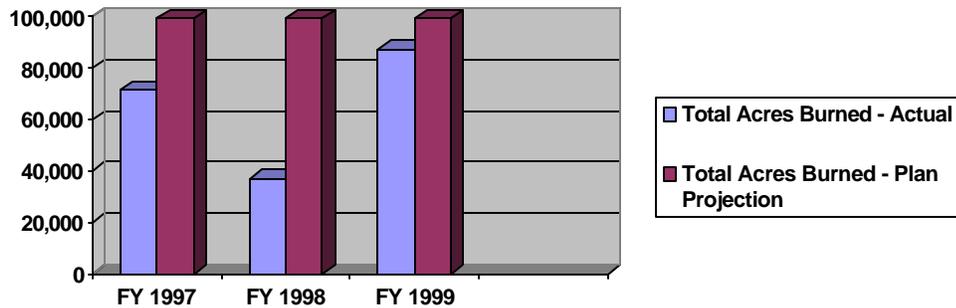
Table 4
Prescribed Fire - Acres

FY	Fuel Reduction	Brownspot Control (Longleaf)	Site Preparation For Regeneration	Control of Understory	Range Improvement	T&E*	Other Wildlife	Total
1997	38,454	397	196	4,353	883	5,501	21,583	71,367
1998	29,742	0	538	0	0	363	6,166	36,809
1999	52,937	667	174	2,681	500	5,531	24,640	87,130
Total	121,133	1,064	908	7,034	1,383	11,395	52,389	195,306

*Threatened and Endangered Species

On average, 9.6 percent of the NFGT was burned annually during the 1997-1999 monitoring period. The following chart displays a comparison of the actual acres burned annually during the monitoring period versus the total acres projected to be burned in the *Plan's Environmental Impact Statement (EIS)* (see alternative 8 in the *EIS*, pg. 133):

Figure 1



Species Restoration

The *Plan* has a goal to manage for long-term sustainability of diverse ecological systems, including native and desirable non-native species. One of the objectives implementing this direction is to maintain, improve, or restore unique ecosystems using the Ecological Classification System (ECS) information and restoration of ecological processes emphasizing the naturally

occurring fire dependent longleaf and shortleaf pine ecosystems. Several unique communities occur within the longleaf and shortleaf pine ecosystems and were identified as needing restoration. These unique communities, with their *Plan* status, short-term objectives, and current status, are:

Table 5

Community	Forest <i>Plan</i> Status (Ac.)	Short-term Objective (Ac.)	Current Status (Ac.)
Little Bluestem/ Rayless Goldenrod	440	475	439*
Sphagnum/Beakrush	150	200	148*
Sweetbay Magnolia	250	300	502

* A few additional isolated areas have been located, but acreages have not been determined (probably less than five acres each).

Another *Plan* objective is to protect and improve habitat for threatened, endangered, and sensitive (TES) plant and animal species. Habitat for TES species is to be developed, which in turn will benefit other species occurring on these sites. The *Plan* identified five communities to track accomplishment of this objective; these communities, with their *Plan* status, short-term objectives, and current status, are:

Table 6

Community	Forest <i>Plan</i> Status (Ac.)	Short-term Objective (Ac.)	Current Status (Ac.)
Longleaf Pine/ Little Bluestem	21,000	40,000	25,114
Shortleaf/Oak/Hickory	150,000	160,000	157,173
Beech/White Oak	2,532	3,000	2,532
Little Bluestem/ Indian Grass	15,000	20,000	15,000
Bottomland Hardwood	25,000	50,000	32,104

The *Plan's EIS* projected total restoration for the first planning period for the selected alternative is 13,475 acres, or an average of 1,348 acres per year. The restoration of historical longleaf and shortleaf pine sites through conversion of slash pine (a species not native to Texas) stands has been restricted since 1988 due to orders of United States District Court of the Eastern District of Texas Judge Robert M. Parker. During the last three years, only 233 acres of slash pine have been restored to longleaf pine. Current CISC reports show that there are still 5,928 acres of slash pine on the NFGT, plus an additional 923 acres of longleaf-slash pine and 85 acres of slash pine-hardwood. The balance of the acreage increase in the Longleaf Pine/Little Bluestem community, as noted in the table above, is the result of intermediate thinning which favored longleaf pine over other pine species, and updated silvicultural inventories.

Table 7
Slash Pine to Longleaf Pine Restoration

Fiscal Year	Acres
1997	144
1998	64
1999	25
Total	233

Restoration of Storm-Damaged Areas

On February 10, 1998, a major windstorm affected the Angelina, Sabine and Sam Houston National Forests (NFs). Tens of thousands of trees on over 100,000 acres were blown down or snapped off by hurricane strength straight-line winds. Storm damaged trees were removed on 27,438 acres by the end of Calendar Year (CY) 1998. Prescribed fire for fuel reduction was initiated in the Winter/Spring of 1998/1999 with 12,557 acres accomplished by June 1999.

The most significant change as the result of the windstorm was to the vegetational composition and structure of damaged areas. To date, a Changed Condition Analysis, an Environmental Assessment, and a Draft EIS have been developed for windstorm-damaged areas. These include inventories of existing vegetation and special features such as heritage sites, threatened, endangered and sensitive species, and potential vegetation as guided by the ECS.

A Draft EIS for the Texas Blowdown Reforestation Project was completed and mailed to potentially interested or affected publics on October 20, 1999. The Draft EIS examined six alternatives for reforesting areas on the Angelina and Sabine NFs and increasing Management Area 2 (RCW Emphasis) land allocations to provide long-term stability to the RCW population. An Interdisciplinary (ID) Team is currently completing the final EIS for the restoration project, and a decision is expected soon. Plans are to complete implementation in approximately five years.

RCW Midstory Vegetation Control

The Red-cockaded woodpecker (RCW) was listed as an endangered species in 1970. The Forest Service has been actively involved in RCW management since 1975, and management has evolved with better knowledge of the RCW's biology and habitat needs. The Forest Service published a wildlife management handbook in 1979 that included objectives for control of hardwood midstory for RCW habitat.

In a lawsuit contesting NFGT management for the RCW, Judge Robert M. Parker of the Federal District Court for the Eastern District of Texas issued a permanent injunction, enjoining the NFGT from practicing even-aged management on national forest lands within 1,200 meters of RCW colonies. Orders issued by Judge Parker on June 17 and October 20, 1988, directed the NFGT to take several actions including developing a Comprehensive Plan to implement selection management within 1,200 meter zones. Judge Parker's October 20, 1988, order specifically approved portions of the NFGT's Comprehensive Plan directing prescribed burning and midstory control. Prescribed burning on two-year intervals for longleaf pine and three- to four-year intervals for loblolly and shortleaf pine were incorporated to control hardwoods to ensure adequate pine regeneration and growth. The use of herbicides to control large hardwood trees not eliminated by prescribed burning was also included in the Comprehensive Plan. Midstory removal and control was directed for all non-wilderness colony sites, recruitment and replacement stands. The Comprehensive Plan specified that, "All hardwoods greater than two inches (at ground level) will be treated with mechanical mid-story control techniques including shearer, hydro-ax, or mulcher, manual techniques like chainsaw, herbicide use or growing season burning. All encroaching stems will be removed within 50 feet of

cavity trees.”² Management of RCW habitat continues under the direction of Judge Parker’s orders and the Comprehensive Plan for areas within 1,200 meters of RCW colonies until such time as the District Court approves a Forest Service plan for RCW management, as directed by the Fifth Circuit Court of Appeals judgment and order issued March 4, 1991.³

One management practice prescribed by the *Plan* and the *Final EIS and Record of Decision (ROD) for the Management of the RCW and its Habitat on National Forests in the Southern Region (RCW FEIS and ROD)*, and approved by the U.S.D.I. Fish and Wildlife Service (the federal agency responsible for compliance with the Endangered Species Act) for RCW habitat management is to control midstory vegetation within RCW clusters, replacement, and recruitment stands. Prescribed fire is the desired means to maintain the open condition preferred by RCW. In those stands where hardwood midstory is too large to be controlled by prescribed burning, the following methods are used:

1. Mechanical means such as mulcher, hydro-ax, etc.
2. Manual methods such as chainsaws and brush hooks.
3. Herbicides applied by injection, stem spray, etc. or
4. Combination of these methods.

Midstory control involves removing hardwood midstory trees within 50 feet of RCW cavity trees and reducing other midstory trees to no more than three per acre within the RCW cluster. Pine midstory trees that block the cavity entrance are also removed. In addition to prescribed burning, midstory treatments were accomplished utilizing the methods listed above.

Midstory control work within 1,200 meters of RCW colonies follows the guidelines of Judge Parker’s 1988 orders and the Comprehensive Plan. Areas outside the 1,200-meter zones but within the *Plan’s* Management Area 2 (RCW Emphasis) are managed according to the direction in the *RCW FEIS and ROD*, which was incorporated into the *Plan* (see the *Plan*, pp. 107-134). The following table illustrates the number of acres of midstory treatments that were conducted on the NFGT during the three-year monitoring period.

² *Comprehensive Plan based on October 20, 1999 Court Decision for the Management of the Red-cockaded Woodpecker Habitat in the National Forests in Texas*, U.S.D.A. Forest Service, December 15, 1988, pp. 13-14.

³ *Ibid.*

Table 8

Year	Acres Treated
1997	814
1998	976
1999	948

Ecological Classification System (ECS) Report

In July 1999, The Nature Conservancy and SFASU completed a field guide for the NFGT and the Kisatchie NF entitled, *Ecological Classification System (ECS) Field Guide for the National Forests and Adjacent Areas of the West Gulf Coastal Plain*. This was done as part of an agreement between the two forests to develop an ECS for the national forests of the West Gulf Coastal Plain to improve management of forest resources. The ECS will guide planning and management for the complexity and interconnectedness of all components (i.e. vegetation, wildlife, water and soil) that make up a forest.

The field guide was designed to be a working document to aid resource planners, foresters, and biologists to better understand the ecosystems occurring on national forest lands and to integrate ecological information into their planning, management, and research activities. This field guide includes descriptions of ecological types, descriptions of key plan species, a summary account of historical vegetation in the region, and regional maps showing geographic locations of higher level ecological units.

The ECS will be modified and refined to reflect increased understanding of these natural systems and will continue to be used to protect the health and biological diversity of the forests while focusing attention on the ecosystem and natural processes.

Use In Windstorm Recovery Efforts

After initial emergency needs were met for the 1998 windstorm, Forest Service personnel assessed the damage to the affected areas on the Angelina, Sabine and Sam Houston NFs to determine the potential scope of recovery efforts. One of the many objectives of the NFGT was to identify potential reforestation actions, and a commitment was made to guide these efforts with the ECS and management direction from the *Plan*. The ECS was used to identify the appropriate vegetation for which any

particular site could be managed. Once the ecological potential of the site had been determined through the ECS, the *Plan* was utilized to provide direction on factors such as species composition and management intensity.

Old Growth Inventory

In 1999, the NFGT officially adopted the operational old-growth definitions contained in the Region 8 Old Growth Report “Guidance for Conserving and Restoring Old Growth Communities on the National Forests in the Southern Region.” The NFGT analyzed the report and concluded that amending the *Plan* was not necessary. The operational definitions in the report will be used to inventory older stands for possible old-growth character. Stands in the “preliminary inventory” of stands 95 years and older, as well as other potential old-growth areas, will be inventoried during project level planning. The “preliminary inventory” was developed and used in preparing the *Plan* using 1991 stand data. The following table shows a comparison of stands 95 years and older in 1991 and 1999 by forest type.

Table 9

Forest Type	1991 Acres	1999* Acres
Dry and Dry Mesic Oak-Pine		
Loblolly pine	6,720	16,788
Shortleaf pine	12,100	20,525
Shortleaf pine-oak	32	245
Loblolly pine-hardwood	786	2,356
White oak-black oak-yellow pine	103	414
Post oak-black oak	62	62
Upland Longleaf		
Longleaf pine	165	185
Coastal Plain Upland Mesic Hardwood		
White oak-northern red oak-hickory	393	1,610
Beach-magnolia	123	217
River Floodplain Hardwood		
Bottomland hardwood-yellow pine	679	1,251
Swamp chestnut oak-cherrybark oak	1,502	2,744
Sweetgum-nuttal oak-willow	4,421	5,940
Laurel oak-willow oak	202	1,017
Bay		
Sweetbay-swamp tupelo-red maple	37	155
Total	27,325	53,236

*NOTE: 1999 acres do not include damage caused by the February 10, 1998 windstorm. At this time, the number of severely damaged acres in areas that were 95 years old or older has not been determined.

Evaluation:

An updated listing of stands over 94 years old was prepared using 1999 stand data. A comparison of these two listings shows that the forest is fast becoming an “older” forest. The acreage in stands over 94 years old nearly doubled from 1991 to 1999. This “aging” of the forest is consistent with the DFC identified in the *Plan* that “areas of the forests will generally develop older forest conditions.”

Bog Restoration

Hillside seepage bogs, often referred to as pitcher plant (*Sarracenia* sp.) bogs, are sensitive plant communities on the NFs in Texas. In 1982, George Folkerts, an expert on this habitat, calculated that 97 percent of all pitcher plant habitats had been destroyed. Bogs were thought to number less than 50 in eastern Texas, with some of the best examples being on the Angelina NF. Presently, 48 seepage bogs have been located on the Angelina NF. These unique wetland communities are one of the headwater communities of East Texas watersheds and often harbor many sensitive plant species.

In April 1999, widespread damage from recreational all terrain vehicle (ATV) use was discovered in an important bog community (referred to as the Phoenix Bog, in Compartment 76 of the Angelina NF, containing seven known sensitive plant species). Heavy winter and spring rains caused severe rutting and soil movement that disrupted the normal hydrologic process associated with hillside bogs. A second bog, the Millstead Bog in Compartment 91 of the Angelina, was severely damaged by constant off-road vehicle (ORV) use of an existing woods road.

Evaluation:

To protect these important biological niche communities and other unique forest resources, a Forest Supervisor’s closure order was issued on April 13, 1999, prohibiting ORV/ATV use off forest development roads in 15 compartments of the Angelina NF, generally the area on the southwest side of State Highway 63 south of Zavalla to the Forest boundary.

Another Forest Supervisor's closure order was issued on December 16, 1999, prohibiting ORV/ATV use on portions of the Davy Crockett, Angelina and Sabine NFs. Areas closed by this order included RCW areas, streamside management and lakeshore zones, research natural areas, bog sites, and other special areas. The following steps to protect the bogs north of the highway were implemented: all known bogs were located, with additional bog sites being found; each bog site and a 100 ft. buffer was designated by painted lines; sensitive species/area signs were posted; and, "No Vehicle Use" signs were posted on ORV trails approaching bog locations. Information concerning protection of bogs and their closure to ORV activity was posted on the NFGT Internet website.

Restoration efforts were undertaken at both the Phoenix and Millstead bogs to restore the hydrology and native plant communities. Restoration efforts concentrated on soil replacement and stabilization.

Post treatment monitoring of the Phoenix bog revealed that: (1) the water table in the bog rose sufficiently to maintain a wet soil condition and water was again flowing more evenly across the bog surfaces; (2) residual vegetation was largely intact; (3) soil was no longer being washed out of the bog; and (4) plant regrowth of the bog had occurred. The photo points will be used to record results of revegetation at the Phoenix Bog. Monitoring of the bogs will continue.

Management Indicator Species (MIS)

Management indicator species are those species whose welfare is presumed to indicate the welfare of other species using the same habitat. Management indicators are used to provide management direction through objectives established to achieve the desired future condition and to assess through monitoring the effects of management on an ecosystem. They provide measurable objectives to direct management in support of the entire spectrum of native and desirable non-native species.

The NFMA implementing regulations require the Forest Service to plan the management of wildlife habitats to "maintain viable populations of existing native and desired non-native species in the planning area." The Forest Service has relied upon research that correlated wildlife populations with habitat characteristics and then measured the habitat characteristics to estimate wildlife populations, particularly animal populations. To comply

with the August 14, 1997, order and injunction by the United States District Court for the Eastern District of Texas, the NFGT is providing actual population inventories and, where possible, trends for management indicators.

The *Plan EIS* selected 17 wildlife species, nine habitat communities, seven fish, two guilds and a habitat constituent as management indicators to represent the habitat needs for the fauna and flora present on the NFGT (see the *Plan EIS*, page 103). Table V-2 in the *Plan* lists the Forest and Grassland management indicators along with their status at the time of *Plan* development. The table displays the units for measuring each management indicator, which are generally populations for individual wildlife and fish species and acres for habitat communities. The table also shows the short-term and long-term objectives for each of the management indicators.

The following section describes the current status and trend information, if available, for each of the management indicators. The first part will discuss the plant management indicators, followed by the habitat community management indicators, the animal and fish management indicators, and the guild and habitat constituent management indicators. For detailed information on these species, see the tables in **Appendix I**.

Plants

Baseline data for monitoring and evaluation of management indicator plant species and vegetation groups (plant communities) were prepared during the spring of 1999. Future management activities will be compared to these baselines and the outcomes of the activity will be compared to the DFC described in the *Plan*. (See Appendix D in the *Plan* for information about the ranking of each species below.)

Botanical surveys for endangered, threatened, and sensitive species have been conducted by the NFGT botanist, NFGT wildlife biologists, and several cooperators and contractors since data collection for the *Plan* was completed. In August 1995, a contract was initiated with Sam Houston State University to conduct botanical field surveys on 5,851 acres of the Davy Crockett and Sabine NFs. Survey work on this contract was completed by April 1996, and resulted in five sensitive plant species being located on the Sabine NF.

Additional botanical surveys were conducted by Michael and Barbara MacRoberts of Bog Research, Shreveport, Louisiana, in 1994, 1995, and 1996, through several challenge cost share agreements. Over 14,000 acres were surveyed on the Angelina and Sabine NFs, and numerous sensitive species locations were documented.

In 1996 a Challenge Cost-Share (CCS) Agreement was made with the SFASU College of Forestry to map and evaluate all vegetative communities within the Upland Island and Turkey Hill Wildernesses on the Angelina NF, and to provide Geographic Information System (GIS) maps of the wildernesses.

A CCS project with The Nature Conservancy was initiated in 1997 to determine the status and extent of forest communities in which American beech is present in the overstory. The ECS landscape model and the GIS and CISC databases were utilized to select 38 sites on the northern Sabine NF for field survey. Community maps and element occurrence data forms for each site will be utilized to incorporate the results of this study into the GIS and CISC databases for the Sabine NF.

The following section provides recent survey and current status information for the plant and habitat community management indicators.

Incised Groovebur (*Agrimonia incisa*): This species occurs in the coastal plain from southern South Carolina south to north-central Florida and west to Mississippi. In southeast Texas it grows in fire-maintained dry upland longleaf pine savannas on well-drained sandy soils. The Texas Parks and Wildlife Department (TPWD) Texas Natural Heritage Program (TNHP) report, completed in May 1990, noted three locations for this species, all in the Trout Creek area of the Angelina NF. The 1996 baseline is four populations in the Longleaf Ridge area of the Angelina NF. Subsequent surveys by Bog Research (MacRoberts) identified 20 sites, including two of the TNHP sites. Therefore, 21 locations are known for this species on the NFGT, which meets the short-term objective and approaches the long-term objective in the *Plan*. These additional sites need a more detailed field survey that could be conducted at almost any time of year.

Louisiana Squarehead (*Tetragonetheca ludoviciana*): Also known as the Sawtooth Nerveray, this species has been recorded in 19 east Texas counties as well as in western Louisiana and extreme southwest Arkansas according to the TNHP report. Populations are known to occur on Davy Crockett NF, Angelina NF, and Sabine NF. The baseline in the *Plan* was five populations, which included two locations that were reported by TNHP, both occurring on the Angelina NF. Inventories and monitoring associated with the tree removal operations following the February 10, 1998, windstorm blowdown, found an additional population on the northern Angelina NF. Other populations are known to exist. The current population is estimated at 20. If all populations can be

confirmed and “monumented”, the number would exceed the short-term objective in the *Plan* and possibly the long-term objective (25) as well. Additional surveys on all forests will also be needed.



Figure 2 Navasota Ladies Tresses

Photo ©Paul Montgomery

All rights to these images are reserved. Educational use permitted.

Navasota Ladies Tresses (*Spiranthes parksii*): This federal- and state-listed endangered species is most frequently found in the Post Oak Region of East-Central Texas. The 1990 TNHP report noted populations in nine counties, including a disjunct population on the Angelina NF in Jasper County. The 1996 status of one population on the NFGT may have changed to zero. Recent attempts to relocate the population have failed. Detailed research and monitoring is ongoing and will continue cooperatively between the U.S. Fish and Wildlife Service (USFWS), Forest Service research personnel, TPWD, and NFGT. This is an annual species and it is possible that specimens may be found in the future.

Neches River Rose Mallow (*Hibiscus dasycalyx*): The known range of this species is limited to the Davy Crockett NF, but suitable habitat may occur elsewhere. The 1996 status was based on a population near Hargrove Lake. A sample specimen was reported by a SFASU graduate student and confirmed by Dr. James E. VanKley at SFASU. The student could not re-locate the site when accompanied by a Forest Service botanist. The USFWS is proposing to re-introduce this species at several locations along the Neches River in CY 2000. (Note: A cooperative effort between the USFWS, TPWD and SFASU re-introduced almost 700 individual plants to two sites on the Davy Crockett NF in April, 2000.) The Forest Service purchased the Hargrove Lake tract that contains likely habitat for, and possibly a population of, this species in FY 1999.

Nodding Nixie (*Apteris aphylla*): According to the TNHP report, Nodding Nixie occurs in seepage areas, stream margins, and other wet situations, often in association with mosses (*Sphagnum spp.*) and is generally restricted to eight counties in southeast Texas. It grows in decaying leaves in deeply shaded seepage bogs or baygalls. The TNHP report noted five locations of this species on

the NFGT, three on the Angelina NF and two on the Sabine NF. Additional sites have been found on the Sabine NF in the baygall west of Highway 147 in Compartment 51 and in Compartment 90. Also, Houston Sierra Club volunteers located Nodding Nixie on six sites in three compartments (Compartment Nos. 90, 91, and 94) on the east side of the Sam Houston NF, which have been confirmed by a Forest Service biologist. The *Plan's* baseline is seven populations. There are currently 18 sites on the southern Angelina NF, with several thousand plants. The latest population estimate for the NFGT is approximately 24-30 sites, potentially meeting or exceeding short-term objectives published in the *Plan*. Surveys need to be conducted in the fall.

Scarlet Catchfly (*Silene subciliata*): The TNHP report noted the occurrence of this species in southwest Louisiana and southeast Texas, including five Texas counties. At that time only one population was known to occur on the NFGT, located on the Stark Tract of the Sabine NF in Newton County. The *Plan's* baseline is two populations on the Sabine NF. This species grows in the ecotone between upland longleaf pine savannas and forested ravines and is maintained by low-intensity ground fires. According to the TNHP report, care should be taken to avoid placement of firelines either above or below the plants. A detailed survey of the Stark Tract needs to be conducted, as more populations could exist in that area.

Slender Gay Feather (*Liatris tenuis*): The TNHP report noted that this species occurs in seven southeast Texas counties, and occurs most frequently in fire-maintained dry upland longleaf pine savannas in the Catahoula formation. The report also documented nine locations of this species on the National Forests in Texas: eight on the Angelina NF and one on the Sabine NF. At the time the *Plan* was completed in 1996 this species had a baseline of nine populations on the Angelina and Sabine NFs. Surveys conducted by Bog Research (MacRoberts) and other biologists since the baseline was established found this species to be relatively common in open pine forests with low understories and in rights-of-way. At least 100 populations are now known to exist, far exceeding the long-term objective of 35 populations. Additional populations are expected to be found as additional surveys are conducted. Surveys are best conducted in the summer.

Southern Lady Slipper (*Cypripedium kentuckiense*): This species is widely distributed from the Ouachita Mountains in Arkansas east to the Cumberland Plateau in Kentucky and Tennessee, south to the east gulf coastal plain in Alabama and Mississippi, and west to Louisiana, southeastern Oklahoma and eastern Texas. The TNHP report noted populations in seven counties in east Texas, including three populations on the Sabine NF and one on the Angelina NF. The 1996 status of this species on the NFGT was unknown, so the *Plan* specified a short-term objective to establish the baseline population. Botanists have conducted targeted surveys of the most likely habitats for this species, and more broad-based surveys have also been conducted. These surveys have established a baseline of nine populations, eight of which are on the Sabine NF, and the other is on the northern Angelina NF.

Texas Bartonia (*Bartonia texana*): This species was not mentioned in the TNHP report. One population was reported by Bog Research (MacRoberts) on the southern Angelina NF, and a second population is located on the SFA Experimental Forest on the northern Angelina NF. This species is extremely hard to locate during surveys and hard to distinguish from a similar species. It could occur on other forests as well. Additional survey work is needed.

Yellow Fringeless Orchid (*Platanthera integra*): This orchid can be found in pine savannas, sphagnum seeps and bogs in the southeastern United States from New Jersey, south to north-central Florida, and west to Tennessee and southeast Texas. The TNHP report documented two small populations, both in bogs on the southern Angelina NF. These two sites were examined in 1998 and both were still extant. The 1996 baseline is one population. This fire-dependent species becomes dormant or is shaded out by invading woody competition in the absence of fire.

Habitat Community Management Indicators

Bottomland Hardwood: The *Plan's* baseline was 25,000 acres. Acreage can be retrieved annually using the CISC records; this broad group includes CISC forest types 61, 62, 63, 64, 65, and 75. According to a February 2000 CISC report, these types sum 32,104 acres. The increase from 25,000 to 32,104 acres since 1996 is likely the result of stand reclassification during silvicultural exams into one of the above forest types. The reclassification could be the result of better stand data or succession of mixed hardwood and pine to predominantly hardwood, due to natural mortality of pine.

Little Bluestem – Indiangrass: This management indicator, with a *Plan* baseline of approximately 15,000 acres, was intended to identify prairie vegetation. The baseline acreage is located entirely on the Caddo and LBJ NGs, although a small number of potential acres exist on the Sam Houston NF. However, all surveyed blackland sites to date on the Sam Houston NF are in need of restoration. While prescribed burning on the grasslands has improved the condition of this type, there is no known significant increase in acreage.

Sphagnum – Beakrush Series: This is an herb-dominated community type which includes various types of seepage bogs. Occurrences are usually small and isolated within a matrix of upland pine or pine-oak forest. Small trees and shrubs such as sweetbay magnolia and evergreen bayberry invade many bogs in the absence of fire. The *Plan's* status of 150 acres came primarily from the TNHP report, which listed 148 acres on 37 sites in the southern portions of the Angelina and Sabine NFs. A few small isolated sites have been located since, but acreages have not been determined.

Little Bluestem – Rayless Goldenrod Series: This community type is characterized by open grasslands or forb-dominated barrens, and is restricted to flat, shallow soil areas of the Catahoula formation in the southern portion of the east Texas Pineywoods and Post Oak Savanna. These barrens are often interspersed within deciduous woodlands of post oak and black hickory, or occur below hillside seepage bogs or within dry longleaf pine savannas. The *Plan's* baseline of 440 acres came primarily from the TNHP report, which documented three sites of 437 acres on the southern Angelina NF. A few small isolated areas have been found since, which need to be mapped and acreage determined.

Sweetbay Magnolia Series: This community type is a mainly deciduous to evergreen low forest occurring over seeps, in wet creek bottoms, and in other permanently moist soils in east Texas. It is often associated with the sphagnum-beakrush series, and may be successional to bogs in the absence of fire. The TNHP report noted 15 locations on 325 acres of the Angelina and Sabine NFs, and another location of 29 acres on the Sam Houston NF. The *Plan's* status is 250 acres, which was determined from 1991 CISC records. According to February 2000 stand records, 502 acres exist on the forest. The increase in acreage is most likely the result

of better stand type mapping rather than an actual increase in acreage. It is unknown how many of these acres coincide with the 354 acres mapped by TNHP. The TNHP areas need to be checked against CISC records to be sure they are correctly identified in the database.

Beech-White Oak Series: This community type occupies mesic ravines and ridges within creek bottoms. The *Plan's* baseline of 2,532 acres resulted from consolidation of the American Beech-White Oak Series and the American Beech-Southern Magnolia series acres reported by TNHP. Additional area of this type is known, and may be typed in CISC as 53 and others. A CCS project was initiated in 1997 with The Nature Conservancy to determine the status and extent of forest communities in which American beech is present in the overstory. The ecological classification system landscape model, the GIS database, and CISC were utilized to select 38 sites on the northern Sabine NF for field survey. Of these sites, 21 were ranked as high-quality examples of natural lower slope mesic forests. Community maps and element occurrence data forms for each site will be utilized to incorporate this information into the GIS and CISC databases for the Sabine NF.

Longleaf – Bluestem Series: This community type is characterized by mainly evergreen woodlands on loamy or sandy acidic soils in southeast Texas. Longleaf pine is the dominant evergreen species, but loblolly and shortleaf pines may also be present. Common deciduous associates are blackjack, bluejack, and southern red oaks, and sweetgum. A shrub layer containing flowering dogwood, beauty-berry, redbay, wax-myrtle and vaccinium is common, along with a well-developed herbaceous layer of little bluestem, panicum, switchgrass, sedges and other species. As of February 2000, a total of 25,114 acres were shown in the CISC database. An additional 956 acres are in longleaf-slash, which has the potential to be converted to longleaf-bluestem. The *Plan's* baseline is 21,000 acres with a short-term objective of 40,000 acres. Most of the planned increase in acreage of this series is expected from the restoration of areas currently occupied by slash and loblolly pine. The 1988 court orders and the 1997 court injunction of timber harvesting severely restrict the Forest Service from proceeding with this restoration. A total of 233 acres of former slash pine was planted to longleaf pine in 1997-1999. Prescribed burning, during both the dormant and growing seasons, has maintained or improved the quality of many existing stands.

Shortleaf – Oak Forest: This community type occurs primarily in northeast Texas and is characterized by mainly deciduous upland woodlands on shallow to deep, usually sandy soils. Shortleaf pine is the dominant evergreen species, but loblolly pine may also be present. The common oak species are southern red, white, black, post, and blackjack, and hickories are often present as well. The *Plan's* baseline is 150,000 acres with a short-term objective to increase acreage to 160,000. As of February 2000, a total of 157,173 acres are inventoried in this type.

Loblolly – Oak Forest: This community type occurs on loamy or sandy acidic soils in east Texas, and is characterized by mainly deciduous upland forest. Loblolly pine is the dominant evergreen species, but shortleaf pine may also be present. The common oak species are southern red, white, post, and water, and hickories are often present as well. The *Plan's* baseline is 300,000 acres. Current February 2000 stand inventory records show 350,636 acres in this type. The *Plan's* short-term objective is a reduction to 270,000 acres in this type as it is replaced by other types on suitable sites (longleaf, shortleaf, bottomland hardwoods, etc.) either by natural succession or management treatment.

Evaluation:

The best information now available indicates that the number of known populations of several plant management indicator species has increased. This is attributed to the extensive botanical surveys conducted during the tree removal efforts resulting from the February 10, 1998, windstorm blowdown, the survey work of Sam Houston State University, SFASU, and Bog Research, and to surveys conducted by the NFGT botanist and wildlife biologists. The plant management indicator species with higher known populations on the NFGT than in 1996 are the Louisiana Squarehead, Nodding Nixie, Yellow Fringeless Orchid, Incised Groovebur, and Slender Gay Feather. For the other plant management indicator species with stable or declining populations it is hoped that additional surveys will yield previously unknown populations and that management efforts will provide for expansion of existing populations.

Due to the large scale of the habitat community management indicators and the relatively short time frame since the *Plan* was approved, evaluation of trends or current status at this time would likely show insignificant, if any, changes to the 1996 baseline. For those community types that show a significant short-term change in acreage (Bottomland Hardwood and Sweetbay Magnolia), we attribute most of the difference to

improved classification or different classification methods rather than on-the-ground changes. A more appropriate time to review community trends would be during the Five-Year Review of the *Plan* or during the next *Plan* revision.

Wildlife and Fish

Populations of animals are inventoried in numerous ways, including sightings reported, actual harvested numbers (for game species), percent frequency of observations (for bird species), and percent browse consumed (for deer). Fish populations are normally estimated using electro-shocking. The following discussion summarizes management indicator wildlife and fish population information for 1996 (when the *Plan* was completed) and subsequent population survey results and current status.

Red-cockaded Woodpecker (RCW) (*Picoides borealis*): The RCW was listed as a federally-endangered species under the Endangered Species Act in 1970. The Forest Service's role in recovery of the species is critical, as over 50 percent of known RCW occur on National Forest System lands in the south. The USFWS completed an RCW Recovery Plan in 1985 which identified 15 populations needed to recover the species, and 12 of these populations occur totally or in part on the southern National Forests.

In 1996 there were 241 active clusters of RCWs. In 1999 there were 267 active clusters, an increase of 10.8 percent. Substantial efforts by NFGT wildlife biologists and technicians to install artificial cavities in cluster sites and replacement/recruitment stands, installation of restrictor plates to prevent enlargement of cavities by other cavity-nesting species, RCW translocation (trapping and moving first year breeding birds to vacant habitats with adequate tree cavities for nesting and roosting) and cluster augmentation (moving yearling female birds to a colony where only a single male resides), and mid-story control have led to this progress. This success was achieved in spite of the severe 1998 windstorm that damaged 21 active RCW clusters on three of the Texas NFs, completely destroying two clusters when all cavity trees were blown down. Approximately 10,700 acres of forest within the RCW Habitat Management Area (HMA) suffered extensive damage where greater than 60 percent of the existing trees were lost. An additional 45,000 to 65,000 acres of the RCW HMA received moderate damage where 30 to 60 percent of the existing trees were lost.



Wildlife biologists installed 62 cavity inserts in active clusters and 51 in recruitment stands within the North Sabine and North Angelina RCW HMAs after the windstorm. Eighteen active clusters were in the North Sabine and North Angelina RCW HMAs prior to the storm, and there were still eighteen active clusters after the storm. Although many of the trees with natural cavities were blown down, the action of installing cavity inserts prevented the loss of active clusters.

The following section describes the RCW translocation and cluster augmentation efforts on the NFGT from 1997 through 1999.

Figure 3 Red-cockaded Woodpecker
Photo courtesy John and Karen Hollingsworth,
USFWS. All rights to these images are reserved.
Educational use permitted.

Augmentation/Translocation

The Sam Houston NF west side RCW population is a donor source for moving RCW to other populations. Translocations are important to increase populations in suitable habitat where numbers of birds are low.

The Sam Houston NF related RCW translocations to other populations are as follows:

1997 – Relocated 17 birds

- 10 to the Ouachita NF (Arkansas)
- 5 to the McCurtain County Wilderness (Oklahoma)
- 2 to the Big Woods population (east side of Sam Houston NF)

1998 – Relocated 27 birds

- 8 to the Ouachita NF
- 10 to the Angelina NF south population
- 6 to the Davy Crockett NF
- 3 to the Big Woods population

1999 – Relocated 28 birds

- 12 to the Sabine NF
- 8 to the Ouachita NF
- 1 to the McCurtain County Wilderness Area
- 7 to Temple Inland areas in Texas

In addition, the south Angelina NF population received two birds from the Jones State Forest (Texas) population in 1998.

Red-cockaded woodpeckers (RCW) are also moved internally within the same population to augment single bird groups to expand populations to new clusters (recruitment stands). Table 10 displays the total number of RCW moved on each Ranger District, including both birds received from donor populations and those moved internally.

Table 10
RCW Translocation and Augmentation (number of birds received)
Summary by Translocation Season (September-January)

District	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Total to Date
Angelina	4	0	1	3	5	1	0	13	24	3	54
Sabine	0	0	0	4	17	2	2	1	4	21	51
Sam Houston	2	0	0	3	0	0	4	8	13	15	45
Davy Crockett	1	0	0	0	4	4	1	11	15	6	42

For additional information about RCW clusters, population trends, translocation results and priorities, etc. see the tables in **Appendix J**.

Bobwhite Quail (*Colinus virginianus*): In 1996 the population density of bobwhite quail was one per 25 acres. The short-term objective for bobwhite quail in the *Plan* is one per 20 acres. In surveys conducted in 1998, 6.7 percent of the areas observed had bobwhite quail, with 27 individuals observed. Additional surveys conducted in 1999 found a frequency of observation of 6.4 percent, with 30 individuals observed. The TPWD collects information from hunters on the number of birds harvested, but as this reporting is voluntary, the numbers are of little use for estimating population trends.

Eastern Wild Turkey (*Meleagris gallopavo*): This species was selected in the *Plan* as a management indicator for four forest or grassland seral stage habitats: early, mid and late succession and old growth. Acres of habitat in 1996 were estimated to total 395,000 acres, and the *Plan's* short-term objective is to have 372,000 acres. The *Plan* projected that habitat acreage reductions would occur in the early and late succession stages, and increases would occur in the mid succession and old growth stages, with overall reductions exceeding increases by 23,000 acres. There were 76 turkey sightings in 1997 and 82 in 1998. Turkey populations in the Angelina, Sabine and Sam Houston NFs have risen to sufficient levels such that TPWD now allows hunting of this species.

Whitetail Deer (*Odocoileus virginianus*): This species was also selected in the *Plan* as a management indicator for four forest or grassland seral stage habitats: early, mid and late succession and old growth. Acres of habitat in 1996 were estimated to total 315,000 acres, and the *Plan's* short-term objective is to have 300,000 acres. The *Plan* projected that habitat acreage reductions would occur in the early and late succession stages, and increases would occur in the mid succession and old growth stages, with overall reductions exceeding increases by 15,000 acres.

Percent of available browse consumed is a measure of deer populations; during the three-year period covered by this *Plan*, browse consumption was estimated at 15 percent, 18 percent, and 35 percent in 1997, 1998, and 1999, respectively. Texas Parks and Wildlife Department (TPWD) collects annual deer harvest data,

and their records for the period 1997-1999 show 1,227, 1,200, and 1,566 deer harvested each year, respectively, on the NFGT. They also conduct an annual deer spotlight census: the number of deer seen per transect is tallied, from which the number of deer per thousand acres is calculated. The following table shows the results of these surveys on the NFGT for the three-year monitoring period.

Table 11
Deer Seen Per Transect – Deer per 1,000 Acres

Forest	County	1997	1998	1999
Angelina	Angelina	9 – 17.0	21 – 61.1	2 – 5.7
Davy Crockett	Trinity	9 – 37.2	14 – 61.1	11 – 51.0
Davy Crockett	Houston	10 – 27.6	18 – 50.1	9 – 27.0
Davy Crockett	Houston	47 – 91.6	30 – 56.1	52 – 109.0
Sabine	Shelby	16 – 57.2	4 – 13.4	9 – 29.9
Sam Houston		100.0	40.0	
NFGT	All (minus S.Houston)	91 – 46.1	87 – 48.4	83 – 44.5

Yellow Breasted Chat (*Icteria virens*): This species was selected in the *Plan* as a management indicator for three forest or grassland seral stage habitats: early, mid and late succession. Acres of habitat in 1996 were estimated to total 174,000 acres, and the *Plan's* short-term objective is to have 140,000 acres. The *Plan* projected that habitat acreage reductions would occur in the early and late succession stages, and increases would occur in the mid succession stages, with overall reductions exceeding increases by 34,000 acres. Surveys conducted in 1998 found a frequency of observation (percentage of samples in which the species was encountered) of 32.8 percent, with 226 individuals observed. Additional survey transects conducted in 1999 found a frequency of observation of 30.6 percent, with 244 individuals observed.

Pileated Woodpecker (*Dryocopus pileatus*): This species was also selected in the *Plan* as a management indicator for three forest or grassland seral stage habitats: mid and late succession and old

growth. Acres of habitat in 1996 were estimated to total 280,000 acres, and the *Plan's* short-term objective is to have 372,000 acres. The *Plan* projected that habitat acreage reductions would occur in the late succession stage, and increases would occur in the mid succession and old growth stages, with overall increases exceeding reductions by 92,000 acres. Surveys conducted in 1998 found a frequency of observation (percentage of samples in which the species was encountered) of 29.2 percent, with 116 individuals observed. Additional survey transects conducted in 1999 found a frequency of observation of 28.6 percent, with 127 individuals observed.

Gray and Fox Squirrels (*Sciurus carolinensis* and *Sciurus niger*):

These species were also selected in the *Plan* as management indicators for three forest or grassland seral stage habitats: mid and late succession and old growth. Acres of habitat in 1996 were estimated to total 200,000 acres, and the *Plan's* short-term objective is to have 264,000 acres. The *Plan* projected that habitat acreage reductions would occur in the mid and late succession stages, and increases would occur in the mid succession and old growth stages, with overall increases exceeding reductions by 64,000 acres. Surveys conducted in 1999 found 0.52 squirrels per acre of bottomland forest and 0.18 squirrels per acre of upland forest. Annual squirrel harvest data, as collected by TPWD for the 1997-1999 period, show 10,929, 9,374, and 9,264 squirrel harvested each year, respectively, on the NFGT.

Largemouth Bass (*Micropterus salmoides*): This species was one of three chosen in the *Plan* as a management indicator for aquatic (ponds and reservoirs) habitats. Prior to *Plan* revision in 1996 Ratcliff, Fannin, Red Hill, Crockett, Coffeemill, Black Creek, Cottonwood and Clear lakes had been surveyed for largemouth bass. Surveys are conducted using electrical shock equipment and populations are measured in catch per unit electro-fishing effort (fish per hour). Surveys of Crockett Lake in 1997 found 2,141 bass, but data for bass from repeat surveys in 1999 was not available. In 1998 surveys were conducted in Coffeemill, Black Creek, and Cottonwood lakes, with the following catch rates: Coffeemill had 93 bass, Black Creek had 29 bass, and Cottonwood had 12 bass. Populations are in decline in Ratcliff, Red Hill, Crockett and Clear lakes; Coffeemill has a stable population, and Black Creek has an increasing population.

Sunfish (*Lepomis sp.*): This management indicator includes three species of the *Lepomis* genus: bluegill (*L. macrochirus*), redbreast sunfish (*L. microlophus*), and warmouth sunfish (*L. gulosus*). This

group of species is one of three chosen in the *Plan* as a management indicator for aquatic (ponds and reservoirs) habitats. Prior to *Plan* revision in 1996 Ratcliff, Fannin, Red Hill, Crockett, Coffeemill, Black Creek, Cottonwood and Clear lakes had been surveyed for sunfish. Surveys are conducted using electrical shock equipment and populations are measured in catch per unit electro-fishing effort in fish per hour. Surveys of Crockett Lake in 1997 found 332 sunfish, but repeat surveys in 1999 found only 196 sunfish. In 1998 surveys were conducted in Coffeemill, Black Creek, and Cottonwood lakes, with the following results: Coffeemill had 446 sunfish, Black Creek had 32 sunfish, and Cottonwood had 24 sunfish. Populations are in decline in Ratcliff, Red Hill, Crockett and Clear lakes; Coffeemill has a stable population, and Black Creek has an increasing population.

Channel Catfish (*Ictalurus punctatus*): This species was one of three chosen in the *Plan* as a management indicator for aquatic (ponds and reservoirs) habitats. Prior to *Plan* revision in 1996 only Crockett and Coffeemill lakes had been surveyed for catfish. Surveys are conducted using nets at night, and populations are measured in catch per net night. In 1997 surveys were conducted in these lakes again, with Coffeemill having 11 catfish and Crockett Lake having nine catfish. Catfish are stocked in these lakes, as reproduction has been negligible. Population trends are not available for catfish at this time.

Paddlefish (*Polyodon spathula*): This species was one of four chosen in the *Plan* as a management indicator for aquatic (rivers and streams) habitats. Historical records indicate that there were breeding populations of paddlefish in the Neches River on the NFGT, but surveys in 1997, 1998 and 1999 found no breeding adults. Fingerlings have been stocked in the Neches River every year since 1994. Spawning area surveys have determined that spawning habitat is deficient. The cause of the lack of spawning is not exactly known, but it is not thought to be the result of any USFS management practices.

Sabine Shiner (*Hybopsis sabinae*): This species was one of four chosen in the *Plan* as a management indicator for aquatic (rivers and streams) habitats. A survey conducted in 1969 found four breeding populations on the Sam Houston N.F. Surveys in 1997 could find no populations, and in 1998 five individuals were located. Surveys on the Sabine NF have found this species. Surveys in 1995 on the Davy Crockett NF found a few individuals in one stream. More recent surveys of this stream have not found any individuals. A survey of the developed trail system on the

Sam Houston NF was completed in 1998 to identify and assess impacts the trail may have on water quality and aquatic resources. As a result of this trail survey, erosion prevention measures on the trail have been initiated, such as construction of trail bridges over several streams. Additional surveys to identify possible sources of siltation and to initiate mitigation measures are needed.

Dusky Darter (*Percina sciera*): This species was one of four chosen in the *Plan* as a management indicator for aquatic (rivers and streams) habitats. Surveys conducted from 1949 through 1996 found 43 breeding populations present on the NFGT. Surveys in 1997 found four additional populations, and determined that brine and erosion problems were impacting the habitat. Efforts are continuing to locate additional populations of this species.

Scaly Sand Darter (*Ammocrypta vivax*): This species was one of four chosen in the *Plan* as a management indicator for aquatic (rivers and streams) habitats. Surveys conducted from 1949 through 1994 found 12 populations present on the NFGT. Surveys in 1998 could not find three of the populations, and determined that siltation was negatively impacting the habitat. Additional surveys are needed to identify possible sources of erosion and to initiate mitigation measures.

Evaluation:

Management efforts to increase populations of the endangered RCW have been successful, but substantial future efforts will be needed to achieve the long-term objective for this species. Continuing losses of cavity trees to lightning, SPB, and Ips beetles, as well as competition for cavities with other species, particularly flying squirrels, will require artificial cavity and restrictor plate installation and translocation of birds. Management of cluster sites and foraging areas to maintain appropriate pine stocking and control of mid-story vegetation is also necessary.

The NFGT will continue to cooperate with the TPWD to monitor game species populations, including the management indicators bobwhite quail, whitetail deer, eastern wild turkey and gray and fox squirrels, to ensure that viable populations are maintained in Texas.

The bird management indicator species yellow breasted chat and pileated woodpecker will continue to be monitored as the NFGT implements the Southern National Forests' Migratory and Resident Landbird Conservation Strategy. Recent surveys indicated significant populations of these species as evidenced by the frequency of their observation during field reconnaissance. The short-term *Plan* objective of reducing the

amount of habitat for the yellow breasted chat is being achieved through reduction in the number of acres regenerated each year. The short-term *Plan* objective of increasing the amount of habitat for the pileated woodpecker is being achieved through lengthening rotation ages and retention of snags.

Populations of largemouth bass and sunfish on NFGT lakes are generally declining due to weeds, algae, and low fertility. The outlook for these species is poor in the short term due to the three to six year time span needed to improve habitat and build the populations, but the species are expected to show long-term improvement. Populations of channel catfish must be maintained through stocking, as reproduction has been negligible. Paddlefish spawning habitat restoration is needed in the Neches River in order to achieve population increases. Populations of the Sabine Shiner, Dusky Darter, and Scaly Sand Darter are declining due to deteriorating habitat caused by erosion, siltation and brine, and restoration efforts are needed to rebuild these populations.

Guilds and Habitat Constituents

The *Plan* identified two guilds and one habitat constituent as management indicators. The guilds are the Stonefly Guild and the Neotropical Migratory Bird Guild, and the habitat constituent is snags. The following discussion summarizes the management indicator information for 1996 (when the *Plan* was completed), subsequent survey results and current status of these guilds, and the snag habitat constituent.

Stonefly Guild: The Stonefly Guild is a composite of macroinvertebrate species that are used to gauge the amount of pollution in streams based on the tolerance characteristics of cumulative species. The Environmental Protection Agency (EPA) has developed a rating system based on the number of macroinvertebrate species present in a stream system; a score of less than 11 is considered poor, while a score of greater than 22 is considered excellent. The status of the Stonefly Guild in 1996 was fair, with an EPA rating of good. The *Plan's* short-term objective is to establish good to excellent EPA scores for this guild. Surveys conducted in 1997, 1998, and 1999 revealed scores and ratings of 18 (good), 13 (fair), and 14 (fair), respectively, for the NFGT.

Neotropical Migratory Bird Guild: In 1996 the occurrence of Neotropical Migratory Bird Species on the NFGT was unknown. The *Plan's* short-term objective is to establish baseline population estimates for these species, which include Yellow-throated Vireo, Wood Thrush, Acadian Flycatcher and others. Initial surveys in 1998 found 1,579 per area, and additional surveys in 1999 found 1,883 per area.

Snags: Snags are a habitat component of virtually all forests, and were identified as a management indicator because of the number of species which depend on them and because the lack of snags can be a limiting factor in increasing populations of some species. This guild was selected in the *Plan* as a management indicator for four forest or grassland seral stage habitats: early, mid and late succession and old growth. The number of snags per acre in 1996 were estimated to average two in early succession habitat, two to four per acre in the mid-succession habitat, two to six in the late succession habitat, and six to eight per acre in old growth habitat. The *Plan* short-term objective is to have two to three snags per acre in early succession habitat, three to six per acre in mid-succession habitat, six to eight per acre in late succession habitat, and eight to twelve per acre in old-growth habitat. No surveys for snags have been conducted since the *Plan* was completed in 1996. However, a research project entitled "Long-term Study on the Population Dynamics of Snags in Pine-Hardwood Forests" was initiated in 1994 in cooperation with the Southern Research Station's Nacogdoches Research Work Unit. This study is located on the Stephen F. Austin Experimental Forest on the Angelina NF and is examining snag population dynamics for both pine and hardwood species. The results of this study will help the NFGT determine if the snag objectives in the *Plan* are appropriate.

Evaluation:

Management efforts to protect and improve water quality will be needed to achieve the long-term objective for the stonefly guild. Efforts will continue to locate sources of sediment and other pollutants, identify and implement appropriate measures to reduce or eliminate, if possible, the sources of contamination. Survey efforts have begun and will continue in order to establish the baseline populations for the Neotropical Migratory

Bird Guild. The NFGT will be participating in the Southern National Forests' Migratory and Resident Landbird Conservation Strategy (see the Landbird Monitoring Project below) to ensure the conservation of this guild. Retention of the snag habitat constituent during timber harvesting will lead to increasing numbers of snags throughout the NFGT, which in turn will provide more habitat for primary and secondary cavity nesting species. However, maintaining fire-dependent ecosystems using prescribed fire tends to reduce the number of snags as they are consumed by fire. Snags occurring within bottomlands and Streamside Management Zones (SMZs) are rarely exposed to fire and therefore are very important in maintaining and increasing this habitat constituent.

Threatened and Endangered Species

The NFGT has populations of two federally-listed endangered species, the RCW and the Navasota Ladies Tresses, and two federally-listed threatened species, the Bald Eagle and the American alligator. The RCW and the Navasota Ladies Tresses were designated Management Indicator Species in the *Plan*, and have already been discussed in the Management Indicator Species section. The remainder of this section will discuss the status and trends of the Bald Eagle and the American alligator, and briefly discuss other species of concern.

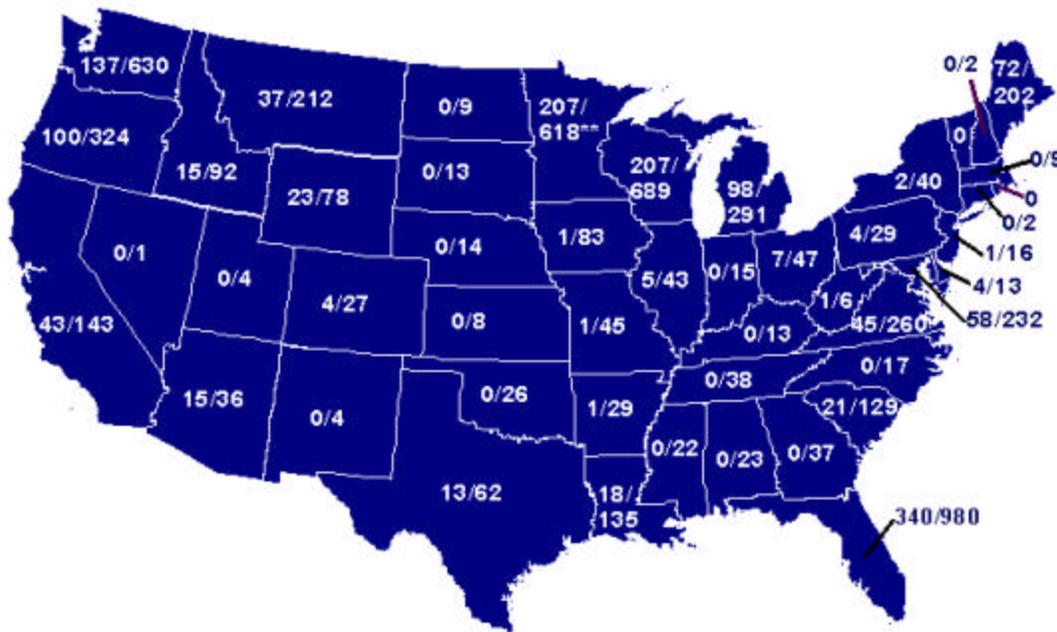
Bald Eagle: The Bald Eagle (*Haliaeetus leucocephalus*) was first listed as a federally endangered species in 1967. It is found throughout North America from northern Alaska and Canada, south to southern California and Florida. Breeding occurs throughout the same area. Nesting in the southeast United States occurs in three primary areas: peninsular Florida, coastal South Carolina, and coastal Louisiana. By 1963 only 417 nesting pairs were found in the lower 48 states.

Recovery efforts led to a steady increase in the number of breeding pairs so that by 1998 there were 5,748 pairs in the lower 48 states. A population recovery goal of 40 occupied territories was established by the USFWS for Texas. Texas had just 13 breeding pairs in 1982, but by 1998 there were 62 breeding pairs. In July 1995, the USFWS reclassified the bald eagle from endangered to threatened throughout the lower 48 states (Federal Register, July 12, 1995). Then, in July, 1999 the USFWS proposed to remove the bald eagle in the lower 48 states from the list of endangered and threatened wildlife due to continued increases in population levels (Federal Register, July 6, 1999). A final decision is expected in July 2000.

Bald eagle nest surveys have been conducted on the NFGT in cooperation with the TPWD since 1986, when only one nest was reported. Annual surveys indicate a slow but steady increase in the number of occupied territories, the number of nests observed, and the number of young fledged so that by 1999 there were nine occupied territories, 18 nests observed, and ten young fledged. The Angelina and Sabine NFs each had four occupied territories and fledged four eaglets, and the Angelina NF had the greatest number of nests observed (nine) in 1999. The Sam Houston NF had just one occupied territory and three nests in 1999. Nests sites are located in proximity to large bodies of water, and the Angelina, Sabine, and Sam Houston populations are found near Toledo Bend Reservoir, Sam Rayburn Reservoir, and Lake Conroe, respectively. The Davy Crockett NF has no known eagle nests, most likely due to the lack of any large bodies of water. For additional information see **Appendix L** in the back of this report.

Figure 4

Bald Eagle Pair⁴
Lower 48 States 1982 vs 1998



Totals
1982 1,480 pairs
1998 5,748 pairs

**1998 census was not conducted, 1995 data is used.

⁴ Bald Eagle: Population, U.S.D.I. Fish and Wildlife Service Region 3 website.

American Alligator: The American alligator (*Alligator mississippiensis*) was listed as an endangered species in 1967. It is an outstanding example of successful conservation of a crocodylian accomplished by the application of controlled use at a sustainable level. Populations have responded well to management and have recovered rapidly. Sustainable management programs have been operated in Florida, Georgia, Louisiana, South Carolina and Texas for more than a decade. Management is based on a combination of ranching, farming, and direct cropping of wild adults. The current stock in ranches and farms is over 350,000, and throughout the United States there are over 150 ranches and farms involved in commercial alligator production. The only remaining threat to alligators is the loss of habitat to expanding agriculture and residential development, water diversion and pollution. Sustainable use of alligators in the United States generates more than 60 million dollars annually, providing a substantial incentive to retain habitat and tolerate alligators. Fees from the regulatory system provide funding for management, enforcement, regulation and research programs on alligators.⁵



Figure 5
American alligator, *Alligator mississippiensis*.
F. Wayne King photo. [Copyright © 1996](#)⁶

The current status of the American alligator is threatened due to similarity to a threatened taxa; this change in listing occurred in June 1987.⁷ NFGT populations have been increasing since 1987, with occurrences on all four

⁵ Ross, J.P. (ed.). 1998. Crocodiles. Status Survey and Conservation Action Plan [Online]. 2nd Edition. IUCN/SSC Crocodile Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK. Viii + 167 pp. Available at <http://www.flmnh.ufl.edu/natsci/herpetology/act-plan/plan1998a.htm> [6 July 1998].

⁶ <http://www.flmnh.ufl.edu/natsci/herpetology/act-plan/a-plan78.htm>

⁷ http://www.ecos.fws.gov/species_profile/species_profile.html?module=undefined&spcode=C000

national forests. The *Plan* provides habitat enhancement for alligators, primarily through protection of bottomlands and riparian areas in Management Area 4. Texas Parks and Wildlife Department (TPWD) monitors alligator populations in Texas and considers them to be stable. The TPWD allows annual harvests of the species in certain counties containing National Forest System lands.⁸

Other Species of Concern

The *Plan's* Biological Assessment addressed twelve federally-listed threatened or endangered species, including four with confirmed occurrences on the NFGT and eight that may occur on the NFGT. The *Plan* directs the development of additional protection measures and management actions for all twelve of these species and for any other threatened or endangered species that may be found or become listed. Other species with similar habitat requirements to these twelve federally-listed species will also be protected through management goals, objectives, standards and guidelines, as well as monitoring actions. The management applications prescribed in the *Plan* conform to specific direction described in existing recovery plans, handbook guidelines, and USFWS direction.

The four federally-listed threatened or endangered species known to occur on the NFGT have been discussed previously in this report. The endangered RCW and Navasota Ladies Tresses are both Management Indicator Species (MIS), and are addressed in the MIS section. The threatened bald eagle and American alligator are addressed in the previous section entitled, "Threatened and Endangered Species."

The eight federally-listed threatened or endangered species that may occur on the NFGT are the American burying beetle, American chaffseed, black-capped vireo, Houston toad, Louisiana black bear, peregrine falcon, Texas trailing phlox, and white bladderpod. The following section provides a brief discussion of the habitat, range, and status of these species.

American burying beetle: The American burying beetle (*Nicrophorus americanus*) was known historically in at least 150 counties in 35 states in the eastern and central United States as well as portions of Canada. Populations have declined to the point that the species is currently known in only four states: Arkansas,

⁸ U.S.D.A. Forest Service. 1996. Final Environmental Impact Statement for the Revised Land and Resource Management Plan for the National Forests and Grasslands in Texas. Biological Assessment, p.10.

Oklahoma, Nebraska, and Rhode Island. The species was placed on the federal endangered list in 1989.⁹ While specific habitat requirements are not known, the habitats where they are known to occur are mostly undisturbed areas characterized by grassland prairie, forest edge and scrubland. The Caddo and LBJ NGs may have suitable habitat for this species, but none have been found there to date.

American chaffseed: The American chaffseed (*Schwalbea americana*) is a perennial root-parasitic herb that was known historically from approximately 78 sites in fifteen states from Connecticut south to Florida and as far west as Mississippi, Tennessee and Kentucky. Current records show 51 populations in five states, with 43 of those occurring in South Carolina.¹⁰ In Texas the status of this species is a mystery, since while it has been reported to occur in east Texas, there are no known voucher specimens in any of the major Texas herbaria and there are no known extant populations. The species is parasitic on the roots of a large number of tree species including oaks, pines, and sweetgum, it is not tolerant of deep shade and is usually found along the margins of forests or woodlands where there is sufficient light.¹¹ Several NFGT locations appear to have suitable habitat for this species, but no specimens have been found to date.

Black-capped vireo: The Black-capped vireo (*Vireo atricapillus*) is a state- and federally-listed endangered songbird that breeds from central Oklahoma, through the Edward's Plateau and Big Bend region of Texas, and into central Mexico. It occurs in rangelands with scattered clumps of shrubs separated by open grassland. The species is believed to be endangered because the low growing woody cover it needs for nesting has been cleared or overgrazed by deer and cattle. In addition, range fires, which used to keep the grasslands open and the shrubs growing low to the ground, are not as frequent now as they were in pre-settlement times. Brown-headed cowbirds lay their eggs in vireo nests, causing the vireos to abandon their nest.¹² A pre-1900 record in Montague County exists for this species, but there are no recent records in Fannin, Montague, or Wise Counties.

Houston toad: The Houston toad (*Bufo houstonensis*) is a federal- and Texas-listed endangered species first listed in 1970. It was first recognized as a species in 1953, and its historical range is

⁹ <http://ngp.ngpc.state.ne.us/wildlife/beetle.html>

¹⁰ <http://endangered.fws.gov/i/q/saq9f.html>

¹¹ <http://www.tpwd.state.tx.us/nature/endang/plants/chafseed.htm>

¹² <http://www.tpwd.state.tx.us/nature/endang/birds/bcv.htm>

limited to twelve counties in southeast-central Texas. The most recent population estimates indicate approximately 2,000 adults in Bastrop County (the largest known population is in Bastrop State Park), plus unknown numbers in seven other Texas counties.¹³ Habitat consists of rangeland and native grassland pasture in the Post Oak Savannah region and loblolly pine woodlands. Temporary wet-weather ponds and other small natural ponds located within one-half mile of deep sandy soils supporting post oak or loblolly pine woodlands are prime breeding habitat.¹⁴ The Davy Crockett and Sam Houston NFs contain habitat for this species, but no individuals have been reported to date.

Louisiana black bear: The Louisiana black bear (*Ursus americanus luteolus*) is a federally- and Texas-listed threatened species that was first listed in 1992. Its historic range includes all of Louisiana, southern Mississippi, and east Texas. It is currently restricted mostly to the Atchafalaya and Tensas River basins in Louisiana, although the bears are wide-ranging and are occasionally seen in Mississippi. It is unknown whether breeding numbers occur outside of Louisiana. Their habitat consists primarily of bottomland hardwood forests in river basins and floodplains.¹⁵ Habitat reduction, modification, and fragmentation along with human-induced mortality are the primary causes of the species decline as well as the primary factors limiting its recovery.¹⁶ The National Forests in Texas are on the western edge of the range of the Louisiana black bear. Black bear sightings have increased in recent years, but none have been confirmed to be Louisiana black bear.

Peregrine falcon: The American peregrine falcon (*Falco peregrinus anatum*) was federally- and state-listed as endangered in 1970. The historic range of the falcon extended from Alaska and Canada south to Baja California, and in the east from the Canadian Maritime Provinces south to northern Georgia. Based on a 1975 survey the eastern population appeared to be extirpated.¹⁷ A captive breeding program and reintroductions have led to the recovery of the species, and it was delisted in August 1999.¹⁸ In Texas this species is a resident of the Trans-Pecos region, including the Chisos, Guadalupe, and Davis mountain ranges, and

¹³ <http://www.tpwd.state.tx.us/nature/endang/animals/htoad.htm>

¹⁴ <http://www.tpwd.state.tx.us/nature/endang/animals/toadman.htm>

¹⁵ <http://endangered.fws.gov/i/a/saa9e.html>

¹⁶ <http://bluegoose.arw.r9.fws.gov/NWRSFiles/WildlifeMgmt/SpeciesAccounts/Mammals/LABlackBear/LABlackBearAck.html>

¹⁷ <http://endangered.fws.gov/i/b/sab22.html>

¹⁸ <http://endangered.fws.gov/frpubs/s990825.htm>

it is also migratory along the Texas coast.¹⁹ It nests on high cliffs, usually near water where prey species are most abundant, and it utilizes meadows, mudflats, marshes, beaches and lakes. The U.S.D.I. Fish and Wildlife Service directs monitoring for this species to ensure that the recovered populations are maintained.

Texas trailing phlox: Texas trailing phlox (*Phlox nivalis texensis*) is a federally- and Texas-listed endangered species that was first listed in 1991. Its range is limited to Hardin, Polk, and Tyler counties in east Texas, with fewer than 20 populations known to exist. This species occurs in fire-maintained openings in upland longleaf pine savannas or post oak-bluejack oak woodlands on deep sandy soils. While considered very rare and imperiled just a decade ago, Texas trailing phlox populations have increased at some study sites in recent years. These studies appear to indicate that prescribed burning is essential to the continued survival of the species.²⁰ Texas trailing phlox has not been found on the NFGT, but suitable habitat appears to occur on the southern Angelina and Sabine NFs.

White bladderpod: The white bladderpod (*Lesquerella pallida*) is a federally- and Texas-listed endangered species first listed in 1987. Initially discovered in 1830, it was not found again until 1981. The range of this species is extremely limited with only seven known populations, all of which occur in San Augustine County, Texas. Its habitat appears to be restricted to seasonally wet, basic soils in naturally treeless glades within pine-oak forests on top of the Weches geologic formation.²¹ However, current populations also occur in pastures and along road rights-of-way.²² Suitable habitat for this species may occur on the central Sabine NF where outcrops of the Weches formation occur, but no individuals or populations have been discovered to date.

The NFGT conducts surveys and cooperates in monitoring for other species of concern in addition to the management indicator species. The following section describes inventory and monitoring being conducted for threatened and sensitive fauna.

Landbird Monitoring Project: Analysis of data collected from the Breeding Bird Survey (BBS) between 1966 and 1987 showed evidence of long-term population declines in many species of

¹⁹ <http://www.tpwd.state.tx.us/nature/endang/birds/peregrin.htm>

²⁰ <http://www.tpwd.state.tx.us/nature/endang/plants/trlphlox.htm>

²¹ <http://www.tpwd.state.tx.us/nature/endang/plants/wbladder.htm>

²² U.S. Fish and Wildlife Service. 1992. White Bladderpod (*Lesquerella pallida*) Recovery Plan. USDI Fish and Wildlife Service, Albuquerque, New Mexico. 22 pp.

Neotropical migratory birds (NTMB). National forest lands have been identified as important “reserves” of secure breeding habitat for birds in the United States. Region 8 has targeted the conservation of NTMB as a high wildlife management priority. Temperate migrants and resident bird species are of equal importance and will be given equal consideration.

The National Fish and Wildlife Foundation initiated the Partners in Flight program in 1990, which is an international cooperative effort to direct resources toward protecting Neotropical Migratory Birds and their habitats. A consortium of federal and state agencies, non-governmental organizations, researchers, educators, bird enthusiasts, land owners and other cooperators are involved in this conservation effort. Partners in Flight has subdivided the United States into regions, with each region having a steering committee and working groups to establish plans, priorities, and networks to conserve the birds in their area. Texas is in the HF Southeastern Region, and Texas Partners in Flight is the local link to national and international initiatives.

The Southern National Forests’ Migratory and Resident Landbird Conservation Strategy (Gaines and Morris 1996) will serve as a tool to make southern national forests a leader in the conservation of forest birds. See **Appendix M** in the back of this report.

Bobcat: The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) included the bobcat (*Lynx rufus*) in its Appendix II on February 4, 1977. The USFWS Office of Scientific Authority has responsibility to determine that international export of bobcat pelts will not be detrimental to survival of the species. The most recent report on bobcat status in Texas was completed by Paul B. Robertson of the TPWD for the USFWS in March 2000, covering the period September 1, 1998 to August 31, 1999. The report concluded that bobcat populations in Texas are sustaining the annual harvest, and that the program of monitoring bobcat harvests by tagging pelts should be continued.²³

²³ Robertson, Paul B. *Performance Report, Project No. 17: Bobcat Status*. Texas Parks and Wildlife Dept. March 21, 2000.

Sub-Issue 2. Forest Health

The USFS is responsible for managing approximately 675,658 acres of land in 15 counties in the State of Texas. Numerous laws and regulations guide the USFS in protecting lands under its management while programs developed for these forested and grasslands areas are designed to obtain the greatest benefit from all resources including recreation, fish and wildlife, soil and water, timber, range and minerals. To be certain the NFGT is meeting its responsibility in balancing the need to protect the overall condition of these lands while enacting planned programs, the R.O. and NFGT Leadership Team decided *Air Quality*, *Integrated Pest Management*, and *Other Mortality Events* are topics that can be reviewed to address this sub-issue.

The following section discusses current air quality status and monitoring results.

Air Quality

Resource sustainability, including soil, water, and air, was an issue addressed in the *Plan*. Forest-wide standards and guidelines for air quality are located on page 53 of the *Plan*. Most Management Areas utilize the Forest-wide standards and guidelines for air quality, but Management Area (MA) 7, Wilderness, has an additional standard on page 182.

Data and information from State and Local Air Monitoring Stations (SLAMS) and the National Air Monitoring Stations (NAMS) around the forest will be used to monitor and evaluate potential impacts and trends associated with air quality on the NFGT. Of the six Criteria Pollutants monitored by these sites, Carbon Monoxide (CO), Nitrogen Dioxide (NO₂), Sulfur Dioxide (SO₂), Ozone (O₃) and Particulate matter (PM-10 and PM-2.5) are of concern. Lead (Pb), although important, is of lesser concern at this time.

The NFGT has no Class I wilderness area. The state does have one area that is in non-attainment for ozone, the City of Houston, which has the potential to impact national forest lands.

The closest visibility site is the Interagency Monitoring of Protected Visual Environments (IMPROVE) site at the National Park Service's Big Bend National Park. It is located approximately 600 miles west of the NFGT.

Evaluation:

Based on the SLAMS, NAMS and IMPROVE data: (1) The National Ambient Air Quality Standards (NAAQS) were not exceeded on five of the six criteria pollutants in Texas for 1999; (2) One area in the state, the

City of Houston, was designated as non-attainment for ozone in 1999; and (3) There are no specific indications that the flora on the NFGT has been impacted by anthropogenic air pollution.

Based on the above findings we believe that impacts from prescribed burning on the air quality have been within the national, state and local standards and guidelines. However, we do not have enough data at this time to evaluate potential impacts to forest health from air pollutants. The other Air Quality Related Values (AQRVs) that are associated with forest health, flora, fauna and water chemistry may be monitored in the coming years.

See the graphics in **Appendix K** for additional information.

Integrated Pest Management

The *Plan* also addressed the issues of biodiversity and integrated pest management. Management direction for non-native or exotic plants and animals is given in the Forest-wide standards and specific MA standards for forested and grassland ecosystems. Integrated pest management is a process for selecting strategies to regulate forest pests in which all aspects of a pest-host system are studied and weighed. Integrated pest management in the *Plan* generally focuses on prevention and control of the southern pine beetle (SPB), *Dendroctonus frontalis*. The following section discusses the current status and monitoring results of several forest pests.

Gypsy Moth – Gypsy moth (*Lymantria dispar*) is a non-native insect introduced near Boston, Massachusetts, from Europe in the late 1860s. The larvae cause extensive defoliation, particularly of oak species, and can cause significant tree mortality. The insect has since spread throughout New England and the Mid-Atlantic states, and scattered infestations have been reported along the east coast to Florida and as far west as California. The NFGT participates in monitoring for gypsy moth by placing traps in areas of high public traffic, such as recreation areas, to catch any moths that may have been transported in from infested regions. Suspect moths are sent for positive identification. No gypsy moths have been captured on the NFGT to date.

Southern Pine Beetle - Every spring the NFT participates in the southwide southern pine beetle (SPB) (*Dendroctonus frontalis*) detection survey to predict infestation trends for the year. Infestation and treatment data for each SPB spot are recorded in the Southern Pine Beetle Information System (SPBIS). This database allows the Forest to monitor SPB activity and impacts and

track treatment implementation. The districts also conduct aerial detection surveys for SPB infestations as needed. Active SPB spots within wilderness that have the potential to impact adjacent private land are ground-checked weekly during the spring, summer, and fall, and monthly in the winter. Since 1997, the survey has predicted declining SPB populations in east Texas, a trend borne out by a decreasing number of infestations each year. No SPB infestations were reported on the NFT in 1999.

Table 12
SPB Spot Summary

Year	# SPB Spots in General Forest	# Spots Treated by Cut & Remove	# Spots Treated by Cut & Leave	# Spots Monitored	# Wilderness Spots	# Wilderness Acres Affected
1997	313	103	84	126	11	11.85
1998	172	38	24	110	10	10.35
1999	0	0	0	0	0	0
Total	485	141	108	236	21	22.20

Ips beetle - The drought conditions in east Texas have resulted in high levels of *Ips* beetle activity on the NFT over the past three years. These beetles are secondary pests attacking downed or damaged pines or trees under stress. Single trees or small patches are usually affected, and no records are kept unless infestations become large. Patch kills are checked to verify that SPB are not involved.

Red Imported Fire Ant – The red imported fire ant (RIFA), *Solenopsis invicta* Buren, is an introduced species that arrived in Mobile, Alabama, from South America around the 1920s. This species has had an enormous impact in the southeastern United States and continues to spread into areas of North America with mild climates and adequate moisture and food. Since its invasion RIFA has displaced many native species and, consequently, has reduced native biodiversity, thereby altering natural ecosystems. Certain types of wildlife, such as deer, ground-nesting birds, and reptiles, are especially affected by ants during and soon after birth or hatching. Fawns are vulnerable because they are born in June and because they instinctively remain motionless in their hiding places. Hatching quail and ground-nesting waterfowl chicks are

also attacked. However, the impact of fire ants on area-wide populations of wildlife is generally anecdotal rather than documented in rigid scientific studies. In Texas, no endangered species has been reported to have become extinct because of fire ants, although the ants can attack individuals of several threatened species.²⁴

Native ants play important roles in forested ecosystems by translocating and aerating soil and contributing to litter decomposition and fragmentation. The impacts of native ant displacement by the RIFA are still being studied, as well as the impact of RIFA on other insect and animal species.

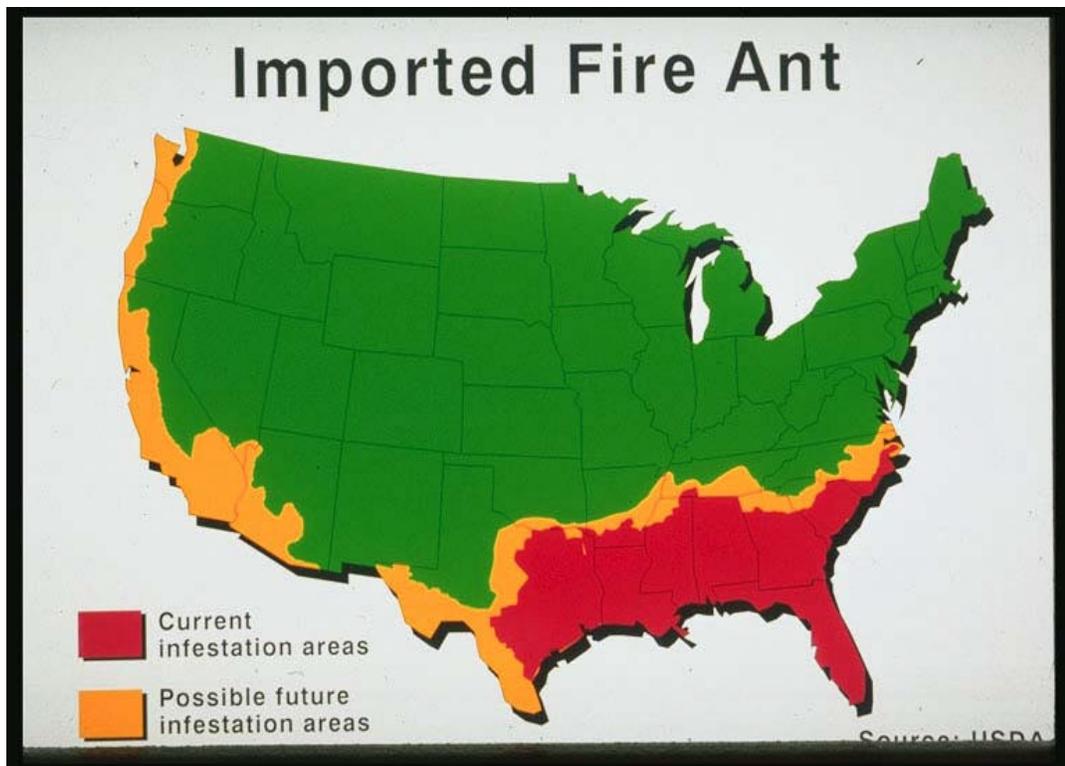


Figure 6
Imported Fire Ant-National Distribution map²⁵

²⁴ Drees, Bastiaan M. Managing Red Imported Fire Ants in Wildlife Areas. Department of Entomology, Texas A&M University, College Station, Texas. <http://fireant.tamu.edu/materials/factsheets/fapfs006.htm>

²⁵ <http://fireant.tamu.edu/antfacts/index.html>

Africanized honey bees - Africanized honey bees arrived in Texas in 1990, with the first record in San Patricio County reported in 1992 (see Figure 7).²⁶ Due to their accentuated defensive behavior and increased rates of swarming and absconding, Africanized honey bees are incompatible with current beekeeping practices and may cause problems in areas of livestock and human habitation. Honey bees (*Apis mellifera* L.) play an important role in many ecosystems, pollinating a wide variety of native, agricultural, and exotic plants. In the United States, managed honey bee colonies declined about 25 percent from 1995 to 1996. Few studies have documented population trends for feral colonies, but Loper (1997) reported an 82 percent decline in spring populations from 1992 to 1997. More data on the population dynamics of feral honey bees are needed to address important issues related to pollination and the spread of Africanized honey bees. The decline of managed and feral bee colonies has been attributed to Africanized honey bees as well as parasitic mites and pesticide use.

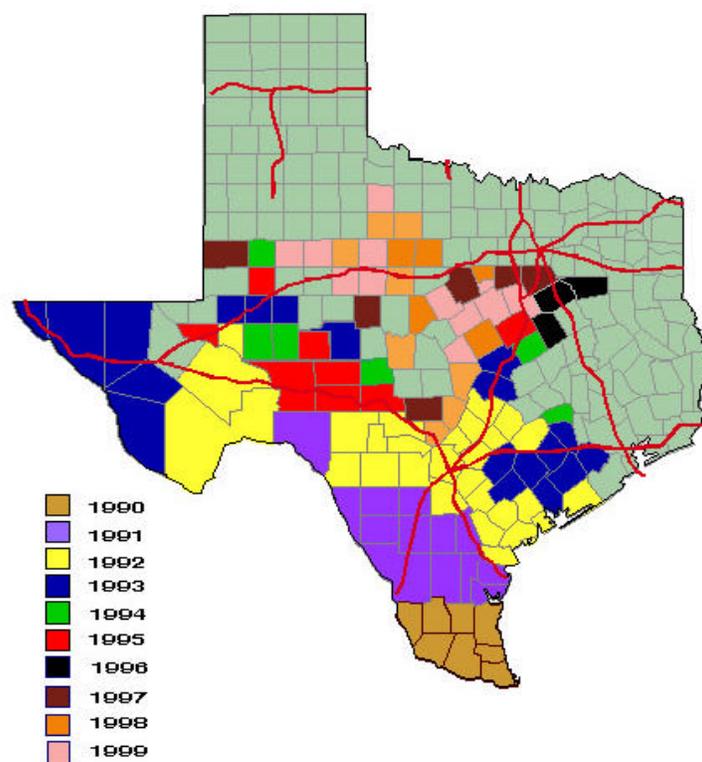


Figure 7. The spread of Africanized honey bees in Texas.²⁷

²⁶ Baum, Kristen A., William L. Rubink, Robert N. Counlson, and Douglas F. Wunneburger. 1998. Effects of Landscape Pattern on the Distribution of Feral Honey Bee Colonies in South Texas. Knowledge Engineering Laboratory, Department of Entomology, Texas A&M University, College Station, Texas. <http://kelab.tamu.edu/standard/honeybees/>

²⁷ Ibid, p 2.

Noxious weeds: Noxious weeds, exotic aggressive species, such as *Sericea lespedeza* (*Lespedeza cuneata*), have maintained populations. The Caddo/LBJ Ranger District inventoried and mapped 175 acres of *Sericea lespedeza* on the Caddo NG in FY 1997-98, and treated 50 acres by mowing in FY 1999. Treatment of an additional 50 acres by mowing is planned in FY 2000. It does not appear to be spreading significantly at this point. Where it does occur, it has a significant hold on the land. Treatments will continue to be conducted to address this problem.

Chinese Tallow: Chinese Tallow (*Sapium sebiferum*) was introduced to the United States from China in the 1700s. It has been widely used as an ornamental and has become naturalized in the southern coastal plain from Texas east to Florida and north to South Carolina. Its popularity as an ornamental tree stems from its fast growth and attractive foliage, which becomes yellow to red in the fall, and resistance to pests. It is a small to medium-sized tree that grows to about 20 feet in height. It spreads rapidly, is difficult to kill, thrives in a wide range of habitats, and tends to take over large areas by out-competing native plants. Chinese Tallow degrades wetland management levee systems, coastal prairie, and habitat for migratory and ground nesting birds. The photo at the left shows a typical specimen growing on a lakeshore in Florida. In Texas, Chinese Tallow has widely invaded the mid and upper coastal plain. The TPWD has initiated research to determine practical and cost effective measures to be taken to control invasion and regrowth of Chinese Tallow.



Figure 8. Chinese Tallow

Kudzu: Kudzu (*Pueraria lobata*) is a non-native vine species introduced from Japan in the 19th century. Kudzu is continually spreading over southern forest lands, roadsides, and homesites, crowding out native species, as the picture below illustrates.²⁸ It is a continuing concern and will be monitored for expansion of known sites; control measures may be warranted in the future. There are no known occurrences of kudzu on the Davy Crockett, Sabine or Sam Houston NFs, and only one known location (0.5 acres) on the Angelina NF.



Figure 9. Kudzu along a roadside

Floating Water-Hyacinth: Water-Hyacinth (*Eichhornia crassipes*) is a noxious floating plant native to Central and South America that has spread rapidly throughout inland and coastal fresh water bays, lakes, and marshes in all of the Gulf Coast States. It has one of the highest growth rates of any plant known; populations can double in size in as little as 12 days. Dense mats of water hyacinth prevent sunlight and oxygen from getting



Figure 10. Water-Hyacinth in bloom.

into the water, block boat traffic, prevent swimming and fishing, shade out submersed plants, crowd out emersed plants, and reduce biological diversity.²⁹ The San Jacinto River Authority has been spot treating water-hyacinth in Lake Conroe with chemicals to keep it under control. The map on the following page illustrates the extent of water hyacinth infestations throughout the United States as of September 1999.³⁰

²⁸ <http://nbii.gov/invasive/KudzuKudzuphoto.html>

²⁹ <http://aquat1.ifas.ufl.edu/hyacin2.html>

³⁰ <http://nas.er.usgs.gov/plants/maps/smec.gif>

Eichhornia crassipes, water-hyacinth

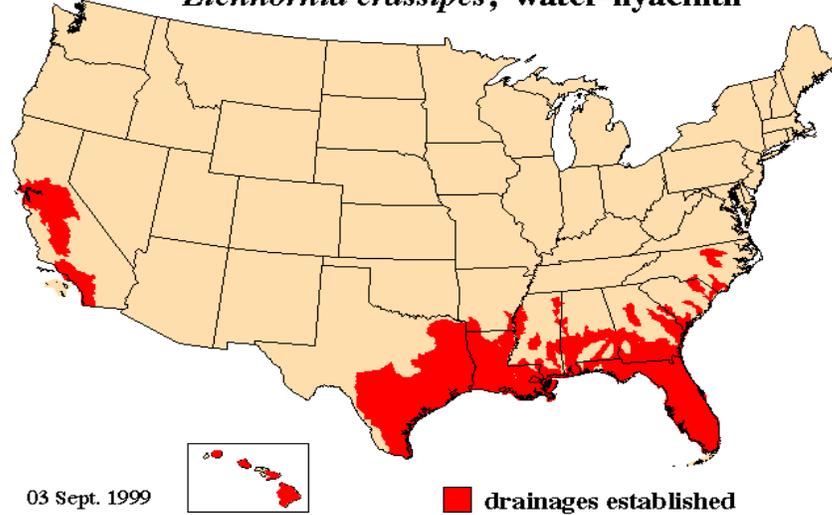


Figure 11. Distribution of Water-Hyacinth in the U.S.

Hydrilla: Hydrilla (*Hydrilla verticillata*) is an introduced noxious aquatic submersent vascular plant with long, branching stems, which often fragment and form large floating mats. The dioecious strain, originally from India, was introduced to the United States in the early 1950s for use in aquariums. It escaped to Florida’s inland water system and has since spread to wide areas of the southern Coastal Plain. A monoecious strain, believed to be introduced from Korea, was first discovered in the Potomac Basin in 1985.

Hydrilla thrives in a variety of water conditions and requires less sunlight for photosynthesis than native plants, enabling it to grow at greater depths and in darker waters than native vegetation. Its heavy growth greatly interferes with fisheries, water flow, swimming, boat traffic, power generation and agricultural irrigation. Hydrilla has been shown to alter the physical and chemical characteristics of lakes, decreasing oxygen levels resulting in fish kills, and changing water chemistry causing zooplankton and phytoplankton declines.³¹ It has been found in both Sam Rayburn and Toledo Bend Reservoirs since the 1980’s, and is currently present in the Angelina, Neches, Sabine and Trinity Rivers. While considered a pest species, the coverage of the plant has varied through the years and has been impacted by fluctuating water levels of the reservoirs caused by drought conditions. Currently, Hydrilla in Sam Rayburn is much reduced from a few years ago.

³¹ http://nas.er.usgs.gov/plants/docs/hy_verti.html

The Sam Houston Ranger District surrounds the northern or upper third of Lake Conroe, a reservoir built in 1973 by the San Jacinto River Authority and the City of Houston for water supply. A heavy infestation of macrophytes, primarily Hydrilla, in the lake was treated by stocking approximately 270,000 diploid grass carp (*Ctenopharyngodon idella*) in the early 1980s. Texas A&M University (TAMU) staff evaluated and documented the effects of the resulting loss of macrophytes on the fish populations in the lake.³² The TAMU report noted that almost all macrophytes had been removed by 1983 and that primary productivity increased in response. However, most nutrients had returned to pre-treatment levels by the conclusion of the investigation in 1986.



Figure 12. Hydrilla

Hydrilla has infested many waterways in eastern and southern Texas, as the map on the following page illustrates.

³² Klusmann, W.G., R.I. Noble, R.D. Martyn, W.J. Clark, R.K. Betsill, P.W. Bettoli, M.F. Cichra, and J.M. Campbell. 1988. *Control of aquatic macrophytes by grass carp in Lake Conroe, Texas, and the effects on the reservoir ecosystem.* Texas Agricultural Experiment Station Bulletin MP-1664. College Station, TX.

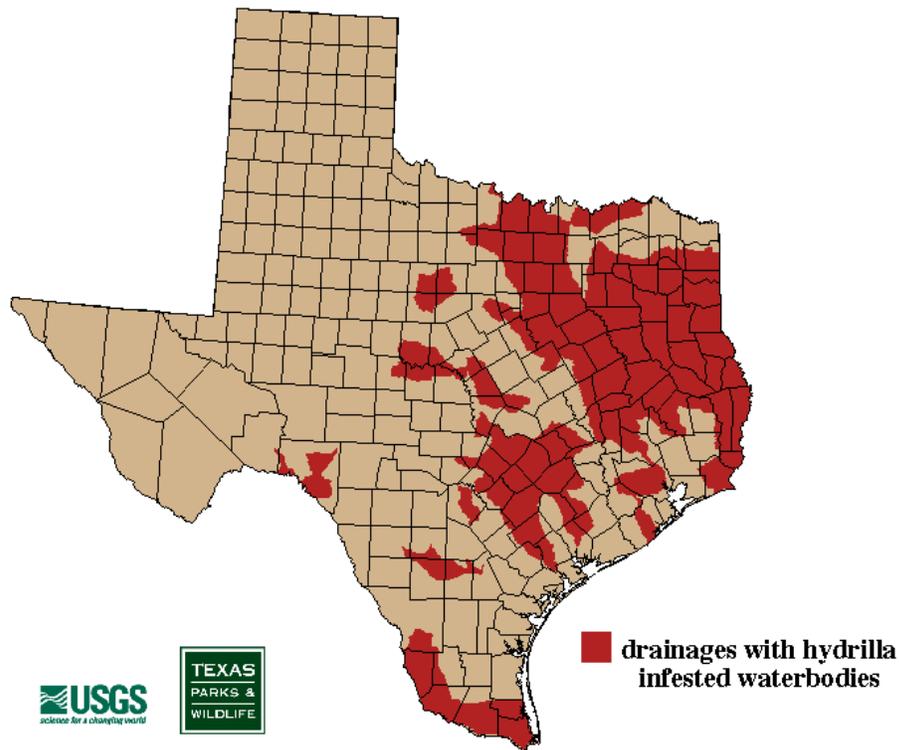


Figure 13. Hydrilla Infestations in Texas, 1998³³

The TPWD Inland Fisheries staff conducted a study in 1993 to determine the status of the Lake Conroe fisheries since the termination of the TAMU project in 1986.³⁴ They determined that the Lake Conroe fisheries are still in a state of flux as species expand and decline, productivity changes, shoreline structure is altered by development, and management activities such as length limits and stockings take effect. Currently both Hydrilla and grass carp remain in Lake Conroe, and the San Jacinto River Authority continues to monitor and treat the Hydrilla with herbicides when necessary. Other than a nuisance to fishermen wanting to utilize recreational facilities like boat ramps and campgrounds, this aquatic plant does not seem to notably adversely affect management of USFS managed resources.

³³ <http://nas.er.usgs.gov/plants/maps/txhv.gif>

³⁴ Webb, M.A., J.C. Henson, and M.S. Reed. 1994. *Lake Conroe Fisheries – Population Trends Following Macrophyte Removal*. In *Proceedings of the Grass Carp Symposium*, March 7-9, 1994, Gainesville, Florida, pp. 169-185.

Giant Salvinia: Giant Salvinia (*Salvinia molesta*) is an aquatic fern (see photo below)³⁵ prohibited in the United States by federal law, but was recently introduced to Texas from South America. It is a very serious, fast spreading aquatic pest, which spreads rapidly to cover the surface of lakes and streams, spreading aggressively by buds that break off when disturbed. It forms floating mats that



shade and crowd out important native plants. Thick mats reduce oxygen content, degrade water quality, clog water intakes, and interfere with agricultural irrigation and electrical generation. It was discovered in Toledo Bend in September 1998 and spread to many parts of the lake in late 1998 and 1999. It has been confirmed in Lake Conroe but not yet in Sam Rayburn Reservoir.

Figure 14. Giant Salvinia

According to a report by the Florida Caribbean Science Center of the Biological Resources Division, U.S.D.I. Geological Survey, the Giant Salvinia infestation in Toledo Bend poses the most serious threat to interstate spread. As of May 2000 there were three public reservoirs, five rivers or streams and nearly 20 ponds with confirmed infestations of Giant Salvinia in Texas. Infestations threaten marshes and aquatic ecosystems including the Big Thicket National Preserve (an international biosphere reserve), the Trinity River National Wildlife Refuge, and the Brazoria National Wildlife Refuge complex, among others. Animal habitat is altered by the obliteration of open water, causing the failure of migrating birds to recognize and stop at waterbodies covered by Giant Salvinia.

The NFGT do not have the responsibility for the management of the water, aquatic, and fisheries resources within Toledo Bend, Sam Rayburn, or Lake Conroe reservoirs. The U.S. Army Corp of Engineers is the managing water authority for Sam Rayburn, while

³⁵ <http://www.tpwd.state.tx.us/expltx/eft/urban/hounonnat.htm>

the San Jacinto River Authority is the managing water authority for Lake Conroe and the Sabine River Authority is the managing water agency for Toledo Bend. The TPWD's fisheries department oversees the fisheries resources, and its aquatic weed division is responsible for management and control efforts of invasive aquatic plants within Texas waters. The aquatic weed division has headed up recent control efforts for Giant Salvinia on the Texas side of Toledo Bend Reservoir and in Lake Conroe.

The photo below shows an area of Toledo Bend Reservoir impacted by Giant Salvinia.



Figure 15. Giant Salvinia (*Salvinia molesta*)³⁶

[Salter Creek, Toledo Bend Reservoir 10/98](#), photo by: J. M. Hyde, Sabine River Authority

The map on the following page shows the known locations of Giant Salvinia in Texas and Louisiana as of April 2000.

³⁶ http://nas.er.usgs.gov/plants/sa_molesta/images/smtol.jpg

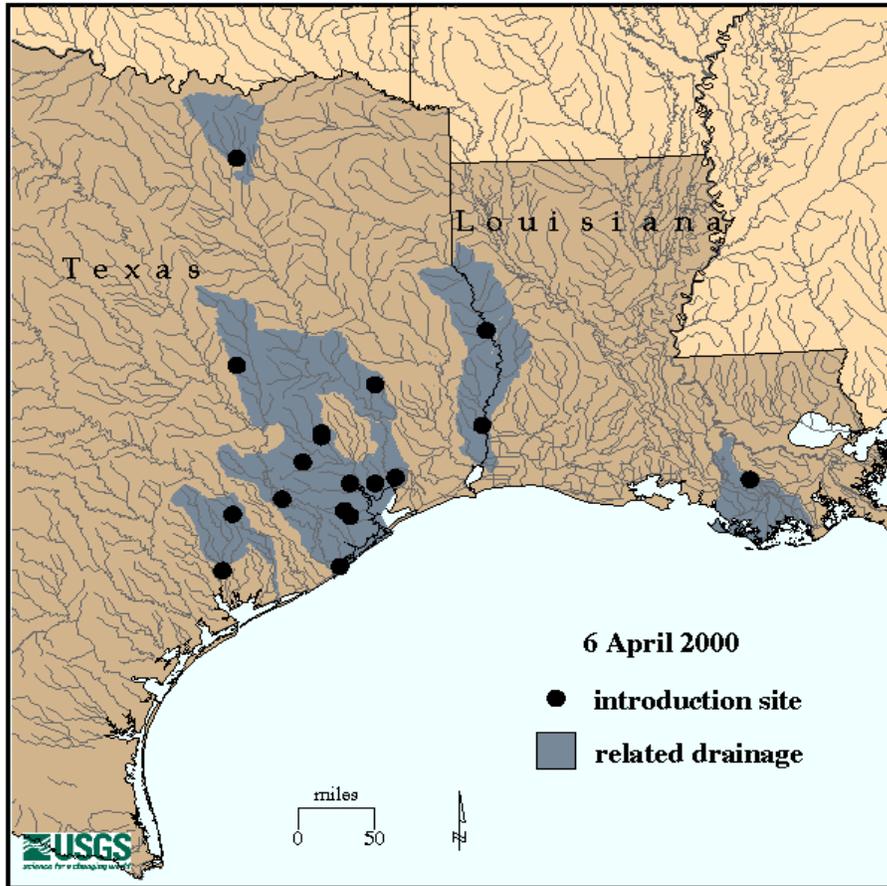


Figure 16. Texas and Louisiana Locations of Giant Salvinia in 2000¹

Feral Hogs: Feral hogs (*Sus scrofa*) are found on most of the forested areas, but have created significant problems throughout the Sam Houston NF. During their routine feeding activities, they often root-up food source found two to six inches below the soil surface. One adult may affect as much as two acres or more per day. The impact to the soil resource is that often times erosion is initiated, and stream sedimentation is increased. After two years of trapping to reduce and/or control them, feral hog activity observed on the Sam Houston NF seems to have stabilized. Continued trappings are planned to help manage the hog problem.

¹ http://nas.er.usgs.gov/plants/sa_molesta/maps/sam0211.gif

Other Mortality Events

Windstorm

On February 10, 1998, straight-line winds in excess of 100 miles per hour uprooted thousand of trees on the Sabine, Angelina, and Sam Houston NFs. The photo below illustrates a typical damaged area on the Sabine NF. The uprooted trees exposed many tons of bare soil and resulted in the introduction of woody material into the stream channels. This situation has caused concern for the impact on water quality.



Figure 17. Extensive storm damage on the Sabine NF.

To monitor the effects on water chemistry, benthic macroinvertebrates, and fisheries, the forest entered into a cost share agreement with SFASU. The main objectives of the monitoring are to determine the possible effects of large woody debris on water quality in several streams on the Sabine NF (including, Brittain, Martinez, Siep, Cypress Creek, and Blue Bayou) and to determine if streamside management zones (SMZs) were effective in protecting water quality. The monitoring will examine the possible effects and changes over time in water chemistry, benthic macroinvertebrates, and fisheries.

Water Chemistry: Water samples were taken on a monthly basis for 12 months. Twenty-five chemical parameters were analyzed on each sample. Six of the parameters were analyzed in the field. The samples were collected from July of 1998 to June 1999.

Benthic Macroinvertebrates: The benthic macroinvertebrates were sampled in two different ways. First, a coarse particulate organic matter sample was collected. This material was mainly collected around log dams and other areas of large accumulation and was composed primarily of leaves, pine needles, twigs and sticks. Secondly a five-minute dip net sample was taken to sample the benthic microhabitat.

Fish: A fish survey of the stream was also conducted. A backpack electro shocker was used to shock fish. Most were identified and measured on site and returned to the stream.

The monitoring is ongoing and conclusions can't be determined at this time. However, preliminary findings indicate that this large woody debris in the stream is beneficial. In terms of fish numbers, having additional substrate has been beneficial by providing habitat, and substrate for algae to accumulate. Water chemistry will be compared to that of a reference stream on the national forest. Preliminary findings indicate high conductivity reading that implies the presence of slates. The high conductivity is believed not to have any relevance to the large woody debris in the streams.

The monitoring is scheduled to be completed in early summer of the year 2000.

Drought (Rainfall Deficit)

Average annual rainfall for forested areas for the 10-year period (1987-1996) just prior to our monitoring period is 47.91 inches.

1997 Rainfall was 52.36 inches, or 4.45 inches over the 10-year average;

1998 Rainfall was 57.26 inches, or 9.35 inches over the 10-year average; and

1999 Rainfall was 43.99 inches, or 3.92 inches under the 10-year average.

Rainfall during 1998 and 1999 was deficit during the growing season for both years. Vegetation was under moisture stress for much of the growing season, resulting in scattered tree mortality.

Generally, the Caddo/LBJ NGs has been managing vegetation in terms of drought since 1997. North Texas areas experienced a severe drought situation in 1997, 1998 and 1999 since each year they ended approximately 12 inches short of moisture. During the 97-99 time period, grazing was modified, cattle were moved to different areas, and some areas ran out of grass. Upon completion of grazing in some permitted areas, livestock were removed as vegetation regrowth had not occurred sufficiently to would allow grazing rotation to begin. All livestock were removed for approximately two months in 1999. This was the first time that all livestock, including those on 12-month permits, were removed. This was considered necessary, from a resource standpoint, to allow vegetation to grow unimpeded by grazing during the critical early growing season.

The watershed program on the NGs was somewhat impacted by drought as well. In 1998, not all planned watershed restoration was completed. Work had to be suspended due to a lack of soil moisture. Once the soil moisture drops below 12 percent, the soil will not compact properly for the construction of structures. To continue work below 12 percent would significantly increase costs due to the need to haul water.

Additionally, second seedings were required on some watershed structures, as first seedings did not “take” due to drought conditions.

See earlier portions of the report discussing **Regeneration** and **Ips** for further information regarding drought affects.

Losses Due to Wildfires

In 1997, no losses occurred due to fire. In 1998, 73 acres of pine plantations (8-10 years old) were destroyed by fires and had to be replanted. In 1999, 13 acres of pine plantations (11 years old) were destroyed by fires and had to be replanted.

Evaluation:

Except for the catastrophic windstorm on February 10, 1998, none of the occurrences listed above had a significant effect on the land.

Sub-Issue 3. Watershed Conditions

The ECS handbook, mentioned earlier in this report as one of the tools used to guide management actions, describes a watershed as a region or area drained by a particular body of water. Diverse watershed units on lands managed by the NFGT require different management techniques to protect their uniqueness. The topics below describe methods utilized by the NFGT to measure watershed conditions. Each topic is more fully described in the following pages.

1. *Assessment Team Report;*
2. *Fireline Erosion Control;*
3. *Long-Term Soil Productivity Study;*
4. *Multi-use Trail Management on the Sam Houston NF;*
5. *Oil Well Spills and Salt Water Discharge;*
6. *Off-Road Vehicle Closures;*
7. *Prescribed Burning;*
8. *Road Construction/Reconstruction;*
9. *Road Obliteration;*
10. *SFASU Baseline Water Quality Study;*
11. *SFASU Water Quality Monitoring Study in a 120- Meter Thinning Area;*
12. *SFASU Water Quality Monitoring Study in a SPB Impacted Area;*
13. *Soil Survey Acres and Soil and Water Improvement Accomplishments;*
14. *State Designated Impaired Streams;*
15. *Streamside Management Zones;*
16. *Ten Percent Roads and Trails Funds (TRTR) Accomplishments;*
17. *Texas Forest Service (TFS) Best Management Practices (BMP) Results;*
18. *Timber Sale Erosion Control Efforts;*
19. *Vegetation Treatments;*
20. *Watershed Restoration Work;*
21. *Well Plugging; and*
22. *Windstorm Blowdown Monitoring Efforts.*

Assessment Team Report

In September 1997 an Assessment Team consisting of a botanist, soil scientist, wildlife biologist, silviculturist and photographer inventoried the condition of the natural resources on six timber sale cutting units prior to harvest so that a post-treatment evaluation of effects on natural resources from timber harvesting could be made. The six units were selected to represent six different types of timber harvesting done on the NFGT: selection, shelterwood, 1200-meter thinning in RCW habitat, silvicultural thinning, seed tree, and clearcut. Sample plots were taken at pre-

determined intervals along transect lines, and photo points were established in each unit. Each professional gathered data pertinent to his field of expertise, which included information on vegetation (species composition and abundance in the overstory, midstory, saplings and understory); soil series, topsoil thickness and erosion potential; wildlife management indicator species and habitat condition, the condition of stands from a silvicultural perspective, and photo points to observe general stand conditions and perennial and ephemeral stream channels. The Assessment Team planned to re-visit the sample points one growing season after harvest treatments were completed.

By November 1997 harvest treatments in two of the selected units had been completed: the selection unit in the Compartments 98 and 106 Sale on the Sabine NF, and the 1200 meter thinning unit in the Compartment 41 Sale on the Davy Crockett NF. The Assessment Team re-visited these units in November 1998 to gather data. Due to difficulties in getting some of the botanical specimens identified, the post-treatment report was delayed until September 1999.

Evaluation:

From a watershed condition perspective, the post treatment assessment indicated no adverse affects on soil productivity or water quality. On areas that had no logging equipment traffic, the duff, litter layer and thickness of topsoil remained at pre-harvest levels. On the traffic surface areas, the duff and litter layers were reduced one-fourth to one and one-half inches on the Sabine NF sale and one-half to one inch on the Davy Crockett NF sale. Approximately five to ten percent of the area was affected by skid trails on the selection unit, while 10-30 percent of the area was affected by skid trails on the 1200-meter thinning unit.

Photo points reveal a small amount of sediment moving into the stream channels. All protected stream courses within the sale areas had established SMZs.

Plan standards and guidelines for protecting riparian areas and wetlands (Management Area 4) are being implemented. Protection zones of varying widths are established on all protected stream courses and wetlands. Timber is not harvested within the protection zones unless it is for the purpose of improving threatened and endangered species or for forest health.

Fireline Erosion Control

The Plan specifies measures to be taken to minimize erosion resulting from fireline construction in the Forest-wide Standards and Guidelines (chapter IV, pp. 62-64, 82) and in the Management Area Standards and Guidelines (Chapter IV, pp. 139 and 155). These measures include constructing waterbars at appropriate intervals; using green lines, wet lines, and foam lines; and seeding bare soil to quickly re-establish vegetation. There has been no formal monitoring of this activity. However, districts informally monitor this during follow-up visits after the burning season. Problem areas are noted and action is taken to correct all problems. This is an ongoing process and has been standard practice during the 1997-1999 burning seasons.

Long-Term Soil Productivity Study

The forest is participating in a long-term soil productivity monitoring study on the Davy Crockett NF. The study is part of a national effort to detect changes in productivity related to timber management. The site was logged in 1996 and planted in 1997. Treatments consist of three levels of organic matter removal (bole only, total tree, and total above ground biomass) and three levels of compaction (none, moderate, and severe). Productivity information, including pine growth, understory development, and changes in soil properties, will be measured at five-year intervals for 60 years. The information will be used to validate and revise soil quality standards, develop management strategies to protect soil productivity, and evaluate monitoring techniques.

Evaluation:

Management of logging residual appears to have a direct effect on pine seedling height development and survival. Very preliminary results from the first two years of the study indicate that retaining coarse woody debris on the site favors height development and possibly improves survival rates.

Multi-use Trail Management on the Sam Houston NF

A June 1998 assessment of permanently marked multi-use (equestrian, motorized dirt bike, mountain bike, 4-wheeler) trails (PMTs) on the Sam Houston NF revealed that two out of every three crossings had impacted riparian values, water quality and stream bank stabilization. The entire trail system was closed part or all the time for renovations. No specific resource damage required the PMT to be closed. The effort was initiated after the discovery of sensitive fish species (the Sabine Shiner, thought to be extirpated in Texas) in several drainages, and an archaeological survey

that identified several sites in close proximity to the PMT. In response to recommendations by staff specialists, the closure time was utilized to make renovations for resource protection, including replacing concrete hardened drainage crossings with bridges, relocating the PMT away from known archeological sites and outside “high probability” zones, realignment to eliminate sections of PMT that paralleled drainages, expansion of RCW clusters over the PMT and the redesign of cluster boundaries, and an effort to move the PMT out of riparian zones to more upland sites.

Oil Well Spills and Salt Water Discharge

During this three-year period there have been several oil spills and salt-water discharges on the NFGT. The following is a summary of the significant activities. All incidents were cleaned up to the satisfaction of the Texas Railroad Commission (TRC) and the management officers of the USFS. Spills greater than five barrels of oil must be reported to the TRC, which inspects the cleanup operations.

Sabine National Forest (NF)

Compartment 123 – A spill of approximately 50 – 100 barrels of crude oil went into a tributary of Trout Creek. The cleanup was completed under the supervision of the TRC and the USFS. The contaminated organic debris and soil were removed from the stream and adjacent areas to the extent it did not cause additional unacceptable levels of disturbance to the stream.

Compartment 21- A spew of an undetermined amount of crude oil occurred. The TRC estimated this spill at less than five barrels of oil therefore they were not involved in the clean up. Contaminated duff and soil was removed from the site. Currently there are several dead pine trees in this area that need to be removed. It is not known if the tree mortality was caused by contaminated soil or natural causes. No additional damage is documented.

Another company bought the above-referenced spew site and there have been two similar occurrences with similar results.

Compartment 42 - A salt water release into a stream was discovered. The truck operator that allowed this material to flow back into the stream confessed to this incident. He was ticketed and the case went to the Federal Magistrate.

He was personally fined for this act and in addition, he was charged to make monetary restoration. No cleanup was feasible for this incident because the salt water had already flushed downstream and dissipated by the time the USFS became aware of it.

Compartment 13- Rainwater breached the ring levee on a well site, mixed with residue from the reserve pit, and flowed into Granny's Creek. Sampling was conducted in Granny's Creek and no damage to the Creek was detected.

Sam Houston National Forest (NF)

Compartment 94 - An oil tank overflowed at a production site. The volume of the overflow was estimated to be no more than 10 barrels of oil and salt water, some of which entered an adjacent small stream. To the extent feasible, the soil was removed and the site rehabilitated. The stream was flushed out and the liquid was collected by a vacuum truck and removed to an approved disposal site. There was no documented damage to the stream. There were two sensitive plant species in the area adjacent to the stream. These areas were flagged and checked one growing season after the spill. One of the species was still present; the other was absent. It is not known if the lack of the second species is due to the spill or unusually dry conditions. This area will be checked again next growing season. The cleanup was completed to the satisfaction of the TRC and management of the USFS.

Compartment 94 – Salt water was also found in puddles outside of the levy of a production site. The source of the salt water could not be determined. It was speculated that a saltwater disposal truck had dumped the water adjacent to the site. This case was not resolved due to lack of information.

Caddo/LBJ National Grasslands (NGs)

LBJ Unit – A saltwater release occurred from a production site. Approximately 0.2 acres and an adjacent stream were affected by the saltwater release. The 0.2-acre site was rehabilitated. The stream was flushed out and the residue was vacuumed up and disposed of properly. No additional damage was documented. The site was restored to the satisfaction of the USFS.

Off-Road Vehicle (ORV) Closures

At the time the *Plan* was completed there were approximately 55 miles of ORV trails on the NFGT (none of these trails were on the NGs units). The *Plan* provided for approximately 300 miles of ORV trails to be built on the southern part of the Angelina NF in the Longleaf Ridge Special Area (MA 6) and on the Sam Houston NF. The *Plan* also specified that the Sam Houston NF would no longer be open for ORV use except on designated trails, and that the NGs units would remain closed to ORV use except on Forest Service system roads. However, all of the Sabine and Davy Crockett NFs, as well as the portion of the Angelina NF north of Sam Rayburn reservoir, would remain open for cross-country ORV use.

The following section provides further details about ORV use on the Angelina and Sam Houston NFs.

Sam Houston National Forest (NF)

The open riding area on the Sam Houston NF was changed to restricted use in 1997 in accordance with direction in the *Plan* (see Forest-wide Standard and Guideline FW-162, p. 74, and Appendix E, p. 8). The restricted designation means that ORV use is limited to designated motorcycle and ATV trails. The area encompasses approximately 14,000 acres with over one hundred miles of spider-web volunteer/un-designated trails. The whole area is being assessed in order to add more designated trails to the system, in order to comply with direction in the *Plan*.

Angelina National Forest (NF) - Longleaf Ridge Special Area

The *Plan* directs that any motorized off-road use in Longleaf Ridge (MA-6) be confined to a designated trail system (*Plan*, FW-162, p. 74, and Appendix E, p. 8). Many recreation opportunities are provided in Longleaf Ridge, but recreation use will be oriented to the sustainability of the longleaf pine ecosystem and associated communities and minimize impacts to the RCW. Motorized trail riding opportunities will be evident from signs on both roads and trails (*Plan*, pp. 169-170).

Evaluation:

The multiple use trail evaluation process is proceeding as outlined in the *Plan*. In the 1999 evaluation of ORV trails on the Angelina NF, 75 percent of all crossings showed adverse impacts on riparian values, water quality and stream bank stability. Closures implemented in the Longleaf

Ridge area have been successful in protecting areas south of Highway 63, but use has concentrated north of Highway 63. Enforcement of special area closures, which the Forest Supervisor initiated on December 17, 1999, is difficult due to lack of signing on the ground. Signing is impractical in many areas such as streamside zones, shoreline zones, and numerous special areas that are located far from roads. The picture below illustrates resource damage on the Angelina NF that occurred in 1997; while the damage pictured was caused by OHVs, it is illustrative of similar damage caused by ORVs.



Figure 18. Resource damage caused by OHVs, Angelina NF, May 1997.

Implementation steps to guide the Angelina and Sam Houston NFs in the direction of providing opportunities for off-road motorized recreation while protecting resources are outlined in the *Plan* (Appendix E, pp. 10-11). These steps include inventory and evaluation, evaluation and mitigation, partnerships, and monitoring. It was stated in the *Plan* that closures may be needed as determined by site-specific environmental analysis.

In 1996 SFASU inventoried the existing user-made motorized trails on the Angelina NF within the Longleaf Ridge Special Area. As part of that inventory a list of 150 stream crossings and a description of the visual appearance of the trails, including slope, evidence of erosion, exposed roots, etc., was submitted.

On April 13, 1999 a closure order was signed that prohibited motorized use off of forest system roads south of Highway 63 on the Angelina NF (the southern portion of the Longleaf Ridge Special Area, MA 6).

On December 16, 1999, a closure order was signed that prohibited motorized use in the following areas on the Angelina, Sabine and Davy Crockett NFs: RCW areas, streamside management and lakeshore zones, research natural areas, protected river and stream corridors, scenic areas, natural heritage areas, special bottomland areas, cultural heritage areas, and bog sites. This closure also restricted four-wheel drive vehicles to forest system roads not closed by a gate, a mound, or a sign.

A partnership was initiated with SFASU to complete a trail plan and marketing plan for a motorized trail system, and to conduct the necessary public meetings. An initial scoping letter was sent to potentially interested or affected publics on October 14, 1998. Since then eight public meetings have been held to determine issues and concerns. Information about the trail evaluation process, the scoping letter, comments received, and a list of issues and concerns have been placed at the USFS website <http://www.southernregion.fs.fed.us/texas>.

Prescribed Burning

Soil erosion is a natural process that occurs in both undisturbed and disturbed areas. Activities that affect vegetative cover, forest litter layer, or the soil itself may increase erosion. A prescribed burn affects vegetation, organic matter, and soil properties and is predicted to increase erosion. Erosion resulting from prescribed burning can be compared to erosion from undisturbed forested lands and from agricultural lands to gain a perspective. Soil losses from undisturbed native forests and pine plantations are minimal, seldom exceeding 0.0023 tons per acre per year. This rate was derived by averaging the projected out-put for geologic erosion of the six soil units in Appendix F of the *Plan*. The 1992 Natural Resource Inventory Summary compiled by the USDA Conservation Service (NRCS) indicates that agricultural practices in Texas on slopes greater than three percent in gradient causes soil losses of four to five tons per acre per year. By comparison, prescribed burning is expected to result in soil loss of approximately .038 tons per acre per year. This rate was derived by averaging the projected out-put for sediment from prescribed burns for the six soil units in Appendix F of the *Plan*. Increased erosion from prescribed burning is essentially limited to the first year after treatment due to the rapid re-establishment of the natural vegetative cover. Plowed fire lines have the potential to produce greater amounts of soil erosion; however, soil loss is held to a minimum due to the implementation of state approved BMPs.

Road Construction/Reconstruction

The construction and reconstruction of roads is potentially one of the greatest sources of erosion and sediment yield due to the soil disturbance inherent in these activities. Mitigation measures to minimize these impacts were identified in the Forest-wide standards and guidelines in the *Plan* (see Chapter IV, pp. 82-83), as well as specific Management Area standards and guidelines. In addition, NFGT engineers assure, during contract inspections, that this work complies with USFS Manual and Handbook direction, Texas Department of Transportation (TXDOT) Erosion Control Specifications, USFS Specifications for Construction of Roads and Bridges (EM 7720-100) and basic engineering science. Projects are planned to conform to the State of Texas voluntary BMPs and are adhered to so that state water quality standards will be met.

The TFS BMP Project staff monitor BMP compliance on industrial and non-industrial private forest lands and federal lands in Texas. Inspections of permanent and temporary roads and streamside management zones are part of the compliance monitoring that the BMP staff conducts.

For additional information related to this topic, see the **Infrastructure Sub-Issue** later in this report.

Evaluation:

The latest report issued by the TFS BMP staff, *Voluntary Compliance with Forestry BMPs in East Texas*, was published in April 1998. Their findings were that BMP compliance on national forest lands has been at 100 percent throughout all the monitoring they had conducted up to that point. For the eleven national forest sites evaluated in Round 3 monitoring (conducted between June 1996 and July 1997), they found that all sites received a Good or Excellent rating. To receive an excellent rating, a site must have had BMPs installed correctly, guidelines followed, and some BMPs implemented even though they might not be required. A Good rating requires that BMPs be generally installed correctly, guidelines followed, but allows for some failure of devices or failure to observe guidelines, but with minor consequences.³⁸

Multi-year (FY 97-99) assessments of road crossings revealed impacted riparian values and stream bank stability in 50 percent of those observed. The primary areas of concern are culverts that are too small to carry the water flow during major storm events; culverts that were installed improperly, creating a waterfall effect at the outlet that causes pool creation and downstream streambed downcutting and bank instability; and

³⁸ Carraway, B., L. Clendennen, and D. Work. 1998. *Voluntary Compliance with Forestry Best Management Practices in East Texas*.

wing ditches that are not functioning properly in carrying water away from streams. Efforts to correct these problems are ongoing and include replacing improperly sized or installed culverts with larger culverts and ensuring that the horizontal and vertical alignment of the culvert closely match that of the stream; replacing culverts with bridges; and refurbishing wing ditches so that they effectively carry water away from streams.

Road Obliteration

Timber harvesting necessitates the use of roads for moving forest products from the forest to the mill. Temporary roads are frequently used where re-entry into a given area will not be needed for many years. When these temporary roads are no longer needed, they are closed and obliterated. Obliteration is largely accomplished through disking, seeding and fertilizing in order to rapidly establish vegetation on the bare soil, since plant cover is one of the greatest deterrents to surface erosion.

Monitoring of on-the-ground activities indicates that all temporary roads are being revegetated promptly after their use is completed. Most timber sale contracts contain the following requirements:

“Temporary road . . . cut and fill slopes and shoulders shall not be left without seed and fertilizer for more than 15 days within the seeding season . . .

Temporary road surfaces . . . shall be seeded whenever they are not to be used for a period of 60 days or more and seeding can be done within the seeding season. .

All exposed soil on temporary roads . . . shall be seeded and fertilized within 30 days of the time these facilities are no longer needed for Purchaser’s operations if it is within the seeding season . . .”

SFASU Baseline Water Quality Study

The NFGT entered into a cost share agreement with SFASU to establish baseline physicochemical, benthic macroinvertebrate, and ichthyological data for comparison with future studies to determine the effects of intensive RCW management practices on the water quality of streams. Streams in Houston County on the Davy Crockett NF were studied which were in close proximity to areas with planned RCW management activities. A masters thesis by William Joel Kirby entitled, *A Baseline Study of Six Stream Sites in the Davy Crockett National Forest in Close Proximity to Red-Cockaded Woodpecker Thinning Operations: A Physicochemical, Benthic Macroinvertebrate, and Ichthyological Study*, was completed in May 2000 documenting the research results.³⁹

³⁹ Kirby, W.J. 2000. *A Baseline Study of Six Stream Sites in the Davy Crockett National Forest in Close Proximity to Red-Cockaded Woodpecker Thinning Operations: A Physicochemical, Benthic Macroinvertebrate, and Ichthyological Study*. SFASU.

Monthly physicochemical and benthic macroinvertebrate samples were taken and analyzed from six sites (four sites were on tributaries of Austin Branch and two sites were on the South Fork of Cochino Bayou) in the Davy Crockett NF from February 1998 to February 1999. Quarterly samples of the fish community were also taken and analyzed during this year. A habitat assessment was conducted for each sample site so that comparisons between the reference stream (Boggy Slough) and the sample sites could be made. Elements of the habitat assessment were bottom substrate, embeddedness, stream flow, channel alteration, scouring and deposition, bank stability, pool to riffle ratio, bank vegetative stability, and streamside cover. All the sample sites were located in areas that will be intensively managed for the RCW in the near future.

Physicochemical parameters and benthic macroinvertebrate data for Cochino Bayou and Austin Branch sites generally ranked higher than those collected concurrently in the Boggy Slough reference stream, reflecting the different geology of the drainage basins. Twenty-nine physicochemical and five statistically significant biological parameters were evaluated. The Hilsenhoff's Biotic Index (HBI) annual means for the six sites ranged from 5.04 to 6.64, indicating excellent to good water quality. All six sites rated better than the reference stream in their HBI means.

The ichthyological survey was hindered by drought during the summer of 1998, causing four of the six study sites to become dry for at least two months. Statistical analyses could not be performed due to the small and uneven sample sizes. The Austin Branch sites were generally dominated by species intolerant to pollution, while the Cochino Bayou sites were generally dominated by species tolerant of pollution. The influence of the drought during the summer months had an obvious negative effect on the fish communities in the study.

Evaluation:

Both Austin Branch and Cochino Bayou exhibited characteristics of least impacted watersheds, with Austin Branch having somewhat better water quality than Cochino Bayou. While drought and summer conditions appeared to introduce the majority of variation within the site's benthic macroinvertebrate and fish communities, this variation is normal in intermittent streams in east Texas.

SFASU Water Quality Monitoring Study in a 1200-Meter Thinning Area

The NFGT entered into a cost share agreement with Stephen F. Austin State University to monitor the effects on water chemistry, fish populations, and benthic macroinvertebrates from a 1200-meter thinning on the Sam Houston NF. A masters thesis by Terry Wilson entitled, *Stream Characteristics of an Environmentally Sensitive Region in the Sam Houston National Forest, Texas*, was completed in May 2000 documenting the research results.⁴⁰

Monthly physicochemical and benthic macroinvertebrate samples were taken and analyzed from seven sites on three streams in the Sam Houston NF (Sand Branch, Little Lake Creek and an un-named intermittent stream) from December 1997 to November 1998. Quarterly samples of the fish community were also taken and analyzed during this year on Sand Branch and the un-named intermittent stream. All the sample sites were located in the same watershed and downstream from areas where RCW 1200 meter thinning operations had recently taken place or were ongoing.

Physicochemical results indicate high conductivity, chloride and total dissolved solids vary in Little Lake Creek and Sand Branch. High calcium and calcium hardness levels were also obtained. An analysis of the rocks used to stabilize road crossings revealed a calcium level of 180,000 ppm and a magnesium level of 1950 ppm. This may account for the high calcium, calcium hardness and total dissolved solids values and could be contributing to the high conductivity. Acceptable limits on other parameters were observed with some seasonal variations.

Sampling of the benthic macroinvertebrate community included 31,376 individuals represented by 172 taxa. The Hilsenhoff's Biotic Index (HBI) of 5.8 indicates good water quality with low environmental stress.

The biotic indices of the fish communities ranged from poor to fair and indicated moderate environmental stress. This is believed to be due to the drought during the year and is not supported by the physicochemical and benthic macroinvertebrate data.

Evaluation:

Preliminary findings of high conductivity, total dissolved solids and chloride values indicate moderate stress in Little Lake Creek and Sand Branch. The HBI and diversity values indicate good water quality and

⁴⁰ Wilson, T.W. 2000. *Stream Characteristics of an Environmentally Sensitive Region in the Sam Houston National Forest, Texas*. SFASU.

low environmental stress. The 1200-meter thinning for the protection of the RCW habitat does not seem to be contributing to the stressful situations in the streams.

The same type of monitoring was also performed in Compartments 31 and 68 on the Sam Houston NF. Preliminary findings are basically the same for these sites as for Little Lake Creek and Sand Branch with one exception, Gourd Creek. Analysis of physicochemical parameters and fish data revealed signs of moderate pollution in Gourd Creek (Compartment 68). There was no timber removal from Compartment 68 during the study period; however, Gourd Creek does receive effluent from a plywood mill and treating plant approximately three kilometers upstream. High concentrations of chlorides, total dissolved solids and conductivity appear to be hampering the aquatic habitat. Also the fish community was noticeably affected by low dissolved oxygen levels (0.6 and 2.4 mg/liter) observed in September of 1998. This data was collected from December 1997 to November 1998. Final analysis is scheduled for completion in the summer of 2000.

SFASU Water Quality Monitoring Study in a Southern Pine Beetle Impacted Area

The SFASU Department of Biology conducted research for the NFGT on the effects of SPB-caused tree mortality and the resulting influx of large amounts of woody material into streams on water quality. The study was designed to help the NFGT determine if current policy regarding SPB outbreaks in wildernesses is detrimental to the aquatic environment, particularly the benthic macroinvertebrates. The specific objectives of the study were to determine the influence on community composition of benthic macroinvertebrates by large amounts of detritus originating from dead and dying pine trees; whether erosion and siltation has increased due to the toppling of trees into the streamcourse; and whether any physicochemical changes within the streams can be attributed to SPB damage. Robin Reese conducted the study under the supervision of Dr. Jack D. McCullough, and the results were published as a Master of Science thesis in May 1998.⁴¹

The study was located in Indian Mounds Wilderness (IMW) on the Sabine NF, approximately three miles east of Hemphill, Texas. The IMW has three major drainages: Bull Creek, Indian Creek, and Hurricane Bayou. All three streams occur on the same geologic formation and are similar in size of watershed and dominant vegetation type. The Bull Creek and

⁴¹ Reese, R.A. 1998. *The Effect of Southern Pine Beetle (*Dendroctonus frontalis* Zimm.) Damage on the Water Quality of Two Streams in Indian Mounds wilderness Area: A Macrobenthic and Physicochemical Analysis*. SFASU Dept. of Biology.

Hurricane Bayou watersheds sustained major SPB damage from 1987 to 1995, but Indian Creek had only minor damage in the upper reaches of its watershed. During the period 1987 to 1995 SPB spots in IMW killed pine trees on approximately 8,300 acres out of 10,900 susceptible acres. Indian Creek was used as the reference stream, or least impacted stream, for this study due to minimal SPB damage within its watershed.

The Wilderness Act of 1964 provides that a wilderness be “protected and managed so as to preserve its natural condition.” Human intervention is limited and natural processes are allowed to determine the characteristics of the wilderness. Guidance for determining whether or not to take action to control SPB infestations, and what type of control actions can be taken, are provided in the *Record of Decision and Final Environmental Impact Statement for the Suppression of the Southern Pine Beetle (SPB FEIS/ROD)* approved by USFS Chief Dale Robertson on April 6, 1987. The *SPB FEIS/ROD* also provided direction for taking SPB control actions in wildernesses and RCW habitat areas. In general, SPB infestations in wilderness are allowed to run their natural course. Control actions are not taken unless site-specific analysis determines that SPB spot(s), “Will likely threaten the continued existence of an essential RCW colony site and foraging area,” or “occurs within ¼ mile of susceptible host type on State and private land or high-value Federal forest resources other than commercial timber.” (*SPB FEIS/ROD*, p. 12)

Evaluation:

One sample site was chosen for each stream, and collections began in February 1996 and continued for one year. Due to a severe drought in the summer of 1996 Indian Creek went completely dry during August and a sample could not be taken. The study determined that Bull Creek and Hurricane Bayou had been affected by the large amounts of decaying pine trees within their watersheds. The benthic macroinvertebrate community contained fewer numbers of Ephemeroptera, Plecoptera, and Trichoptera and greater numbers of dipterans. Density of organisms was also lower, most likely due to siltation and smothering. This supposition is supported by the fact that Bull Creek had high turbidity levels and Hurricane Bayou had high total solids. While increased organic matter has been shown to increase the production of benthic macroinvertebrates, the nature of the debris in these streams may have caused the opposite to occur. This is likely because pine is resistant to decay and is a low quality food substrate for macroinvertebrates. The dense colonies of microorganisms usually found on decaying vegetation provide much of the nutrition that benthic macroinvertebrates need.

The study also found that high true and apparent color levels in all three streams can be attributed to a massive influx of organic matter. This is not a significant cause of concern for the streams themselves, but the possible influence on water quality in Toledo Bend Reservoir may be a concern. High phosphate levels in the streams may also cause phytoplankton blooms in the reservoir.

A similar study is being conducted on several streams within the area of the Sabine NF that was devastated by the February 10, 1998 windstorm. Preliminary findings indicate that large woody debris in the streams is beneficial, apparently due to having additional substrate for benthic macroinvertebrates. Additional information about this study can be found in the Windstorm section under Sub-Issue 2 Forest Health, Other Mortality Events.

Soil Survey Acres and Soil and Water Improvement Accomplishments

Soil resource inventories are conducted at various intensities depending on management requirements. The NFGT have an Order III level intensity on 100 percent of the lands. In 1982, the NFGT began contracting with the NRCS (then Soil Conservation Service) to upgrade all national forests lands to the Order II level, which is the intensity needed to manage most NFGT lands. As of FY 2000, all NFGT lands are covered with an Order II level survey except approximately 10,000 acres on the Sam Houston NFs and the entire Caddo Unit of the NGs. Plans are to complete the Sam Houston NF in FY2001. There are no immediate plans to upgrade the soil survey on the Caddo Unit. At this time, the Order III level inventory is adequate for the management needs on that unit.

The Order II survey is made for intensive land use that requires detailed information about soil resources for making predictions of suitability for use and of treatment needs. Mapping Unit delineations for Order II surveys are variable in size, with a minimum of 0.5 to 10 acres depending on landscape complexity and survey objectives. The base map scale is generally 1:12,000 to 1:31,680, depending on the complexity of the soil pattern within the area.

The Order III survey is made for extensive land use that does not require precise knowledge of small areas or detailed soils information. Such survey areas are usually dominated by a single land use and have few subordinate uses. Mapping Unit delineations for Order III surveys have a minimum size of about 4 to 640 acres depending on the survey objectives and complexity of the landscape.

Soil and Water Improvement (Watershed Improvement) is the program area that restores those NFGT lands that do not meet the intent of the 319 Section (non-point source pollution) of the Clean Water Act. There are approximately 2,500 acres of NFGT lands that are in need of restoration. The majority of these lands are on the Caddo-LBJ NGs. These lands are restored using various erosion control techniques that are discussed in Watershed Improvement Prescriptions prepared by Ranger District personnel. These acres are tracked by using a Watershed Improvement Needs database. The database will be upgraded after the implementation of a National Oracle database.

Table 13
Inventories and Accomplishments

Activities	Unit of Measure	FY 97 Accomplishments	FY 98 Accomplishments	FY 99 Accomplishments
Soil Resource Inventory	Acres	17,700	15,410	16,439
Soil & Water Improvement	Acres	37	34	58*

*The total Soil and Water Improvement for FY 99 includes: NFSI, 38 acres reported in the FY 99 MAR final; CWKV, 8 acres reported in the FY 99 MAR final; and 12 acres completed by Challenge Cost Share (CCS) projects on the Caddo/LBJ NGs and reported to the Regional Office as a CCS accomplishment in FY 99.

State Designated Impaired Streams

Seven water quality monitoring stations have been established on the Forest: one on the Angelina and two each on the Davy Crockett, Sabine and Sam Houston NFs. The Angelina and Neches River Authority have monitored these stations for the past five years using EPA approved laboratory methods. That data is on file in the Supervisor’s Office in Lufkin, Texas.

The following chart names the streams and water bodies on national forest lands that are included in the Draft Texas 2000 Clean Water Act Section 303(d) List. The 303(d) lists are those streams and water bodies that are impaired by not meeting State Water Quality Standards.

Table 14

Stream segments and water bodies occurring on national forest lands that appear on the Draft 303(d) list for the State of Texas, dated January 14, 2000.

Water Body Name	Summary of Impairment
Lower Neches River – Davy Crockett NF	Bacteria levels sometime exceed the criterion established to assure the safety of contact recreation.
Piney Creek – Trinity County – Davy Crockett NF	Dissolved oxygen levels are occasionally lower than the established standard. Bacteria levels sometimes exceed the criterion established to assure the safety of contact recreation.
Angelina River – Above Sam Rayburn Reservoir	In the middle 16 miles, bacteria levels sometimes exceed the criterion established to assure the safety of contact recreation.
Ayish Bayou – Angelina National Forest	Bacteria levels sometime exceed the criterion established to assure the safety on contact recreation.
East Fork, San Jacinto River – Sam Houston NF	Partially supports contact recreation due to moderately elevated levels of fecal coliform bacteria.
West Fork, San Jacinto River – Sam Houston NF	Partially supports contact recreation due to moderately elevated levels of fecal coliform bacteria.

Evaluation:

The national forests are being managed in accordance with *Plan* standards and guidelines and state-approved BMPs. The parameters that cause these streams and water bodies to be impaired are not associated with ongoing management practices on national forest lands. Currently, the State of Texas has not requested the USFS to provide any input or assistance to address measures to improve these streams and water bodies.

Streamside Management Zones

In accordance with the *Plan*, riparian areas are being protected through the implementation of Streamside Management Zones (SMZ). Included within SMZs are riparian areas, jurisdictional wetlands, lakes, oxbows, and other areas adjacent to intermittent and perennial streams. Minimal disturbance occurs within SMZs. It has been determined through field observations that minimal adverse effects are occurring within riparian areas. (See also the topics on the **Long-Term Soil Productivity Study** and **SFASU Water Quality Monitoring**).

Ten Percent Roads and Trails Funds (TRTR)
Accomplishments

Ten percent of national forest receipts are made available by the Congress to build and maintain roads and trails and to address forest health issues. The funds are to be used for high priority watershed projects identified by interdisciplinary teams. The NFGT is required to submit yearly accomplishment reports to the Washington Office. These funds were first made available in FY 1998; therefore, only two years of accomplishment and monitoring are available.

Fiscal Year: 1998 Allocation: \$1,566,629 Accomplishments:

TABLE 15

Activity	Roads	Trails
Surfacing		
Aggregate	26.0 miles	.07 miles
Chip Seal/Pavement	3.0 miles	0.0 miles
Relocation	0.0 miles	2.6 miles
Drainage Improvements		
Ditch armoring	0.5 miles	0.0 miles
Waterbars/drain dips	42 each	450 each
Culvert replacement	3 each	3 each
Bridges constructed	0 each	28 each
Fords constructed	1 each	1 each
Berms constructed	4 each	4 each
Cut/fill stabilization	22 sites	2 sites
Dispersed Rec. Improvements	6 sites	26 sites

Fiscal Year: 1999

Allocation: \$500,000

Accomplishments:

Table 16

Activity	Roads	Trails
Surfacing		
Aggregate	29.5 miles	.00 miles
Chip Seal/Pavement	0.4 miles	0.0 miles
Relocation	0.0 miles	7.2 miles
Drainage Improvements		
Ditch armoring	0.5 miles	0.0 miles
Waterbars/drain dips	40 each	2587 each
Culvert replacement	12 each	0 each
Bridges constructed	0 each	36 each
Fords constructed	0 each	0 each
Berms constructed	25 each	2 each
Cut/fill stabilization	2 sites	1 site
Dispersed Rec. Improvements	3 sites	5 sites

Benefits from these projects include protection and enhancement of soil and watershed resources, protection of sensitive and endangered species, protection of archaeological resources, and improved forest visitor safety. The NFGT will monitor these sites to verify that the intended objectives continue to be met.

Texas Forest Service (TFS) Best Management Practices (BMPs) Results

The TFS is the state agency that established the program to develop and implement BMPs to reduce nonpoint source water pollution as outlined in the Clean Water Act of 1987. The Act also required states to develop methods for determining the effectiveness of BMPs, including a measure of BMP compliance.

The Texas Silvicultural Nonpoint Source Pollution project includes a monitoring program that documents the level of voluntary implementation of BMPs and their effectiveness in reducing nonpoint source pollution from silvicultural activities. The TFS has published three reports to date documenting their findings. The first report was published in October 1992 and summarized the results of monitoring 162 sites between mid-

1990 and mid-1992.⁴² The second report was published in March 1996 and summarized the results of monitoring 135 sites between September 1992 and November 1995.⁴³ The third report, mentioned previously in the *Road Construction/Reconstruction* section, was published in April 1998 and summarized the results of monitoring 150 sites between June 1996 and July 1997. A fourth round of monitoring has been completed, and results of this effort are to be published in 2000.

Evaluation:

The TFS conducted BMP monitoring of logging operations -

- On three sites on the Sam Houston NF on October 24, 1996;
- On two sites on the Sam Houston NF on November 5, 1998;
- On three sites on the Davy Crockett NF on September 16, 1998; and
- On three sites on the Sam Houston NF on May 13, 1999.

All the sites received a “good” or “excellent” rating. The logging operations on national forest lands have consistently received the highest BMP ratings in the state for protecting water quality.

On January 23, 1999 Burl Carraway and Dr. Ron Billings of the TFS inspected the salvage logging operations on two sites on the Sam Houston NF in response to letters of complaint received from the Sierra Club. They found that:

- “(1) compliance with BMPs was above and beyond the State’s guidelines,
- (2) there was no water quality impact,
- (3) fire hazard was reduced, and
- (4) forest health conditions were improved by removal of potential bark beetle breeding material.”

Timber Sale Erosion Control Efforts

USFS Timber Sale Administrators monitor ground conditions to ensure sale activities do not occur when *Plan* Standards and Guidelines pertaining to soil and water protection would be violated. When conditions are such that a violation would occur, the sale activities are suspended until conditions improve. This is documented in the Sale Inspection Report.

⁴² Lord, R., J. Norris, and J. Tullos. 1992. *Voluntary Compliance with Forestry Best Management Practices in East Texas*.

⁴³ Carraway, B., and J. Norris. 1996. *Voluntary Compliance with Forestry Best Management Practices in East Texas*.

The erosion control requirements in our timber sale contracts are effective and administered well, although conditions beyond our control (i.e. drought or heavy rainstorms) can adversely affect the results of erosion control work. To ensure erosion control work is satisfactory and not adversely affected by severe weather, direction was issued to better monitor erosion control work (August 27, 1999, 2450 Supervisor's Office Memo). The following three monitoring elements have been instituted to assure that erosion control work is satisfactory and remains effective:

- Conduct post erosion control work inspections, especially after severe weather, to promptly correct deficiencies found.
- Make a final inspection report approximately one year after completion of any erosion control work. This inspection is necessary even if the timber sale contract has been completed and closed.
- Identify the responsible party for taking action to correct any deficiencies found. For example, ORV traffic during wet weather may be responsible for rutting roads and cutting through the erosion control structures that a timber sale purchaser constructed, in which case the NFGT would be responsible to take corrective action. The purchaser is not responsible for damage caused by other users of the national forest unless the damage was the result of negligence by the purchaser.

Vegetation Treatments

The effects of prescribed burning, road obliteration, and road construction and reconstruction on watershed conditions have been previously discussed in this section. The NFGT conducts other treatments that also have potential to affect watershed conditions such as pre-commercial thinning and various types of site preparation (shearing, shearing and burning, chopping, and cutting with hand tools). Site preparation is done to prepare seedbeds for natural regeneration and to prepare areas for planting. Pre-commercial thinning is usually done in areas that were regenerated naturally and have become overstocked with trees.

The most serious potential pollutant from silvicultural activities is sediment, as it can have a physical effect on downstream biota and may transport significant amounts of nutrients, carbon, and pesticides. Slash burning and chopping usually have no significant effect on sediment yield, but mechanical site preparation with shearing and windrowing of debris can generate significant sediment pollution.⁴⁴

Fire, whether wildfire or prescribed burning, has the potential to kill trees, reduce transpiration, and consume some of the litter and larger fuels that protect the ground. Prescribed burning is conducted for a number of reasons, and burning plans are designed to accomplish their objectives while keeping fire intensity levels low enough to minimize the amount of bare soil exposed and damage to non-target vegetation.

Forest-wide standards and guidelines for vegetation treatments are located in the *Plan*, Chapter IV, pages 77-82. Many of these standards were incorporated from the *Record of Decision for the Final Environmental Impact Statement for Vegetation Management in the Coastal Plain/Piedmont*, which was approved by the Regional Forester in February 1989. There are also additional Forest-wide and Management Area standards and guidelines that provide further direction for vegetation treatments. Actions that may affect water quality must meet or exceed State-approved BMPs, even though the State of Texas has a voluntary BMP program.

Watershed Restoration Work

A total of 46 acres of watershed restoration work was completed on the Caddo/LBJ NGs in FY 1999. This work included gully restoration, pond construction, gully plugging, and revegetation work in areas where accelerated erosion was occurring. This work prevented hundreds of tons of soil from being washed down the many gullies where it silts up ponds and reservoirs. This is especially important since the Big Sandy watershed on the LBJ NG serves major reservoirs that supply drinking water to the Dallas/Ft. Worth metropolitan area.

The erosion control work ensures that the land's capability to produce vegetation for controlling erosion and improving grazing conditions is maintained. The watershed work also removes potential dangerous situations for the visiting public and improves the safety of those utilizing the grasslands.

⁴⁴ Riekerk, H., D.G. Neary, and W.T. Swank. 1989. *The Magnitude of Upland Silvicultural Nonpoint Source Pollution in the South*. In *Institute of Food and Agricultural Sciences Journal*, No. 9268. University of Florida.

Well Plugging

Approximately 40 wells were closed in the years 1997-1999. The first step in the process of closing wells is to plug the down-hole portion of the well. The TRC has the responsibility to approve the well-plugging operation. On U.S. owned minerals, the Bureau of Land Management also approves the operation. The USFS is the surface management agency responsible for the surface reclamation. This operation consists of removing any contaminated soil from the site and disposing it in an approved site. Gravel from the existing roads is removed and the roads are ripped to a depth of at least six inches. Then the area is contoured to its original state. Next topsoil is spread on the entire site and the area is seeded and fertilized. The closure of the site will not be approved until there is at least 70 percent vegetative cover over the entire site after one growing season on the national forests, and two growing seasons on the NGs. When this rehabilitation work is completed the well is officially closed. This assures the USFS that the site will return to its natural productive capacity and that other resources and values, including wildlife, timber, recreation, scenic, and watershed, are protected.

The NFGT located an uncapped, abandoned oil/gas well adjacent to Graham Creek in the Upland Island Wilderness on the Angelina NF in January 1993. Effluent from the well was flowing into Graham Creek, and was found to contain high levels of chloride, sodium, calcium, magnesium, and conductivity. Dr. Jack McCullough of SFASU conducted a monitoring study to determine the effect of the well effluent on Graham Creek, and found that the water chemistry and aquatic communities of the stream were being significantly impacted.⁴⁵ A determination was made that the well should be plugged since it was likely that the well casing had split open below the ground surface, allowing effluent to contaminate surface and ground water. The well was plugged in 1995, and a second study to examine the water chemistry and aquatic communities of Graham Creek was conducted by SFASU to determine if the well had been successfully closed. Sampling for this study was done in May, June, and July, 1996. The researchers found that the capping of the well was very successful, as the water chemistry results showed much-reduced chloride and conductivity levels. The fish and benthic macroinvertebrate community assessments also showed an improvement in environmental conditions compared to the 1993 data before the well was plugged.⁴⁶

⁴⁵ McCullough, J.D., K. McLaughlin, and K. Fleener. 1993. *Monitoring Project to Determine Effects of an Existing Oil/Gas Well on Graham Creek Ecosystem*. Final Report to the U.S. Forest Service. Lufkin, Texas.

⁴⁶ McCullough, J.D., K. McLaughlin, and K. Fleener. 1993. *Monitoring Project to Determine Effects of an Existing Oil/Gas Well on Graham Creek Ecosystem*. Final Report to the U.S. Forest Service. Lufkin, Texas.

Windstorm Blowdown Monitoring Efforts

The February 10, 1998 severe windstorm that struck East Texas caused significant timberland damage to three national forests (Angelina, Sabine and Sam Houston) on about 103,000 acres of national forest lands. The NFGT and incident personnel established an extensive project Implementation Monitoring Plan for tree removal operations in these storm-damaged areas. Monitoring actually began with pre-sale review by a resource monitoring group that included forestry, archeology, wildlife and soil science/hydrology resource specialists who reviewed each sale prior to advertisement for inclusion of all necessary resource requirements.

Evaluation:

Trained sale administrators and harvest inspectors continued the monitoring process by inspecting tree removal operations for compliance with sale contracts that included resource mitigation measures. They detected minor contract compliance problems such as a minimal number of unauthorized incidences where a few downed trees were removed from designated riparian areas. Resource specialists, in addition to sale administrators, then reviewed those areas to ensure no unacceptable environmental effects occurred as a result of those actions. It was determined that the removals caused no significant problems.

During and immediately following completion of tree removal operations, archeologists, soil scientists, wildlife and fisheries biologists, landscape architects, and foresters monitored operations for compliance with the *Plan* and project-specific mitigation measures. More than 1,445 individual resource specialty monitoring reports were filed to document monitoring findings.

Longer-term monitoring of the storm response has also begun. Dr. McCullough of SFASU and his students began water quality monitoring to determine effects associated with tree removal as well as effects from not removing downed trees within riparian areas. Several SFASU forestry students conducted site-specific vegetation inventories of harvested areas that are being used by the reforestation interdisciplinary team to analyze reforestation/restoration options and then monitor the effects of reforestation efforts.

Forestry students from SFASU conducted inventories after the tree removal operations were completed that are being used to determine what options are available for reforesting the damaged areas.

Issue B. Sustainable Multiple Forest and Range Benefits

The NFMA requires that the national forests and rangelands are managed to produce and sustain a level of goods and services to meet the public's present and future demands. This section addresses the range of opportunities and level of products provided by and on the NFGT, and the impacts of use by the public.

Sub-Issue 1. Outdoor Recreation Opportunities

A full range of recreation uses and opportunities are being provided by the NFGT, however, public demand for recreational uses in Texas is changing. Public desire for horse, ORV and OHV, and mountain bicycle trails; riding opportunities, and facilities has increased. The Caddo/LBJ Grasslands are planning and constructing facilities for horse use to help meet these needs. The Angelina NF has begun evaluation of a user-made trail system to determine an appropriate course of action. The Sam Houston NF is developing plans for increased resource protection on the trail system, which in turn improves aesthetic values. Improvements were made on the Davy Crockett NF horse trail and bridge improvement and replacements were made to the 4-C Trail.

In addition, our publics are demanding more sophisticated site amenities such as electrical hook-ups at developed recreational areas. Double Lake Campground has provided electricity in the expanded loop and plans for electric hook-ups at Caney Creek Campground have been delayed. Wastewater system planning for Cagle Campground is continuing. Fifty campsites with water, sewer and electricity will be added to the Sam Houston NF facilities when this is finished.

Concessionaires are providing assistance through special use permits with maintenance and management at Double Lake and Ratcliff Lake Campgrounds. The Fee Demonstration program is being considered for developed recreation areas not under concession and at designated trails. The Lake Conroe Complex, including Cagle, Scott's Ridge, and Stubblefield Campgrounds, is currently participating in the program. This will provide additional funds for maintenance and up-grades at those sites.

Water-based day use demand has dramatically increased at Scott's Ridge and dispersed shoreline locations on Lake Conroe. Facility development and better distribution of users at Scott's Ridge is in the planning stage. Fishing was made safer by constructing walkways along Bridge 215 on the Sam Houston NF. This also improved the aesthetics of the area and protected the riverbanks.

Evaluation:

The NFGT are faced with a challenge to accommodate the changing needs and demands of the public for amenities (i.e. electrical hook-ups, an increase in the variety of recreational facilities) in a time when work forces and budgets are

decreasing. This section has addressed the current services being provided, as well as acknowledging our inability under present funding to meet the growing demands. We will continue to explore alternatives to provide the recreational experiences the public wants from the NFGT, and with continued cooperation of partners, respond to those demands.

The *Plan* envisioned a quality recreation experience for our visiting publics and providing that quality will continue to be a major goal of the NFGT.

Visual Quality Objectives (VQO)

Planned VQOs are being met for the most part. SPB infestations have left some areas with severe visual contrasts. Court-ordered vegetation management for RCW has resulted in the removal of more hardwoods than would otherwise be left if the NFGT were allowed to manage in accordance with the guidelines in the *Plan*.

Management activities, including harvesting activities, meet the VQO and Scenic Objectives. However, the 1998 timber blow down in the Sabine, Angelina and Sam Houston NFs created situations that exceeded the VQOs, and in many areas mitigation was not possible. The restoration and cleanup improved the scenic quality in the Double Lake and Ragtown recreation areas, and in woodpecker areas. It will take several years of natural revegetation to obtain an appropriate level of VQO standards in many of the damaged roadside areas.

Highway 7 Powerline Visual Effect

During FY 99 the Houston County Electrical Cooperative was granted a permit from the Texas Department of Transportation (TXDOT) to locate a powerline along the north side of State Highway 7 in Houston County. The power line was constructed within ten feet of compartments 36 and 37 on the Davy Crockett NF and changed an irregular, natural appearing edge to an abrupt straight line. The VQO identified in the *Plan* for the State Highway 7 corridor is “retention.” The section of State Highway 7 affected by the powerline currently does not meet the “retention” VQO.

Public Private Venture (PPV) Studies

In 1998 a Sustainability, Marketability and Profitability Study was completed for Lake Fannin Organizational Camp on the Caddo NG. The same type of study was completed in 1999 for Caney Creek Recreation Area on the Angelina NF. Both studies were conducted by the Center for Regional and Economic Development Studies at Texas A & M University – Commerce in conjunction with MJS Resources in Dallas, Texas.

Evaluation:

Both studies indicate that considerable money and effort will be needed to develop and promote viable destination recreation areas.

A Solicitation of Interest was sent to the public for operation of Lake Fannin on the Caddo NG. Several private parties have shown interest in the project. A project prospectus is currently being written.

There has been interest expressed from the private sector in operating the Concession Stand at Caney Creek Campground. However, this operation has failed once and continued concern of failure in this concession prevails due to lack of campers. Electrification of campsites should increase use and is considered necessary prior to any public – private venture. Plans for electrification have been delayed.

Customer Card Summaries

Satisfaction and Visitor Issues

The NFGT continues to receive comment cards from the public. The four questions that visitors address are:

1. I received prompt and courteous attention.
2. I was provided the information or service needed.
3. For my request or business, the information was clear and efficient.
4. I was satisfied with the facilities used.

Table 17
Comment Card Summary

Fiscal Year	Cards Rec'd	Question Breakdown (shown above) Strongly Agree	Agree	Disagree	Strongly Disagree	N/A
1997	60	121	11	1	2	13
1998	69	223	22	4	4	25
1999	25	72	15	1	5	6

Evaluation:

- The number of cards received for FY 1997 and 1998 were about the same; however, the responses became more “positive.”
- The number of cards received in FY 1999 dropped significantly from the two previous years.
- The responses in the “Strongly Agree” column are much higher than the other categories.

It is unclear why the number of responses dropped in FY 99. The NFGT will continue to monitor and evaluate the responses. It is now possible for the public to respond by using the Internet. The NFGT has the “Comment Card” in its Web Page and is available for public use. The NFGT Public Affairs Office, the District Ranger or his staff responds to many of the public’s inquiries or comments. Most of the comments refer to experiences the public has with Forest Service employees and facilities. Those that address facilities, such as problems with a restroom, are discussed with the Recreation and Engineering Staff and are remedied as soon as possible. The NFGT takes the public’s concerns seriously and the comment card is a good way to get feedback from them.

Visits and Operational Costs

The Meaningful Measures database and spreadsheet is now being used to prepare reports on recreation use and the cost of operation and maintenance. As the NFGT gathers more and better information, the recreational picture will improve and help NFGT managers make longer-range management decisions.

Recreation Construction

NFGT submitted a funding request in FY 99 for the decommissioning of recreation structures. These structures include old and dilapidated toilets and sewer treatment plants. This work will be accomplished in FY 2000. Several outside entities assumed management of recreation areas in FY 99. The Sabine River Authority of Texas now manages the recreation sites on the Sabine NF. Double Lake Recreation Area and Ratcliff Lake Recreation Areas are being operated under Concessionaire Granger-Thye Special Use Permits. To date, all *Plan* objectives are being met.

Trail Work

Many efforts are underway to provide an adequate trails system for ORV, horse, and hiking needs. The Angelina NF is going through the planning and development process for ORV trails. The Sam Houston NF is maintaining their trail system maximizing the use of 10 percent Roads and

Trails funds. The Caddo/LBJ NGs has developed horse trails through partnerships and in-house means. Although the total planned mileage in the *Plan* has still not been accomplished, efforts are underway to develop a sound trail system management program.

**Transportation Equity Act for 21st Century (TEA 21) -
(Formerly known as Symms Act Dollars)**

The TPWD administers the National Recreational Trail Fund for Texas that consists of funds from the Federal Highway Administration (FHWA). The Sam Houston NF applied in 1998 and received funds for trail work accomplished in 1998 and 1999. The Sam Houston and Davy Crockett NFs and the Caddo NGs applied in 1999 and each received funding for approved projects. The NFGT approved projects will receive up to \$320,000. The grant dollars will provide up to 80 percent of the approved project costs after submitting documentation of expenses. Approved projects for the awarded funds in August of 1999 are for the Bois d' Arc Trailhead on the Caddo NG, the 4-C Hiking Trail and the Multi-Use/Horse Trail on the Davy Crockett NF and the Multi-Use/Motorized Trail, Lakeshore Trail and Bike Trail on the Sam Houston NF. Most of the work will be accomplished in FY 2000 - 2002.

Stephen F. Austin Experimental Forest Trail

The Stephen F. Austin Experimental Forest, on the Angelina NF, completed an interpretive trail in the summer of 1997. The trail system is comprised of two separate loops: (1) The Jack Creek Loop is nine tenths of a mile and is a barrier free, surfaced universally accessible trail meandering through old pine trees and hardwoods; and (2) The Management Loop is one and one-half miles long and provides conservation education by offering an array of forest management practices at various stages.

The trail is open to the public during daylight hours. Accessible and bus parking spaces are provided.



Figure 19. Universally accessible trail on the Stephen F. Austin Experimental Forest, October 18, 1997.

Volunteer Time/Value

Volunteers accomplish numerous tasks every year including Volunteer Campground Hosts, as well as volunteers in other program areas. Volunteers provide services that would otherwise not be supplied.

As an example of the contribution made by volunteers, accomplishments in 1999 in the recreation program are estimated to be approximately \$100,000, in fish and wildlife management \$6,300, and for facilities construction, \$1,000.

Recreation Use Trends

Recreation trends for the NFGT have not been monitored or evaluated. We do know that recreation use is increasing by looking at certain indicators (i.e. increased revenues, fee demo collections, and increase in visitors). Monitoring techniques are being developed on a national basis that will help us perform this enormous task. Until all field data is collected through the Recreation Management System (Meaningful Measures Database) and an analysis is completed from annual fee receipts and customer samplings, the NFGT will not be able to clearly demonstrate recreation trends.

Shooting Area Closure and Sam Houston Opening

Forest

Currently there are two shooting areas on the Sam Houston NF. One is limited to shotguns only and one other is open for all legal gun target practice. These were established to manage Wildlife Management Area (WMA) rules and still give the public a target area if they do not purchase a hunting area permit. This limits gun fire in the national forest to known sites and helps to prevent individuals from shooting across one of the more than 190 miles of pedestrian trails. So far this has functioned well.

Grasslands

The closure of unlimited firearm shooting in 1997 on the NGs, except during hunting season, has all but eliminated the public safety and health concerns that existed when unlimited shooting was allowed. All rifle and centerfire ammunition shooting is currently banned on the LBJ NGs year round. Damage to USFS facilities and private improvements, mostly windmills, oil wells and storage tanks, has been drastically reduced. A proposed shooting range is currently being evaluated in the Environmental Assessment process to allow the rifles and other weapons a safe and protected place to shoot. This assessment is scheduled to be completed in FY 2000.

Off-road Vehicle (ORV) Closure

Refer to **Sub-Issue 3. Watershed Conditions** and section **ORV Closures** earlier in the report where Sam Houston and Angelina NF closures were discussed.

Fee Demo

The NFGT initiated a Fee Demo Program on July 1, 1999. An annual report to Congress outlines the project, fees collected and projects for which the fees will be used.

The objective is to implement the Texas National Forests Fee Demo program as outlined in the Business and Communication Plan submitted May 21, 1999 and amended on December 9, 1999.

Recreation areas that are part of the fee demo project are allowed to retain 80 percent of fees generated to maintain the site. Of the remaining 20 percent up to 15 percent can be used for fee collection and the remaining 5 percent will go to the R.O.

The following areas are included in the fee demo project:

ANGELINA NF: Boykin Springs, Caney Creek, Sandy Creek and Trailhead Parking for the soon to be established ORV trail.

SABINE NF: Boles Field campground, and Red Hill Lake.

SAM HOUSTON NF: Stubblefield Recreation Area, Cagle Recreation Area, Scott's Ridge Recreation Area and the Trailhead Parking for the ORV trailhead(s).

CADDO/LBJ NGs: Lake Davy Crockett.

As stated in the Amended Fee Demo Business and Communication Plan submitted 12/9/99, the following priorities are to be used when funding activities with Fee Demo site-specific special funds.

- Meet Federal and State safety and health standards.
- Reduce backlog of heavy maintenance and rehabilitation of sites.
- Increase visitor information and customer service.
- Add visitor requested amenities as indicated through scoping sessions.
- Fill high priority accessibility needs.
- Increase Law Enforcement presence.

Evaluation:

The fee demo program is a test program and the Business Plan can be amended annually to update and improve the program based on customer input and new information to improve service to customers.

To date no comment cards have been received relative to the Fee Demo Program. Customer suggestions for spending the funds have been submitted by telephone and by notes placed in fee tubes.

One area listed as one of the priorities that has received no funding is increasing law enforcement presence.

Wildlife Management Area (WMA) Stamp Trend

The NFGT participates with TPWD in a program that establishes areas to be managed under a permit system for several public uses, including hunting. A portion of fees paid by permittees is paid back to the NFGT by the state agency for maintaining and improving habitat of these specified areas.

Table 18
Wildlife Management Area (WMA) Trends

WMA	Year	# Hunters	# Trips	# Days	% of Highest Year*
Caddo Grassland	96/97	1,601	8,185	10,659	100
	97/98	1,346	8,698	5,907	55
	98/99	1,538	8,262	9,595	90
Moore Plantation (Sabine NF)	96/97	888	5,756	7,655	89
	97/98	607	3,998	5,907	69
	98/99	1,098	6,360	8,557	100
Bannister (Angelina NF)	96/97	682	3,348	4,762	86
	97/98	600	2,665	4,749	86
	98/99	879	4,337	5,538	100
Alabama Creek (Davy Crockett NF)	96/97	744	2,728	4,564	100
	97/98	482	1,774	3,765	82
	98/99	651	2,757	4,137	91
Sam Houston NF	96/97	2,702	17,748	21,157	69
	97/98	2,487	21,999	27,368	90
	98/99	3,262	25,674	30,548	100

*Highest year established by pinpointing number of days in individual areas showing 100 percent use. Note: Data obtained from TPWD annual report.

Hunter Camps

Hunter camp use was dispersed on the Davy Crockett NF by the addition of two additional sites. Aesthetics and safety were improved by the removal of hazard trees in hunter camp locations.

Sub-Issue 2. Infrastructure

Appendix E of the *Plan* provides the base tabulation of infrastructure facilities. Although the NFGT transportation system also includes County and State roads, only Forest Development Roads (FDRs) and Forest Highways will be addressed in this report. Forest Highways are of primary importance for the protection, administration and utilization of the NFGT. The FHWA provides funding to the NFGT for upgrading and reconstructing these roads.

Transportation System

Table 19

Jurisdiction	Total Miles (Plan)	Total Miles (Inventoried as of 26 Jan 2000)*
State	1226.0	1228.4 (Includes Forest Highways)
County	772.0	796.2
Forest Service	2353.0	2449.3

* These mileages differ from those published in "Fingertip Facts". Fingertip Facts are published yearly, hence they do not reflect more current information obtained through actual field measurements. Fingertip Facts will be updated to reflect these numbers at its next publication.

The Chief of the Forest Service directed all field units to conduct condition surveys on all Forest Development Roads during FY 1999 and FY 2000. This directive was issued to address financial management deficiencies in the Forest Service. Road condition surveys have resulted in more accurate inventories of existing roads. A more accurate inventory and new construction (as shown below) accounts for the 96.3 mile difference in *Plan* and inventoried Forest Service road mileage. New construction is as follows:

FY 1997:	2.44 miles
FY 1998:	0.40 miles
FY 1999:	0.80 miles
TOTAL:	3.64 miles**

**These roads were constructed to meet travel and road management objectives (as part of timber sales) per *Plan* Standards and Guidelines.

Two other significant actions have taken place during FY 1997-1999: road reconstruction and decommissioning (obliteration). Additionally, backlog maintenance on FDRs is taking place and funded with appropriated maintenance funds and Ten Percent Roads and Trails (TRTR) funds.

Road reconstruction and decommissioning has taken place as follows:

<u>Reconstruction</u>	<u>Obliteration/Decommissioning</u>
FY 1997: 35.7 miles	FY 1997: 0.0 miles
FY 1998: 173.3 miles	FY 1998: 7.2 miles
FY 1999: 39.0 miles	FY 1999: 24.0 miles

Evaluation:

- NEPA compliance needs to be strengthened for obliteration/decommissioning projects.
- One hundred percent of inventories for roads having maintenance Levels 3, 4, 5 and two percent of roads having maintenance Levels 1 and 2 have been completed. The completion of road inventories for Level 1 and 2 roads in FY 2000 will yield a more accurate account of total road mileage for the NFGT. The maintenance backlog assessments that were done concurrently with the inventories identified a need of \$4,600,000 annual maintenance and \$79,500,000 for deferred maintenance.
- Based on FY 1999 accomplishments, the NFGT has the capability to decommission approximately 30 miles of roads per year if transportation planning and analysis prescribes it.
- Funds received from the FHWA for forest highways are being utilized for the completion of Forest Highway 87 (reference the *Plan*, Appendix E, p. 3). Full coordination is taking place with TXDOT headquartered in Lufkin, Texas.
- All the roads on the NFGT are being reviewed through transportation studies and road management objectives are being documented. The transportation goal of the NFGT is to complete all inventories, document findings in the Infrastructure (INFRA) database, continue the reduction of backlogged maintenance, decommission unneeded roads and continue maintenance and reconstruction through USFS contracting services and cooperative work with counties and the state with adherence to *Plan* Standards & Guidelines and engineering controls. No major problems have been encountered

Dams

The Chief's directive to conduct deferred maintenance inventories has produced a clear picture of program needs. All dams (100 percent) were inspected during FY 1999. The estimated annual maintenance need for dams is approximately \$16,000, whereas the deferred maintenance backlog is approximately \$1,300,000. Clearly a greater level of funding is needed to bring all dams under full operational compliance.

Road Bridges and Major Culverts

Eighty percent of all bridges and major culverts (those having an end area of 35 square feet or more) were inspected in FY 1999. The outcome was that maintenance needs of approximately \$298,000 and \$1,993,000 respectively were identified. Although NFGT road bridges and major culverts are structurally stable, low maintenance due to lack of funding

will continue to accelerate their deterioration. These structures have inspection cycles of two to three years. NFGT Engineering will continue to report deficiencies to the Regional Office and work towards a replacement program that will prevent catastrophic failures. The estimates for annual maintenance are based on the 80 percent inspected in FY 1999.

Water and Wastewater Systems

Thirty-three percent of the total number of systems was inspected during FY 99. Two new wastewater treatment facilities were contracted for construction in FY 99. Both are in developed recreation areas, Caney Creek and Cagle. Both were funded with appropriated recreation construction funds. A request was submitted to the Regional Office for the New Waverly Ranger's Office wastewater drain field. Funding will come from Congressional Minor Construction Authority during FY 2000. All systems that are owned and operated by the NFGT must meet the Texas Natural Resource Conservation Commission (TNRCC) and USFS standards for safety and public use.

Structures (FA&O and Recreation)

The *Plan* lists three facilities that are scheduled for replacement: Angelina NF office and work center, Davy Crockett NF office, and Sabine NF office. It also states that one facility will be replaced per *Plan* period. The NFGT completed the construction of the Angelina NF work center in FY 99 and is scheduled to complete the office during FY 2000, hence meeting the requirements of the *Plan*. It is anticipated that the two remaining facilities will also be replaced during the *Plan* period. Efforts are underway to accomplish this. Legislation is being introduced that will allow the NFGT to eliminate six residences and use the revenue from the sale for the construction of an office. Additionally the Third Naval Mobile Construction Brigade and the Forest Service may agree to jointly construct the remaining two facilities.

See also **Sub-Issue 2. Outdoor Recreation Opportunities, Recreation Construction** earlier in this report for a discussion on recreation facilities.

Trails and Trail Bridges

See **Sub-Issue 3. Watershed Conditions, ORV Trail Work (Bridges/Block Crossings)** earlier in this report for a discussion of trails and trail bridges.

Accessibility Changes

Several modifications and changes have been made at NFGT facilities to make them more accessible to NFGT visitors. Renovations in the women's side of the Civilian Conservation Corps (CCC)-era constructed bathhouse at Ratcliff Lake on the Davy Crockett NF were completed in FY 1997. The modifications provide accessible facilities. Renovations to the men's side have not been funded. Phase 3 of the six foot wide accessible concrete walkway in the day-use area is completed, which provides access to the picnic shelter from the parking area, bathhouse and swimming area.

A reconstructed camping loop was opened in FY 1998 in the Double Lake Recreation Area on the Sam Houston NF. All the new campsites are accessible and have water, sewer and electric hook-ups. The existing campsites that remained in the loop are wider and have water and electric hook-ups. Three of four old toilet buildings were replaced with accessible facilities. Two of the toilet buildings are in the reconstructed loop and the third toilet building is across the lake and provides accessible facilities to the non-modified campsites.

Many of the existing ground mounted fire rings with fire rings mounted to concrete slabs of accessible height were replaced in FY 1999 at the Stubblefield Recreation Area on the Sam Houston NF. This project will continue through FY 2000. In addition, a universally accessible fishing deck was built in 1997.



Figure 20. Universally accessible fishing decks on the FDR 215 bridge at Stubblefield Recreation Area, Sam Houston NF, 1997.

The fourth and final phase of the six-foot wide concrete walkway at Ratcliff Lake Recreation Area on the Davy Crockett NF was completed. This phase provides a complete circular route to elements in the day-use area. All the elements, fishing piers, swimming beach, bathhouse, shelter and picnic table with grill are accessible.

An existing small concrete block vault toilet at Black Creek Lake was modified to meet accessibility standards on the LBJ NG. The picture below shows where the facility was enlarged for better accessibility.



Figure 21. Universally accessible vault toilet, Black Creek Lake Recreation Area, LBJ NG.

Valley View Group-Use Site is a semi-primitive motorized camping area with gravel roads and spurs, of accessible width also on the LBJ. While the site is not level, the surface is stable and campsite amenities, the shelter and the vault toilet are accessible.

An accessible vault toilet was installed at the Texas Arabian Distance Riders Association (TADRA) Horse Trailhead and a second accessible vault toilet was begun and will be completed in FY 2000.

Two accessible vault toilets that had been destroyed by vandals were replaced on the West Lake Crockett Recreation Area on the Caddo NG.

Sub-Issue 3. Human Influences

The NFGT considers increased concerns for environmental quality along with the rise in the demand for goods and services obtained from public areas while administering its multiple-use programs. People utilizing areas in or near forests and grasslands areas either directly or indirectly affect NFGT management. These aspects of human influences affecting NFGT management are illustrated in the following segments of the report:

- (1) *Population/Demographics;*
- (2) *Population/Urbanization Issues Affecting National Forest Land Management;* and
- (3) *Urban Interface.*

Population/Demographics of NFGT Counties

Texas became the second most populous state in the United States in 1994.⁴⁷ The latest population estimates available from the U.S. Census Bureau indicate that Texas has a population of 20,044,000 people (as of July 1, 1999).⁴⁸ Three of the ten largest cities in the United States are in Texas: Houston, Dallas, and San Antonio. Texas has a civilian labor force of 10.1 million people, and it is growing by about 200,000 each year.⁴⁹ Population growth in Texas is greater than across the nation as a whole. Texas is the second fastest-growing state in the United States and has the largest population of all of the states in the Southern Region of the U.S. Forest Service (Region 8).⁵⁰

The U.S. Census Bureau's population estimates for cities with populations of 100,000 and greater as of July 1, 1998, show 218 cities of this size. Of these, there are 23 in Texas, and all but one of them (Beaumont) grew in population from 1990 through 1998. The Census Bureau ranked these in terms of percent change from 1990-1998, and Texas had five cities that placed in the top 25. Plano, Texas, had the highest ranking of the Texas cities, placing fourth with a 71.6 percent population increase. Plano is a northern Dallas suburb that is less than 50 miles from the Caddo NG.⁵¹

Texas has 254 counties, and 15 of them contain national forests or national grasslands. Of the twelve counties that have national forest land, Montgomery County has the largest population (277,503) and had the greatest population growth in the past decade (52.3 percent), due to its

⁴⁷ Texas Department of Economic Development website, TDED Texas Overview page, 02/04/2000.

⁴⁸ U.S. Department of Commerce Census Bureau website, State Tables page, 02/07/2000.

⁴⁹ Texas Department of Economic Development website, TDED Texas Overview page, 02/04/2000.

⁵⁰ U.S. Department of Commerce Census Bureau website, State Tables page, 02/07/2000.

⁵¹ U.S. Department of Commerce Census Bureau, Population Division, Population Estimates Program, *Population Estimates for Cities with Populations of 100,000 and Greater*, July 1, 1998.

proximity to Houston. Of the three counties that have national grasslands, Wise County has the largest population (42,075) and had the greatest population growth in the past decade (21.3 percent), due to its proximity to Fort Worth.⁵²

San Jacinto County, approximately 30 miles north of Houston, has also experienced considerable population growth in the past decade. The county population in 1990 was 16,372 people, but the 1999 estimate was 19,440, a 19 percent increase. Other than Montgomery County, the county experiencing the largest numerical population gain was Angelina County, which grew by 8,643 people from 1990 to 1999, a 12.4 percent increase.⁵³

Evaluation:

As population increases in and around the NFGT there will be increasing demands for recreational opportunities and special uses to accommodate road and utility rights-of-way. It will also be increasingly difficult to conduct prescribed burning without impacting populated areas with smoke. Wildfire suppression efforts will become more complex and costly as more and more homes and subdivisions are built on the boundaries of the NFGT. The NFGT is likely to experience increasing environmental impacts from increased public use of the national forests and grasslands, and activities taking place on adjacent private lands, such as road construction and debris burning, will be more likely to impact the NFGT. As stewards of a tremendous public resource, NFGT management will be increasingly challenged to meet the multiple use demands of the public while providing for sustained yields of forest resources and products and protecting the forest and grassland environment.

Population/Urbanization Issues Affecting National Forest Land Management

Water Supply

Providing an adequate water supply for the residents and businesses in Texas has become a significant issue due to increasing population and several years of drought within the past decade. The NFGT have been impacted in the past by creation of large reservoirs such as Sam Rayburn and Lake Conroe, inundating approximately 14,558 acres of national

⁵² Department of Rural Sociology, Texas Agricultural Experiment Station, Texas A&M University System, *1998 Total Population Estimates for Texas Counties*, August, 1999.

⁵³ Department of Rural Sociology, Texas Agricultural Experiment Station, Texas A&M University System, *1998 Total Population Estimates for Texas Counties*, August, 1999.

forest lands.⁵⁴ Texas has a 50-year State Water Plan, completed in August 1997, that describes current and prospective water uses, identifies water supplies, matches these supplies to water uses, and identifies needed water-related management measures, facility needs and costs, addresses environmental concerns, and offers program and policy recommendations to better manage the State's water resources.⁵⁵ A state law (commonly referred to as Senate Bill 1) that became effective on September 1, 1997, included provisions to change how the Water Plan is prepared, placing emphasis on planning at the regional level instead of at the State level. Senate Bill 1 also required that the Texas Water Development Board adopt a comprehensive state water plan that incorporates the regional water plans by September 1, 2001. As these regional water plans are completed, potential impacts to management of the NFGT will need to be evaluated.

Trans-basin Water Transfer

The City of Lufkin, near the Angelina NF, purchased surface water rights to Sam Rayburn Reservoir at the time of its construction (late 1950s early 1960s). During 1998-99 the City decided that the water needs of the growing city and surrounding communities warranted preparation for use of these surface water rights in the not-too-distant future. This could conceivably impact the national forests if a request is made for a site on national forest land for a facility and/or an easement for a transmission line.

Evaluation:

The City hired an engineering firm to make a preliminary study and recommend the best way to implement the use of Sam Rayburn Lake water. Representatives of the engineering firm met with Angelina NF personnel in the summer of 1999. As a minimum, the following issues have to be worked out:

1. Location of the water source point of intake. The only location discussed with Angelina District personnel was in the Angelina River channel along the Hwy 147 Bridge. If this site is picked, the Forest Service may become involved in granting a right-of-way easement for a pipeline across FS ownership in the area.
2. Location of the water treatment facility. This issue was discussed in depth because the engineering firm was looking for a site with the highest elevation in the area. One such site was the Moss Hill

⁵⁴ U.S.D.A. Forest Service, National Forests and Grasslands in Texas, *1996 Revised Land and Resource Management Plan for the National Forests and Grasslands in Texas*, 1996, p. 162.

⁵⁵ Texas Water Development Board, *Water For Texas: A Consensus-based Update to the State Water Plan*, Document No. GP-6-2, August, 1997, p. XI.

area (Angelina NF Compartment 55) on FS ownership. Forest Service NEPA requirements and alternatives for handling the location of the facility on national forest lands, including a special use application and permit or a land exchange, will be addressed. The feasibility of locating the facility on private lands was addressed: maps and aerial photographs were used to identify possible locations, and the pros and cons of each site were discussed.

3. There was additional discussion of the potable water needs of the new Angelina District Work Center located at Hwy 147 and Walnut Ridge Road and the Angelina District Office currently under construction at the same location. One alternative for supplying the water needs is to purchase the water from the City of Lufkin, particularly if the water treatment facility or its distribution lines are located near the District Office and Work Center site.

A final decision has not yet been made, but the City may be pumping water from the lake within five years.

Off-road Vehicles

The use of ORVs was an issue in the development of the *Plan*, and continues to be an issue in the management of the NFGT. The *Plan EIS* analyzed the effects of ORV use and examined different levels of ORV use.⁵⁶ The *Plan* provided guidance for ORV use, ORV trail inventory, management, and development.⁵⁷ Proximity of the Sam Houston and Angelina NFs to the Houston and Beaumont metropolitan areas has made them popular areas for ORV recreational use. As the Houston metropolitan area has grown in population, recreational ORV use has also increased. For additional information about this issue see the **Off-Road Vehicle Closures** topic under **Sub-Issue 3. Watershed Conditions**.

⁵⁶ U.S.D.A. Forest Service, National Forests and Grasslands in Texas, *Final Environmental Impact Statement for the 1996 Revised Land and Resource Management Plan for the National Forests and Grasslands in Texas*, pp. 5, 37, 50, 212-214, and 218-219.

⁵⁷ U.S.D.A. Forest Service, National Forests and Grasslands in Texas, *1996 Revised Land and Resource Management Plan for the National Forests and Grasslands in Texas*, 1996, pp. 23, 61, 73-75, 90, 92-93, 103, 105, 115, 139, 143, 154-155, 158-160, 173-175, 177, 194, 197, 213, 216, 237, 251, 253, 265, 267, 274 and 288.

Urban Interface

Wildwood & Bentwater Subdivisions

Wildwood and Bentwater Subdivisions both reflect the growing impacts of urban interface on the NFGT. Wildwood Shore developers bought 200 acres that is surrounded by national forest and subdivided it into over 700 lots. This gives the area the potential to house between 1,400 and 2,000 people. These lots, with wooden cedar cabins, are being sold to urban individuals/families as weekend type homes for recreational opportunities in and around the Sam Houston NF and Lake Conroe. Impacts include increased traffic levels on Forest Service roads that were not designed to handle the higher volume of traffic and are inadequate to serve the planned resident populations; increased use of the NFGT by hunters; increased risk of wildfires; lake boat access channel dredging (some of the land under the lake is still National Forest); sign permits; landline management, etc.

Bentwater Subdivision is on the mid-Lake Conroe shoreline immediately across FM 1097 from the USFS Scott's Ridge Recreation Area that is also adjacent to three to four other smaller subdivisions. Bentwater is an up-scale lake-side golf course residential development with water front homes from \$350,000 to above \$1,500,000.

In both cases, access to Lake Conroe will be critical because of increased demand for recreational opportunities. Since approximately a third of the Lake Conroe shoreline is national forest, the NFGT anticipates increasing demands for public access to the lake. Currently, there are only two boat access points managed by the NFGT.

Grassland Ranchettes

A dramatic increase is taking place in population movement away from the Dallas/Fort Worth Metroplex, toward the open countryside surrounding the Caddo/LBJ NGs. Small ranchettes, subdivided upscale multi-home developments, and expensive individual homes (over \$100,000 in value) are increasing the complexity of the management of the grasslands.

Evaluation:

Developing areas are attracting forest visitors and users inexperienced with outdoor activities and in many cases expecting services at higher efficiency levels than currently available. The biggest impacts will be increased demand for recreational opportunities.

Acreage adjacent to the national grasslands is very desirable due to the fact that this public land will never be developed for commercial or residential use. The population increase surrounding the LBJ NGs was 21.3 percent from 1990-1999. Similarly, the population increase surrounding the Caddo NGs was 13.3 percent during the same period.

Visitor and Resource Protection

Since 1997 Law Enforcement and Investigations (LE&I) for the NFGT has documented alarming numbers of citations, warnings, and incidents. The NFGT LE&I organization includes only five Law Enforcement Officers (LEOs) and one Supervisory LEO. The NFGT receives heavy hunting and fishing pressure each year since it is the largest and one of the few free areas open to the public to hunt and fish in Texas.

The majority of citations issued each year are for the following five reasons: (1) ORV/ATV violations; (2) hunting and fishing without a license (including illegal fish and deer); (3) alcohol related violations; (4) motor vehicle violations; and (5) illegal dumping.



Figure 22. Illegal dumping on the NFGT.

Along with heavy use of the NFGT for camping, hunting, fishing, horse back riding, hiking, operating ORVs and other outdoor activities come problems typically associated with cities such as family disturbances, drug use, murders, suicides, thefts, and assaults. Forest Service LEOs receive calls through sheriff department dispatchers on a regular basis to deal with emergencies in campgrounds and dispersed areas. In most cases a Sheriff's Deputy is not available to take the call because they are dealing with problems in other parts of the county.

Evaluation:

The NFGT currently manages 675,658 acres of public lands in Texas, which represents just .4 of 1 percent of the total area of Texas.⁵⁸ Approximately 2.3 million people visit the NFGT annually. In FY 1998 13 percent (26,247) of all incident reports, 7 percent (1,382) of all violation notices, and 14 percent (8,083) of all warning notices issued by Forest Service LEOs in the nation were on the NFGT.

In FY 1991, law enforcement computer records were queried for criminal histories of 615 individuals who received violation notices from LEOs for offenses ranging from traffic infractions to drug violations while on NF land. Of the 615 individuals, 257 (42 percent) had either a significant misdemeanor record or a felony record. Results indicated that 129 (21 percent) of the individuals had a substantial misdemeanor criminal history and 128 (21) had felony histories. Although there is no way to determine how these percentages would carry over to the overall NF user population, it is a significant concern that one in five people who received violation notices were felons.

In FY 99 one murder, one suicide, and two accidental deaths with firearms occurred on the NFGT. Numerous arrests were made for possession of drugs such as marijuana, methamphetamines (meth), crack cocaine, and cocaine. Two meth labs were discovered and three arrests were made for possession with intent to distribute dangerous drugs. A FS LEO recently arrested two subjects with 45.5 lbs. of marijuana in the trunk of their vehicle; the subjects were planning to sell the drugs in a FS recreation area.

Because of the limited number of officers on the NFGT, LEOs are not able to deal with every reported violation in a reasonable time. With violations spanning the entire spectrum from vandalism of recreation, administrative and cultural resource sites to drug and alcohol use and natural resource destruction, the impact of nearby urban areas is increasingly spreading onto the NFGT. LEOs are currently working sixty to sixty-five hours per week, as budgets do not allow for additional LEO positions.

⁵⁸ The total land and water area of Texas is 171,057,280 acres, or 267,277 sq. miles, according to the *Texas Almanac 2000-2001 Millennium Edition*, published biennially by the Dallas Morning News, available on the Internet at <http://www.texasalmanac.com/>.



Figure 23. Vandalism of the Aldridge Sawmill Historic Site on the Angelina NF, eligible and nominated for inclusion on the National Register of Historic Places (photo taken February 8, 1998).

Fire Management Implications

Prescribed Fire

Due to a fragmented ownership pattern, and numerous private residences intermingled with national forest, prescribed burning must be carried out under strict parameters to prevent conflicts. Temperature, humidity and wind speed are closely monitored to keep fires from burning too intensely, escaping control and threatening private property. Wind direction, mixing heights, and upper level transport winds must be within prescribed limits to minimize impacts to local residents from excessive smoke. In 1997 and 1999 weather conditions were generally favorable for safe and effective prescribed burning. In 1997, 71,367 acres were burned and 87,130 acres were burned in 1999. In 1998, weather conditions became too hot and dry to safely carry out prescribed burning. As a result, only 36,809 acres were burned that year. This urban interface growth is also increasing the cost per unit of the NFGT's prescribed burning program.

Wildland Fire Suppression

Most apparent is the urban interface aspect of wildfire suppression. Equipment, resources, and manpower must be placed to protect life and property in urban developments and homes in the wildland-urban interface, reducing the number of limited resources available to take wildfire suppression action.

Again, due to fragmented ownership and proximity of private residences, fire suppression requires special considerations. The Forest Service relies heavily on local Volunteer Fire Departments and the TFS to assist with structure protection during fire suppression. In 1997 and 1999 there was moderate to average fire activity. The summer of 1998 was hotter and drier than usual and produced high fire activity. The Forest Service pre-positioned resources in anticipation of extra wildfire activity. Due to the need to quickly extinguish fires and prevent spread to adjacent private property, the Forest Service also staged extra helicopters. This added extra cost but was necessary because of the growing wildland-urban interface.

Evaluation:

The use of prescribed fire and wildfire suppression has become increasingly difficult over the past several years as staffing and budgets have declined and urbanization has increased. Ensuring that effective and efficient cooperation occurs between the NFGT, the TFS, and the numerous rural volunteer fire departments and other federal agencies in the east and north-central Texas area is paramount to protecting the resources and people of the NFGT and its neighbors.

Sub-Issue 4. Roadless Areas/Wilderness/Wild and Scenic Rivers

The *Plan* contains land allocations that include protection and long-term management for areas identified with outstanding features. This report explains the status of these special areas by discussing potential *Roadless Areas*, designated *Wilderness*, and *Wild and Scenic Rivers* on the NFGT.

Roadless Areas

Evaluation of roadless areas is the first step toward possible recommendation as potential wilderness. A detailed and site-specific evaluation of 17 identified roadless areas on the NFGT was completed during revision of the *Plan*. These 17 areas were tentatively identified as being essentially unroaded or undeveloped. All roadless areas reviewed contained a number of attributes that, when evaluated according to standard criteria, found them to be undesirable wilderness candidates.

Management of the areas to ensure recovery of the endangered RCW and perhaps other threatened or endangered species was considered to be a conflict with wilderness designation. None of the areas evaluated were recommended to Congress for wilderness designation and no further action has been taken on this issue during most of this reporting period.

However, on October 13, 1999, the President directed the Forest Service to begin an open and public meeting dialogue about the future of inventoried roadless areas within the National Forest System. The Agency initiated this process by publishing a Notice of Intent (NOI) to prepare an EIS in the Federal Register on October 19, 1999. The FY 2000 Monitoring and Evaluation report will address this initiative.

Wilderness

The Wilderness Act of 1964 established the National Wilderness Preservation System, defined wilderness, and prescribed the types of activities that could take place within wilderness areas. While the law emphasized protection of pristine areas, it also recognized the recreational values of providing opportunities for solitude and primitive and unconfined types of recreation. The Eastern Wilderness Act of 1975 established several wilderness areas east of the 100th meridian and eliminated the 5,000- acre minimum size requirement established by the 1964 wilderness Act. The Texas Wilderness Act of 1984 established 34,346 acres of wilderness in Texas. Subsequent legislation passed in 1986 made technical corrections to the Texas wilderness boundaries, increasing the total wilderness acreage to 36,347 acres. The NFGT has acquired some of the private inholdings within the wilderness areas through land exchanges, bringing the current wilderness acreage in Texas to 37,162 acres.

Currently, there are five designated wilderness areas that are completely on the NFGT and under the administrative responsibility of the Forest Supervisor. Estimated recreation use in these wilderness areas is considerably less than the established capacity numbers. Projected annual use was established at 11,000 visitor days/year in the *Plan*. Visitor registration and visual observation indicate that wilderness use is light, mostly day-use, and primarily associated with hunting. Estimated use in 1997, 1998 and 1999 is 5,500 visitor days/year each year.

Wild and Scenic Rivers

The National Wild and Scenic Rivers Act of 1968 established the National Wild and Scenic Rivers System to preserve certain selected rivers “in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.” To be eligible for a

Wild and Scenic River (WSR) designation, a river must be free flowing and possess one or more outstandingly remarkable values. The state, in cooperation with the USFS, has the responsibility for determining suitability through study and for recommending that Congress designate rivers as WSRs. During the recent planning process, eleven river segments (including the Neches River pictured below) were evaluated and four areas appeared to have some potential for eligibility for future designations as WSRs. When the *Plan* was signed, the state agency responsible for river management was not actively reviewing rivers for WSR designation. Therefore, the *Plan* contains provisions that ensure that future determinations are not jeopardized and documents protection to be provided pending suitability determination and legislative direction. If a river is found eligible, the *Plan* provides that its outstanding values will be protected. During FY 1997 through FY 1999, no other rivers were identified as potential candidates for WSR status.



Figure 24. Canoeists on the Neches River.

Sub-Issue 5. Timber

Manufacturing, which includes the forest products industry, is the largest sector of the economy in terms of employment in some counties where national forest lands are located. Timber, the most valuable agricultural crop in the south, is one of the top four cash crops in Texas.⁵⁹ This is in spite of the fact that forests occupy less

⁵⁹ Albers, Catherine. 1992. Socio-Economic Report. USDA Forest Service.

than 13 percent (22.032 million acres) of the total land area of Texas.⁶⁰ Revenue from harvested timber on the NFGT is sent to the Treasury and money in turn is returned to counties through the 25 percent returns fund. *Harvest Trends Information* and *Timber Harvest on the NFGT*, in the next sections, share information about this issue for this reporting period.

Harvest Trends Information

The TFS conducts an annual survey of the State's primary forest products industry and produces an annual report containing information on the volume and value of forest products harvested in Texas, and information on the production of primary wood products. The most recent information available is for calendar year 1998 in the *Harvest Trends 1998* publication. Pine timber removals have exceeded estimated net annual growth every year since 1986 and in 19 years out of the 22 years between 1977 and 1998, inclusive.⁶¹ In 1997 pine timber removals exceeded growth by 6.8 percent⁶², and in 1998 they exceeded growth by 1.7 percent.⁶³

Hardwood removals have been, with the exception of one year, less than estimated net annual growth in east Texas. Since 1976 hardwood removals have exceeded growth just one year, 1983, when harvest was 104 percent of growth; in all other years during this period removals ranged from 64 percent to 86 percent of growth. For the two years within this monitoring period that data is available, hardwood removals were 64 percent of growth in 1997 and 75 percent in 1998.⁶⁴

The *Harvest Trends 1998* publication has data on the amount of pine and hardwood timber harvest by county for 1997. The top five producing counties, in order of total volume harvested in 1997 were Polk, Tyler, Newton, Angelina, and Jasper.⁶⁵ The situation in 1998 was much the same, as the top five timber producing counties were Polk, Angelina, Nacogdoches, Tyler, and Shelby.⁶⁶ All of these counties either contain national forest land or are immediately adjacent to counties that contain national forest land. Timber harvests from national forest lands were relatively small in fiscal years 1997-1999, except for 1998, when approximately 100 million board feet (MMBF) were salvaged from over 27,000 acres of national forest land damaged by the major windstorm.

⁶⁰ http://www.texasalmanac.com/texasrank_2000.htm

⁶¹ Xu, Weihuan. 1999. *Harvest Trends 1998*. Texas Forest Service. Texas A&M University System. Publication No. 157.

⁶² Xu, Weihuan. 1998. *Harvest Trends 1997*. Texas Forest Service. Texas A&M University System. Publication No. 156.

⁶³ Xu, Weihuan. 1999. Op. cit., p. 7.

⁶⁴ Ibid., Table 14.

⁶⁵ Xu, Weihuan. 1998. Op. cit., Table 1.

⁶⁶ Xu, Weihuan. 1999. Op. cit., Table 1.

Given the low harvest levels from national forest lands, we can assume that a high portion of the timber harvesting was done on industrial and non-industrial private lands.

Figure 4 in *Harvest Trends 1997* illustrates the intensity of timber harvesting by county in terms of cubic feet of harvest per acre of timberland. The counties experiencing the greatest relative timber harvesting pressure during 1997 were Angelina, Morris, Polk, and San Augustine, each having in excess of 80 cubic feet per acre harvested.⁶⁷ Harvesting pressure changed somewhat in 1998, with the most intense harvesting occurring in Angelina, Chambers, Marion, Nacogdoches, Polk, San Augustine, and Shelby counties.⁶⁸

Evaluation:

Tree removal in excess of growth over extended periods of time is cause for concern. More detailed information identifying the areas where removals exceed growth by county and by ownership would be helpful but could not be found. The Southern Research Station's Forest Inventory and Analysis unit will be conducting another periodic survey of the forest resources in Texas within the next year or so, and this information will be helpful in assessing changes in timberland ownership, tree growth, mortality and removal rates, and other information useful in addressing the harvest to growth drain issue.

Timber Harvest on the NFGT

All timber harvesting was done to implement project plans approved after an interdisciplinary review and proposed actions were developed in an environmental assessment. The purpose for the timber harvesting was clearly identified during the environmental assessment process. No timber harvesting was done for timber production purposes on lands classified as not suited for timber production. A very limited amount of timber harvesting on those areas was done for:

1. Removal of trees that pose a safety hazard in recreation areas;
2. Removal of trees that threaten to damage special sites, such as historical sites; and/or
3. Removal of pine trees to enhance hardwood trees for wildlife habitat in streamside management zones.

⁶⁷ Xu, Weihuan. 1998. Op. cit., pp. 4,6.

⁶⁸ Xu, Weihuan. 1999. Op. cit., pp. 5-6.

The following is a summary of the acreage of timber actually harvested in a given year by different methods, as opposed to acreages sold and not yet harvested:

Table 20
Acreage Harvested by Method of Cut

FY	Thinning	Clearcut	Seedtree	Removal	Selection	Sanitation	Totals
1997	5,515	144	296	256	70	0	6,281
1998	5,551	64	203	0	35	* 27,438	33,291
1999	4,870	25	23	0	0	0	4,918
Totals	15,936	233	522	256	105	* 27,438	44,490

* This is the acreage of storm-damaged timber salvaged during Spring-Fall 1998

The *Plan* identifies the lands that are suitable for timber production (Management Areas 1, 2, and 6) and apportions the sale volume among the four national forests (see *Plan* Appendix C, p. 8). Adjustments to the suitability classification can be made through the compartment prescription process. During the 1997-1999 period, there were no changes in land suitability through the compartment prescription process. The following table illustrates the number of acres of compartment prescriptions completed during this monitoring period.

Table 21
Compartment Prescriptions

FY	Acres
1997	11,727
1998	12,416
1999	12,772
Total	36,915

The *Plan* specifies the maximum quantity of timber, or allowable sale quantity (ASQ), that may be sold from suitable lands, which is 1,134 million board feet (MMBF) for the first decade of *Plan* implementation [see 36 Code of Federal Regulations (CFR) 219.3]. This quantity is

usually expressed on an annual basis as the average annual allowable sale quantity. The process used to determine this volume is explained in the *Plan EIS*, Appendix B. If ten percent of the ASQ were to be sold each year of the first decade, an annual volume of 113.4 MMBF would be sold. Annual sales may exceed 113.4 MMBF as long as the volume sold during the first decade does not exceed the ASQ (1,134 MMBF). The following table illustrates the total volume sold, the total volume sold excluding the salvage volume sold, the annual ASQ, the volume of timber sold as a percent of the annual ASQ, and the difference between the annual ASQ and the actual volume sold for each year of the monitoring period. Since ASQ does not include salvage volume, the volume sold excluding salvage was used for comparison.

Table 22
Timber Volume Sold vs. ASQ Volume (MMBF)

Fiscal Year	Total Volume Sold**	Volume Sold Excluding Salvage*	ASQ Volume*	Volume Sold as a Percent of ASQ	Difference Between Volume Sold & ASQ
1997	58.5	52.5	113.4	46%	- 60.9
1998	120.8	3.6	113.4	3%	-109.8
1999	20.1	19.4	113.4	17%	- 94.0
Total	199.4	75.5	340.2	22%	-264.7

* Volume does not include timber volumes sold from salvage sales

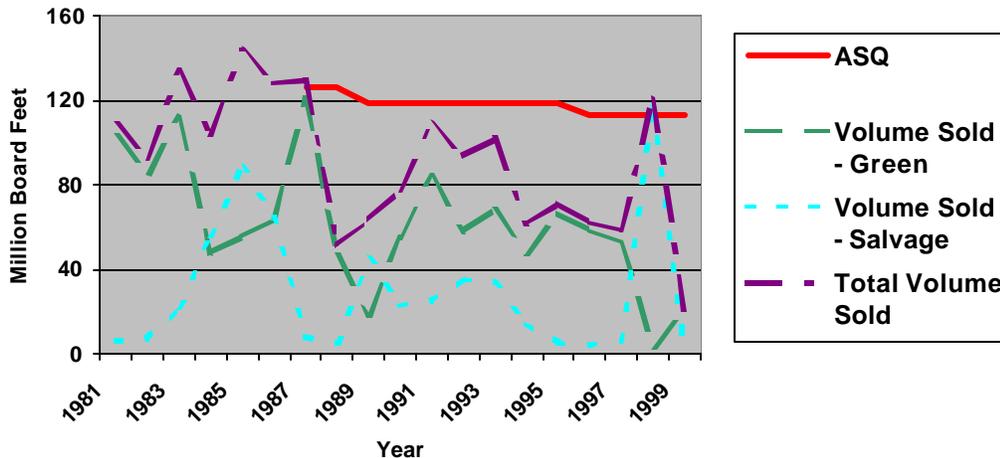
** Volume from *Timber Cut & Sold* report

Implementation of the *Plan* has been severely curtailed by the injunction of timber harvesting on the National Forests in Texas issued by U.S. District Court Judge Richard A. Schell on August 14, 1997. Only 22 percent (75.5 MMBF of 340.2 MMBF) of the planned timber harvesting has been implemented. Other than the salvage of storm damaged timber during Spring-Fall 1998 and the harvesting of fourteen sale areas that were being actively logged at the time the injunction was issued and were allowed to continue, the only timber harvesting occurring under the court injunction has been the thinning of timber stands within 1200 meters of RCW cavity trees in accordance with the court orders issued by U.S. District Court Judge Robert M. Parker on June 17, 1988, and October 20, 1988.

The following graph illustrates how the ASQ and actual timber volume sold have fluctuated since 1981.

Figure 25

Annual Timber Volume Sold



Note: Since an ASQ was first established in 1987, the graph above shows no values for ASQ prior to 1987.

Evaluation:

The following monitoring and administrative reviews of timber management activities were conducted during this monitoring period:

1. A timber program review was conducted on the Sam Houston NF on August 18-19, 1999, by the Supervisor's Office (S.O.) timber staff. The review revealed that the district personnel were doing a good job of planning, preparing, and administering timber sales. No serious deficiencies in the implementation of the *Plan* were observed.
2. Three audits of thinnings of young pine stands were conducted by the S.O. Timber staff: (1) On the Davy Crockett NF on March 11, 1999; (2) On the Sabine NF on May 13, 1999; and (3) On the Sam Houston NF on June 17, 1999. The audits were conducted in response to concerns about problems occurring on other national forests; however, no serious deficiencies were observed. Based on observations, personnel were doing a good job of preparing and administering first thinnings.

3. A timber program review was conducted on both the Angelina NF and the Sabine NF on February 24-28, 1997, by Regional Office staff. The review revealed that the Forest personnel were doing a good job of planning, preparing, and administering timber sales. No serious deficiencies in the implementation of the *Plan* were observed.
4. A timber program review was conducted on the Davy Crockett NF on December 10-12, 1996, by the S.O. Timber staff. The review revealed that the District personnel were doing a good job of planning, preparing, and administering timber sales. No serious deficiencies in the implementation of the *Plan* were observed.

As stated earlier in this report, the TFS found that logging operations on national forest lands have consistently received the highest BMP ratings in the state for protecting water quality during logging operations (see Sub-Issue Watershed Conditions, TFS BMP Results).

Also mentioned previously in this report, additional monitoring elements have been instituted to assure that erosion control work is satisfactory and effective (see **Sub-Issue Watershed Conditions, Timber Sale Erosion Control**).

Sub-Issue 6. Forage

Many wildlife species as well as livestock depend on vegetation for their sustenance. Forage (grass, forb and shrub) production is largely a reflection of yearly climatic patterns. The amount of forage produced is primarily based on precipitation, as soil moisture is generally the limiting factor. Extended periods of drought have a negative impact on forage production and necessitate shortening or changing grazing rotations to ensure vegetation and resource protection [see the discussion under **Sub-Issue 2. Forest Health, Other Mortality Events, Drought (Rainfall Deficit)**]. Long-term production, or productivity, of a site is also influenced by management of the site. Management influences species present, which in turn influence various aspects of the site including pounds of production available for grazing and browsing, soil stability, water quantity and quality, wildlife habitat including cover, and aesthetics. Currently, site composition and productivity are moving toward *Plan* objectives; desired forage production objectives are being achieved as far as management actions can influence this. This is due to such actions as prescribed burning, changes in livestock use to provide for longer rests from grazing, watershed restoration, removal of invading/encroaching species, seeding of native species and seeding of food plot species for wildlife.

Baseline data is being obtained to establish range vegetation objectives against which future inventories will be compared. Vegetation management practices are being implemented to achieve ecological DFCs. Periodic ground cover conditions and assessments are made as projects are planned and implemented, and as permitted grazing use is utilized.

Animal Unit Months (AUMs) and expected forage utilization is as predicted per the Range Administration and Management Information System (RAMIS) report and the Infra Range reporting database.



Figure 26. Cattle grazing on the National Grasslands in Texas.

Under *Plan* direction, grazing of livestock on the four National Forests in Texas is being de-emphasized, while grazing on the two national grasslands continues as one of the management emphases. To implement this direction, the Forest Supervisor decided that term grazing permits scheduled to expire on or after February 28, 2001 would not be renewed. A process to inform grazing permittees of this change was implemented by verbal discussion of upcoming permit closures during annual permit validation in 1998, 1999 and by written correspondence to permittees on March 29, 2000.

Sub-Issue 7. Other Products

Various other products produced on the NFGT are not in high demand by the general public. The sale of ginseng, moss, fungi, cones, and similar forest products is very low. However, fuelwood for personal use is a forest product with significant demand, and minerals are also a valuable resource on the NFGT. Fuelwood sales occur through the permit process, while income derived from minerals is largely obtained through royalties or lease fees. The following sections provide specific information about these additional forest products.

Fuelwood

The following table reflects the volume of fuelwood sold through fuelwood permits during this reporting period.

Table 23
Fuelwood Sales

Year	Amount (Cords)
1997	193
1998	284
1999	88

Minerals

The NFGT are relatively abundant in a variety of natural mineral resources, particularly oil and gas. These resources provide a source of revenue to the Treasury and local counties, material for road surfacing, and employment for the local residents.⁶⁹ The oil and gas industry, however, has grown very conservative and cautious and has been downsizing operations, plugging or shutting-in marginal wells while exploration and development for gas production has also decreased during this reporting period. The federal government owns the mineral rights on approximately two-thirds of the surface acreage in NFGT ownership while minerals rights on the remaining acreage were held in reserve at acquisition or are outstanding. Following is a breakdown of NFGT acreage where the minerals are owned by the federal government and mineral rights that are reserved or outstanding.

⁶⁹ USDA Forest Service. 1992. Five-year Review/Analysis of the Management Situation.

Total Acres of National Forests and Grasslands	675,572
U.S. Mineral Acres	471,148
Reserved and Outstanding Acres	204,424

The NFGT minerals budget, returns to counties, the number of active wells, the number of new applications for permits to drill, the number of seismic permits issued and active, and the number of common variety mineral permits active during the last three years are depicted in the following chart.

Table 24

	FY 97	FY 98	FY 99
Total Forest Budget	\$280,000	\$342,516	\$310,500
Returns to Counties	\$473,597	\$384,981	*
Total Number of Wells	335	303	295
U.S. Wells	242	222	213
Private Wells	93	81	82
New Applications for Permit to Drill	10	0	1
Seismic Permits			
Existing	4	6	0
New	2	2	1
Common Variety Mineral Permits (County Gravel Permits)	2	2	2

* The final returns to counties for FY 99 are not yet available; interim payments as of July 1999 were \$125,000.

New minerals activity on the NFGT has declined over this three-year period due to the low market prices for oil and gas. Also, the Austin Chalk exploration and development on the Sabine and Angelina NFs appears to have reached its current potential.

The following table shows the number of parcels and acres offered for mineral lease and the number of parcels and acres leased during each of the last three fiscal years.

Table 25

LEASING	FY 97	FY 98	FY 99
Parcels Offered	87	7	66
Parcels Leased	64	2	59
Acres Offered	81,413	531	30,598
Acres Leased	45,389	163	29,564

These lease offerings are a direct result of current lease expirations and expressions of interest by the public. If the oil market continues at the current high level, we anticipate an increase in expressions of interest by the public.

Totals for FY 98 were down due to management discretion to offer leases only in the fourth quarter of the fiscal year. The fourth quarter implementation was then limited by shortage of personnel and additional demands in the overall work load.

Evaluation:

Administration of current well permits continues to be at a minimal level. Our goal is to inspect current drilling activity as needed, which can vary from daily to several times a week. Existing wells are to be inspected at least quarterly. Due to the limited budgets and high demand on field personnel for other activities, these inspections are not as timely as needed. Inspections of current drilling activity receives priority and is usually adequate, however, the administration and inspection of existing wells falls short of our expectations. Consequently, there is a continual problem of getting the permittees to comply with proper maintenance of facilities and especially achieving proper and timely rehabilitation operations. This results in several potential problems including oil contaminates on the site, soil erosion that may affect water quality, public safety, and adverse impacts to the visual resource.

Sub-Issue 8. Heritage Resources

In order to further our understanding of the cultural history of the NFGT, as well as to comply with all requirements set forth by law and regulation, heritage resource surveys for all land disturbing activities are conducted in accordance with a "Heritage Management Plan" agreed to by the NFGT, the Texas State Historic Preservation Officer (the state entity responsible for ensuring compliance with the National Historic Preservation Act), and the Advisory Council on Historic Preservation. Forest archeologists and contracted services perform federal and state law compliance work.

The following table provides detailed information about heritage resource accomplishments during the 1997 through 1999 monitoring period.

Table 26

Activity	FY97	FY98	FY99
Acres Inventoried	17,275	26,207	3,503
New Sites Recorded	150	82	31
Total Number Sites Eligible for National Register of Historic Places (NRHP)	12	18*	18
Forest Plan actions affecting NRHP sites	0	0	1

* There were six new eligible sites in FY98.

In FY 97, 11,758 acres were inventoried under the Heritage Management Plan survey guidelines. The additional inventory acreage was in response to various projects requiring Section 106 consultation. Of the 150 new sites recorded in FY 97, 96 were recorded by U.S. Forest Service (USFS) archeologists conducting surveys in accordance with the Heritage Management Plan. The remaining 54 sites were recorded during Section 106 surveys by USFS archeologists or by contractors working for special use applicants. Interpretive and public participation objectives were met through the successful completion of a Passport in Time project.



Figure 27. Volunteers processing artifacts, Passport in Time project near Neches Bluff, Davy Crockett NF, April 1997.

In FY 98, 24,523 acres were inventoried in response to the February 10, 1998 windstorm on the Sabine, Angelina and Sam Houston NFs. Immediately following the windstorm, all 159 known archeological and historical sites within the storm-damaged areas were visited. Any damage to the sites was noted, and recommendations for mitigation and protection were made. Sixty-one (61) of the 82 new sites recorded in FY 98 were identified during the windstorm inventories. During the response to the windstorm, members of the Heritage Resource Strike Team frequently revisited sites located within or near tracts planned for tree removal, monitoring their condition and ensuring that mitigative actions were properly applied. Interpretive and public participation objectives were met through the successful completion of two Passport in Time projects.

During FY 99, the primary emphasis of the Heritage Resource Program was the production of reports documenting the prior years' work, including the completion of reports on the previous Passports in Time projects.

Evaluation:

One project implementing the standards and guidelines of the *Plan* affected a site eligible for the NRHP. The effects of this project proved to be minimal (less than one percent of the total site area was affected). A mitigation plan was developed, approved through consultation with the State Historic Preservation Officer, and implemented. Interpretive and public participation objectives were met through the successful completion of two Passport in Time projects.



Figure 28. Passport in Time project near Neches Bluff, Davy Crockett NF, April 1997.

Issue C. Organizational Effectiveness

The NFGT is comprised of many different elements that contribute to the collective function of “Caring for the Land and Serving the People”. This section addresses the agency’s budgets and personnel factors, as well as changes in laws, regulations, and policy that may affect the agency’s ability to perform its responsibilities. Details of these components of NFGT management are discussed under sub-issues *Economics* and *Evaluating New Information*.

Sub-Issue 1. Economics

Budgets

The *Plan* was developed during a period when federal agency budgets had experienced significant growth for a number of years and was based on the premise that Congress would rely heavily on an aggregation of forest planning direction to allocate funds to the Forest Service. Therefore, the *Plan* anticipated aggressive implementation of projects that would quickly make progress towards the envisioned DFCs. However, shortly after enactment of the NFGT Forest *Plan*, several events occurred that dramatically altered what projects the NFGT could implement and the level of funding that the forest would receive. The August 14, 1997 timber management injunction issued by Federal District Court halted most existing timber sales and all future timber sales not associated with RCW management. Concurrently, the Congress turned its attention to balancing the federal budget. Together, these events resulted in reduced funding to the NFGT. Instead of a forest budget anticipated to grow in excess of \$26 million, the forest budget declined to approximately \$12 million for FY 99. (See **Table 27** for the *Plan’s* budget projections versus actual allocations).

These events alone make meaningful comparisons of *Plan* projections to actual budgets very difficult. Compounding these comparisons are significantly altered fund code structures, discredence of new accounting software, and emergency supplemental funding to handle response to the February 10, 1998 windstorm. In light of the changes made to the agency’s budget structure and the necessity of estimating the representative share of certain funds to discreet activities projected in the *Plan*, **Table 27** comparisons must be taken in relative rather than absolute terms. Even with that caveat, it is readily apparent that budgets received by the NFGT have not permitted the optimistic implementation rate envisioned by the *Plan*.

Table 27
Comparison of Annual Forest Plan Budget Projections (for 1st period) to Actual
Allocations Received (In \$1,000)

ACTIVITY	PLAN PROJECTION	ALLOCATION RECEIVED FY 97	ALLOCATION RECEIVED FY 98	ALLOCATION RECEIVED FY 99
Cultural Resources	504.6	365.9	283.5	269.0
Recreation Management				
-Operations/Maintenance	3,563.4	740.0	840.0	804.1
-Facility Construction	2,028.4	541.9	564.9	370.0
-Trail Construction	138.4	98.0	110.0	109.0
-Trail Maintenance	133.4	²	481.9 ²	204.7 ³
Wilderness Management	170.0	53.0	84.0	79.6
Wildlife Management				
-Fisheries	118.0	79.9	94.9	110.3
-Threatened, Endangered & Sensitive	1,672.7	780.9	540.0	626.9
-Wildlife	3,163.5	*632.7	*467.7	*510.0
Range Management	273.7	318.4	304.6	303.2
Timber Management				
-Planning, Preparation, Administration	3,516.3	2,801.8	1,402.4	1,852.4
-Post Harvest Treatments	2,147.5	809.3	499.6	363.9
Soil, Water & Air Management	559.2	284.3	244.8	194.8
Minerals	470.5	280.0	342.5	310.5
Lands				
-Real Estate Management	447.0	246.0	345.4	302.9
-Landlines	249.9	63.9	70.3	75.5

² Trail maintenance included in Operations/Maintenance above.

² Trail maintenance funding included in FY 98 Operations/Maintenance expanded budget line item. Funds shown here were trail maintenance/reconstruction projects funded by 10% Roads and Trails collections from prior year timber sale receipts and K-V collections derived from timber sale receipts. Trail maintenance in FY 99 includes \$144,700 funded by 10% Roads and Trails collections from prior year timber sale receipts.

³ Same as footnote 2.

* Includes funds derived from sale of Texas Parks and Wildlife Department wildlife management area hunting permits (approximately \$240-\$250,000 per year).

Table 27 - continued

Comparison of Annual Forest Plan Budget Projections (for 1st period) to Actual Allocations Received (In \$1,000)

ACTIVITY	PLAN PROJECTION	ALLOCATION RECEIVED FY 97	ALLOCATION RECEIVED FY 98	ALLOCATION RECEIVED FY 99
Roads & Facilities				
-Administrative Construction	141.9	291.7	0.0	0.0
-Administrative Facility Maintenance	203.9	105.1	132.1	150.6
-Road Maintenance	1,990.2	495.0	1,500.3 ⁴	748.0 ⁵
-Road/Bridge Construction	1,703.0	675.7	791.0	790.4
Planning	565.6	241.9	251.7	236.1
Fire & Protection				
-Presuppression	574.3	1,096.9 ⁶	675.0	675.0
-Fuel Reduction	76.6	See above	799.4	802.0
General Administration & Human Resources	1,605.7	1,720.0	1,524.0	1,335.9
Land Acquisition	59.2	10.0	10.0	21.0
Senior Citizen	194.4	553.5 ⁷	534.2 ⁸	599.3 ⁹
Law Enforcement	359.7	134.4	141.7	98.3
TOTAL	26,631.0	13,420.2	13,035.9	11,943.4
Salvage Sales	0.0	110.0	8,338.2 ¹⁰	250.0
Emergency Disaster Funds	0.0	0.0	2,250.0 ¹¹	0.0
Emergency Fuel Treatment	0.0	0.0	2,000.0 ¹²	0.0

⁴ Congressional allocation for road maintenance supplemented in FY 98 with \$1,004,600 and in FY 99 with \$238,500 from 10% Roads and Trails collections from prior year timber sales.

⁵ Same as footnote 4.

⁶ Congressional allocation in single expanded budget line item for FY 97.

⁷ SCSEP program funded by Department of Labor comes in program year (7/1/XX to 6/30/XX) rather than by fiscal year.

⁸ Same as footnote 7.

⁹ Same as footnote 7.

¹⁰ Salvage sale funding necessary to remove trees uprooted, broken off or severely root-sprung by large scale windstorm that occurred 2/10/98.

¹¹ Emergency supplemental appropriation from Congress to finance emergency response to windstorm damage for endangered species management, etc.

¹² Emergency supplemental appropriation from Congress to treat excessive fire fuel buildup created by 2/10/98 windstorm.

Workforce

Permanent Employees – Two hundred thirteen (213) employees worked for the NFGT effective 1/31/97. At this time, the permanent work force consisted of 1 American Indian, 1 Asian/Pacific Islander, 14 Black, 3 Hispanic and 62 white females for a total of 81 females. There were 3 American Indian, 17 Black, 5 Hispanic and 107 white males for a total of 132 males.

The work force as of 11/03/98 totaled 187 employees with 1 Asian/Pacific Islander, 8 Black, 3 Hispanic and 48 white females and 5 American Indian, 16 black, 4 Hispanic and 96 white males.

The 1999 workforce as of 11/09/99 consisted of 173 employees. One Asian/Pacific Islander, 13 Black, 3 Hispanic and 45 white females were part of these total numbers while there were 3 American Indian, 15 Black, 4 Hispanic and 88 white males.

The total workforce has been reduced from 213 to 173 over the 1997 to 1999 time period. Shortfalls in staffing to conduct traditional duties continue to be felt both in the S.O. and at each district. The reduced workforce continues to impact our operations, with many people carrying additional duties from positions that were vacated and not filled. Rapidly changing policies, procedures, and public desires also place increasing demands on staff. We are making efforts to streamline internal procedures and to develop partnerships with other interested public and private organizations to deliver program benefits to the public.

Reductions in the workforce have been driven primarily by decreasing budgets, and have been achieved through resignations, transfers, and normal attrition.

In addition, many projects would not be completed without the assistance of the temporary employees, SCSEP employees and volunteers. It is difficult to put a value on the work that these groups accomplished. Below are a few examples of the different types of work they provide:

1. Participate in trail construction and maintenance;
2. Pick up trash;
3. Do RCW midstory work and monitoring;
4. Perform bald eagle surveys;
5. Become campground hosts and provide information services;
6. Construct/paint picnic tables;
7. Assist in restoring historic locations;
8. Reroof shelters, etc.;
9. General cleanup and painting;

10. Assist with testing at archeological site test excavations;
11. Process and catalog artifacts as well as mapping of sites and maintenance of equipment;

These employees and volunteers are a significant addition to the NFGT's staff, many times enabling the NFGT to complete projects on time and under budget.

Temporary and Term Employees – Two types of non-permanent appointments commonly utilized by the USFS to accomplish its mission are temporary and term appointments. A temporary appointment is made to a position for work of an expected duration of less than one year, while a term appointment is made to a position for work of an expected duration of more than one year but not more than four years. In recent years the number of term and temporary positions on the NFGT has been drastically reduced due primarily to declining budgets. In August 1997 there were twelve term or temporary employees on the NFGT, but by August 1998 there were ten and by August 1999 there were only two remaining. Employees in these positions have been key in helping the NFGT fulfill its mission and implement its *Plan*. The loss of these positions places increased workloads on the permanent employees and necessitates increased use of contracts to accomplish goals and objectives.

Senior Community Service Employee Program (SCSEP) – Modern technology is changing the complexion of today's work force. The SCSEP program trains older employees to be competitive in a different field from the career from which they retired. The employees become competitive in today's work force and the NFGT in turn benefits from the assistance they provide. In July 1997 there were 75 SCSEP employees on the NFGT; in July 1998 there were 71 SCSEP employees; and in July 1999 there were 75 SCSEP employees. During a period when the permanent workforce reduced substantially (19 percent), the SCSEP workforce has remained relatively unchanged. In 1997 there was one SCSEP employee for every 2.8 permanent employees, but in 1999 there was one SCSEP employee for every 2.3 permanent employees. This illustrates the increasing importance of SCSEP employees in helping the NFGT fulfill its mission and goals.

Hosted Program – In the Spring of FY 97, the Sam Houston NF had a successful Hosted Program. Through the Bureau of Prison System located at Bryan, Texas and a boot camp for troubled youth from the Gulf Coast Trade Center, a total of 235 participants performed RCW midstory control work, prescribed fire preparation, recreation area maintenance, litter and trash pickup, range fence construction and removal, administrative site maintenance and cleanup, and a host of

other jobs. The accomplishments of these groups provided a valuable service to the NFGT and the public. The tangible values can be estimated, but the value in increased self-esteem and the skills and knowledge they received to live and work in today's society are much more difficult to quantify.

Sub-Issue 2. Evaluating New Information

Emerging Issue: The decline in timber management and its effect on the *Plan's* DFCs for wildlife and threatened and endangered species.

As previously outlined under **Sub-Issue 5. Timber**, planned timber harvests have fallen significantly below the annual average ASQ in the *Plan*. During the FY 1997-99 period, planned timber sales averaged just 22 percent of the ASQ. As timber harvesting is one of the principle tools managers use to move the forest toward the DFCs, the harvesting shortfall will significantly extend the time needed to achieve the DFCs. For example, in Management Area 2-RCW Emphasis, restoration and regeneration of upland pine communities is needed to provide favorable RCW habitat. Reduced timber harvest levels adversely impact our ability to obtain and maintain RCW nesting and foraging habitat. Should this trend continue, impacts to the RCW and many other wildlife species will be compounded.

Chapter III. Evaluation of Outcomes on the Land

Continuing injunctions handed down by Federal District Courts have prevented us from implementing vegetative management treatments in accordance with the *Plan* for Management Areas 1 (MA 1-Upland Forest Ecosystems), 2 (MA 2-RCW Emphasis), and 6 (MA 6-Longleaf Ridge Special Area), encompassing approximately 500,000 acres. Since we have not been implementing the *Plan* on the vast majority of acres on the NFGT, we are unable to fully evaluate whether or not our management activities are having the desired outcomes projected by the *Plan*.

However, we are maintaining and improving Management Area 3 (MA 3-Grassland Ecosystems). Recent emphasis on prescribed burning in MA 3 and the treatment of undesirable species (including red cedar, *Sericia lespidiza*, and Bermuda grass) is benefiting the grassland landscape and accelerating the reversion of areas back to the native perennial grasses (Little Bluestem/Indian Grass Ecosystem).

We are meeting the DFCs for Management Area 4 (MA 4-Streamsize Management Zones) by identifying and delineating the management area in accordance with definitions in the *Plan*. According to project-level monitoring, implementation of Standards and Guidelines (S&Gs) found in the *Plan* is allowing us to maintain State Water Quality Standards within streams located inside this management area.

MA 5-Major Aquatic Ecosystems is meeting its *Plan* DFC except in the area of support of native fish population. Decline in the population of largemouth bass and sunfish in some NFGT lakes have been linked to aquatic weeds, algae, and low fertility. Weed control and fertilization have been initiated but results may not be evident for three to six years. Declines in population of the Sabine Shiner, Dusky Darter, and Scaly Land Darter have been linked to the deteriorating habitat caused by siltation and brine. Surveys have located the source of some of the problem areas and corrective action in the form of trails bridges and hardened ORV crossings have been completed. Continued surveys and restoration are needed.

Monitoring by specialists indicates that the low recreation use is not degrading the vegetation, soil and water values of Management Area 7 (MA 7-Wilderness).

The *Plan's* Special Areas shown as Management Areas 8a-f (MA 8a-Research Natural Areas, MA 8b-Protected River and Stream Corridors, MA 8c-Scenic Areas, MA 8d-Natural Heritage Areas, MA 8e-Special Bottomland Areas, and MA 8f-Cultural Heritage Areas) are progressing in their natural state and therefore meeting the *Plan's* DFCs.

We are not achieving desired levels of services in Management Areas 9a-b (MA 9a-Developed Recreation Sites or MA 9b-Minimally Developed Recreation Sites) because of declining budgets. We are utilizing an alternative approach in the use of concessionaires and Memorandum(s) of Understanding (MOUs) with other entities to manage these areas in an attempt to provide the services the public expects. NFGT staff will continue to explore alternative ways to meet the DFCs for these areas.

The NFGT is working toward its *Plan* DFC for Management Area 10a (MA 10a-Administrative Use Sites). See Chapter II. Monitoring Results, Findings and Evaluation, Issue B. Sustainable Multiple Forest and Range Benefits, Sub-Issue 2. Infrastructure. Special Use Permits (Management Area 10b (MA 10b-Special Use Permit Sites) are issued in accordance with the DFC as described in the *Plan*.

Management of Management Area 11 (MA 11-SFA Experiment Forest) is moving this area towards its *Plan* DFC through activities coordinated with the Southern Forest Research Station.

Chapter IV. FY 2000 Action Plan

Below are actions that need to occur to keep the *Plan* current by identifying areas where management emphasis should change, and where amendments may be needed.

A. Actions Not Requiring Forest Plan Amendment or Revision

1. **Action:** Assess the effectiveness of the additional post sale erosion control requirements to prevent sediment from entering streams.
2. **Action:** Continue to develop population trends for MIS.

B. Actions That May Require Amendment or Revision to the *Plan*

1. **Action:** (See recommendations throughout Appendix F). Based on review and documentation in Appendix F, one of the major efforts for FY 2000 and FY 2001 will be to evaluate the *Plan's* monitoring section (Chapter V) to determine the critical monitoring elements that can accurately identify effects of management activities on the land. Through Plan amendment add any monitoring items not currently found in Chapter V and eliminate those items found not to truly assess effects of management activities.

Responsibility: Forest Management and Interdisciplinary Teams

Completion Date: End of FY 2001.

References Cited

Albers, Catherine. 1992. Socio-Economic Report. USDA Forest Service.

Bald Eagle: Population, U.S.D.I. Fish and Wildlife Service Region 3 website.

Baum, Kristen A., William L. Rubink, Robert N. Counlson, and Douglas F. Wunneburger. 1998. *Effects of Landscape Pattern on the Distribution of Feral Honey Bee Colonies in South Texas*. Knowledge Engineering Laboratory, Department of Entomology, Texas A&M University, College Station, Texas.

<http://kelab.tamu.edu/standard/honeybees/>

Carraway, B., and J. Norris. 1996. *Voluntary Compliance with Forestry Best Management Practices in East Texas*.

Carraway, B., L. Clendennen, and D. Work. 1998. *Voluntary Compliance with Forestry Best Management Practices in East Texas*.

Comprehensive Plan based on October 20, 1999 Court Decision for the Management of the Red-cockaded Woodpecker Habitat in the National Forests in Texas, U.S.D.A. Forest Service, December 15, 1988, pp. 13-14.

Department of Rural Sociology, Texas Agricultural Experiment Station, Texas A&M University System, *1998 Total Population Estimates for Texas Counties*, August, 1999.

Drees, Bastiaan M. *Managing Red Imported Fire Ants in Wildlife Areas*. Department of Entomology, Texas A&M University, College Station, Texas.

<http://fireant.tamu.edu/materials/factsheets/fapfs006.htm>

<http://aquat1.ifas.ufl.edu/hyacin2.html>

<http://bluegoose.arw.r9.fws.gov/NWRSFiles/WildlifeMgmt/SpeciesAccounts/Mammals/LABlackBear/LABlackBearAck.html>

<http://endangered.fws.gov/frpubs/s990825.htm>

<http://endangered.fws.gov/i/a/saa9e.html>

<http://endangered.fws.gov/i/b/sab22.html>

<http://endangered.fws.gov/i/q/saq9f.html>

<http://fireant.tamu.edu/antfacts/index.html>

http://nas.er.usgs.gov/plants/docs/hy_verti.html

<http://nas.er.usgs.gov/plants/maps/smec.gif>

<http://nas.er.usgs.gov/plants/maps/txhv.gif>

http://nas.er.usgs.gov/plants/sa_molesta/images/smtol.jpg

http://nas.er.usgs.gov/plants/sa_molesta/maps/sam0211.gif

<http://nbii.gov/invasive/KudzuKudzuphoto.html>

<http://ngp.ngpc.state.ne.us/wildlife/beetle.html>

http://www.ecos.fws.gov/species_profile/species_profile.html?module=undefined&spcode=C000

<http://www.flmnh.ufl.edu/natsci/herpetology/act-plan/a-plan78.htm>

http://www.texasalmanac.com/texasrank_2000.htm

<http://www.tpwd.state.tx.us/expltx/eft/urban/hounonnat.htm>

<http://www.tpwd.state.tx.us/nature/endang/animals/htoad.htm>

<http://www.tpwd.state.tx.us/nature/endang/animals/toadman.htm>

<http://www.tpwd.state.tx.us/nature/endang/birds/bcv.htm>

<http://www.tpwd.state.tx.us/nature/endang/birds/peregrin.htm>

<http://www.tpwd.state.tx.us/nature/endang/plants/chafseed.htm>

<http://www.tpwd.state.tx.us/nature/endang/plants/trlphlox.htm>

<http://www.tpwd.state.tx.us/nature/endang/plants/wbladder.htm>

Kirby, W.J. 2000. *A Baseline Study of Six Stream Sites in the Davy Crockett National Forest in Close Proximity to Red-Cockaded Woodpecker Thinning Operations: A Physicochemical, Benthic Macroinvertebrate, and Ichthyological Study.* SFASU.

Klussmann, W.G., R.I. Noble, R.D. Martyn, W.J. Clark, R.K. Betsill, P.W. Bettoli, M.F. Cichra, and J.M. Campbell. 1988. *Control of aquatic macrophytes by grass carp in Lake Conroe, Texas, and the effects on the reservoir ecosystem.* Texas Agricultural Experiment Station Bulletin MP-1664. College Station, TX.

- Lord, R., J. Norris, and J. Tullos. 1992. *Voluntary Compliance with Forestry Best Management Practices in East Texas*.
- McCullough, J.D., K. McLaughlin, and K. Fleener. 1993. *Monitoring Project to Determine Effects of an Existing Oil/Gas Well on Graham Creek Ecosystem*. Final Report to the U.S. Forest Service. Lufkin, Texas.
- Reese, R.A. 1998. *The Effect of Southern Pine Beetle (Dendroctonus frontalis Zimm.) Damage on the Water Quality of Two Streams in Indian Mounds wilderness Area: A Macrobenthic and Physicochemical Analysis*. SFASU Dept. of Biology.
- Riekerk, H., D.G. Neary, and W.T. Swank. 1989. *The Magnitude of Upland Silvicultural Nonpoint Source Pollution in the South*. In *Institute of Food and Agricultural Sciences Journal*, No. 9268. University of Florida.
- Robertson, Paul B. *Performance Report, Project No. 17: Bobcat Status*. Texas Parks and Wildlife Dept. March 21, 2000.
- Ross, J.P. (ed.). 1998. Crocodiles. Status Survey and Conservation Action Plan [Online]. 2nd Edition. IUCN/SSC Crocodile Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK. Viii + 167 pp.
Available at <http://www.flmnh.ufl.edu/natsci/herpetology/act-plan/plan1998a.htm> [6 July 1998].
- Texas Department of Economic Development website, TDED Texas Overview page, 02/04/2000.
- Texas Water Development Board, *Water For Texas: A Consensus-based Update to the State Water Plan*, Document No. GP-6-2, August, 1997, p. XI.
- The total land and water area of Texas is 171,057,280 acres, or 267,277 sq. miles, according to the *Texas Almanac 2000-2001 Millennium Edition*, published biennially by the Dallas Morning News, available on the Internet at <http://www.texasalmanac.com/>
- U.S.D.A. Forest Service, National Forests and Grasslands in Texas. 1996. *Final Environmental Impact Statement for the 1996 Revised Land and Resource Management Plan for the National Forests and Grasslands in Texas*.
- U.S.D.A. Forest Service. 1992. *Five-year Review/Analysis of the Management Situation*.
- U.S. Department of Commerce Census Bureau, Population Division, Population Estimates Program, *Population Estimates for Cities with Populations of 100,000 and Greater*, July 1, 1998.
- U.S. Department of Commerce Census Bureau website, State Tables page, 02/07/2000.

U.S. Fish and Wildlife Service. 1992. White Bladderpod (*Lesquerella pallida*) Recovery Plan. USDI Fish and Wildlife Service, Albuquerque, New Mexico. 22 pp.

Webb, M.A., J.C. Henson, and M.S. Reed. 1994. *Lake Conroe Fisheries – Population Trends Following Macrophyte Removal*. In *Proceedings of the Grass Carp Symposium*, March 7-9, 1994, Gainesville, Florida, pp. 169-185.

Wilson, T.W. 2000. *Stream Characteristics of an Environmentally Sensitive Region in the Sam Houston National Forest, Texas*. SFASU.

Xu, Weihuan. 1998. *Harvest Trends 1997*. Texas Forest Service. Texas A&M University System. Publication No. 156.

Xu, Weihuan. 1999. *Harvest Trends 1998*. Texas Forest Service. Texas A&M University System. Publication No. 157.

APPENDIX A

List of Names and Positions of Report Preparers

The following staff on the National Forests and Grasslands in Texas participated in the preparation of this report:

Forest Supervisor's Office

Don Benner – Forester/Timber Sales
Mary Chambliss – Applications Examiner/Range
Verma Coleman – Financial Manager
Steve Clarke – Entomologist
Ron Haugen – Forest Silviculturist/Fire Protection Officer
Vicki Howard – Office Automation Clerk
Carolyn Hughes - Budget Analyst
John Ippolito – Forest Heritage Program Manager
Betty Jones – Executive Assistant
Bette Miner – Resource Planner
Ruben Natera – Heritage, Recreation, Lands and Engineering, Information Systems/Telecommunications, Property Team Leader
David Norsworthy – Supervisory Law Enforcement Officer
Rodney Peters – Forest Soil Scientist
Dave Peterson – Zone Fisheries Biologist
Don Phillips – Forest Management and Protection Team Leader, Acting Natural Resources Team Leader
Ronnie Raum – Forest Supervisor
Bill Floyd – Forester/Minerals
Belinda Ross – Personnel Assistant
Nancy Snoberger – Landscape Architect
Sheila Sprague – Planning Assistant
John Stine – Forester
George Weick – NEPA & Appeals Coordinator

Angelina National Forest

Catherine Albers – Other Resources Assistant

Walter Cooper – Silviculturist/Fire Management Officer
Glenn Donnahoe – District Ranger
Ron Mize – Wildlife Biologist

Caddo/LBJ National Grasslands

Jim Crooks – District Ranger
Judith Dyess – Supervisory Range Management Specialist

Davy Crockett National Forest

Raoul Gagne – District Ranger
Bobi Stiles – Silviculturist

Sabine National Forest

Holly Erimias – Geologist

Sam Houston National Forest

Keith Baker - Silviculturist
Tim Bigler – District Ranger
Paul Dufour – Timber Management Assistant/Roads Coordinator
Chip Ernst - Forester

APPENDIX B

Amendments Made Since the *Forest Plan* Was Completed

No amendments to the *National Forests and Grasslands in Texas 1996 Forest Land and Resource Management Plan* have been made to date.

APPENDIX C

Status of Previous Action Plan

The *National Forests and Grasslands 1996 Land and Resource Management Plan* has not been fully implemented on the ground due to court rulings; therefore, no previous Action Plan exists that requires evaluation.

APPENDIX D

Summary of Field Reviews & Other Administrative Activities

This document provides a summary of reviews and other administrative activities that occurred during FY 97-99. Reports are filed at various locations, as noted at the end of each section.

April 21-25, 1997 - Fire and Aviation Management Program Review A program review is conducted on each of the National Forest units, every three to four years to assure compliance with program direction and to assist the forest in solving any problems. The reviewers evaluated readiness, firefighter qualification and training, forest fire program management, cooperative relationships, budget/finance/staffing, dispatch/coordination, fire safety, and fire management in wilderness. One Action Item from this review recommended establishing a Texas Interagency Coordination Center. The Texas Interagency Coordinator Center has now officially opened and is jointly staffed and financed by the U.S. Forest Service (USFS), Texas Forest Service (TFS) and the U.S. Fish and Wildlife Service (USFWS). (Report filed at the Forest Supervisor's Office in Lufkin, Texas.)

June 23, 1997 - Forest Fiscal Compliance and Internal Control (FCIC) Review FCIC reviews normally occur in a three-year cycle. In a letter dated June 23, 1997, the Regional Forester postponed FCIC reviews planned for FY 97, as well as Automated Timber Sale Accounting (ATSA) and Timber Sale Program Information Reporting System (TSPIRS) to allow needed resources to assist with Foundation Financial Information System (FFIS) implementation. Alternative actions to address responsibilities in FSM 1414 included evaluation and monitoring of many of the financial management areas that are normally covered in FCIC reviews, through monitoring of the Region's Financial Health Action Plan, and evaluation of the Financial Management Performance Measures/Accomplishments. (Letter filed at the Forest Supervisor's Office in Lufkin, Texas.)

April 20-24, 1998 - Cooperative Forestry Program Review This review focused on programs that are conducted between TFS and USFS. Urban and Community Forestry Program (UCF), the Rural Community Assistance Program (RCA), and the Rural Forestry Assistance Program (RFA) were programs examined during the review. The UCF program is used to develop local capabilities, increase awareness of the benefits, values, care and management of the urban forest. Project files for this program were reviewed and found to be in compliance. The RCA program consists of Rural Development, administered by TFS, and Economic Recovery, administered by NFGT. Communities are provided with technical and financial assistance in organizing, planning and implementing local economic development activities. Review findings were inconclusive due to the limited review of the RCA program. In addition, TFS was commended for its proactive stance in attempting to move the RFA programs from a one-on-one focus to that of a landscape and forestry community approach to delivery of technical and financial assistance. (Report filed at the Forest Supervisor's Office in Lufkin, Texas.)

April 27-28, 1998 - Procurement and Property Functional Assistance Trip In this review a team discussed technical and non-technical issues and concerns relating to procurement and property operations. Customer interviews were conducted to assess the level of customer service being provided internal and external customers. Reviewers noted that the forest had experienced significant changes in personnel, due to retirements, and encouraged training for replacements. (Report filed at the Forest Supervisor's Office in Lufkin, Texas.)

June 15-17, 1998 - Timber Accountability Audit This was an unannounced timber accountability audit conducted on the Sabine NF in windstorm damaged areas by a team of Washington office (W.O.), Regional Office (R.O.), Law Enforcement and Investigations (LE&I), and Office of the Inspector General (OIG) personnel. Procedures for Conducting Scaled Sales, Management and Accountability of Tree Marking Paint, Weight Scaling of Timber, Regional Utilization Standards/Policy, Load Receipt Inventory Process, Load and Log Accountability, Financial Management, and Load Accountability were issues reviewed by the team. For the activities observed by the audit team, it was concluded that the tree removal operations conducted through salvage sale authorities were accomplishing the objectives agreed to between the USFS and the Council on Environmental Quality (CEQ). Minor discrepancies noted were addressed in an Action Plan for the forest, while some require action by the Regional Office and are not the responsibility of the NFGT. New or supplemental policy will be required to address some concerns. (Report filed at the Forest Supervisor's Office in Lufkin, Texas.)

June 17, 1999 - Timber Sale Accountability Audit. Held on the Sam Houston Ranger District, Sam Houston National Forest. The objective of this audit was to comply with RF direction to get out in the woods and ensure we do what we say we will do in a 2/11/99 Accountability memo; and respond to irregularities discovered in timber sale designation by description (DbD) thinnings elsewhere, and to conduct an on-the-ground inspection of DbD thinnings recently completed on each district forest-wide. (Report filed at the Forest Supervisor's Office in Lufkin, Texas.)

Special Windstorm Monitoring Reports. See **Sub-Issue 3-Watershed Conditions, Monitoring Item 6-Blowdown** earlier in the report for information about Special Windstorm Monitoring Efforts. (Reports are filed at the Dreka Work Center and at the Forest Supervisor's Office in Lufkin, Texas).

APPENDIX E

Updated Research Information

Current Research

Southern Research Station

Below is a list of all ongoing research projects of the Southern Research Station's Nacogdoches Research Work Unit (RWU-4251) currently being conducted on the National Forests and Grasslands in Texas, including research on the Stephen F. Austin Experimental Forest. (Note: Some of the study numbers may change during FY 2000 during revision of the Research Work Unit Description.)

1. **Long-term study on woodpecker selection of cavity trees as related to habitat and fungi** on the Stephen F. Austin Experimental Forest (SRS-4251-2.1). Initiated in 1978 to run until 2007. This study quantifies what trees and snags are selected by the six species of woodpeckers in eastern Texas for nesting sites, measures the habitat surrounding the cavity trees, and examines the internal condition of the cavity tree relative to the species of fungi involved in softening the heartwood.
2. **Long-term study on inoculation of mature pines in Red-cockaded Woodpecker (*Picoides borealis*) recruitment stands** on the Angelina National Forest (SRS-4251-2.1B). Initiated in 1984 to run until at least 2012. Five mature pines in five recruitment stands were inoculated with red heart fungus (*Phellinus pini*) in 1984. The Research Work Unit continues to monitor the inoculated pines for use by Red-cockaded Woodpeckers (RCWs).
3. **Long-term study on the population dynamics of snags in pine-hardwood forests** on the Stephen F. Austin Experimental Forest (SRS-4251-2.2), Initiated in 1994 to run until at least 2012. Six plots 0.56 ha were selected in 1984 and all existing snags were inventoried. Annually, each plot is examined in detail for the height and condition of existing snags and the creation of new snags through tree mortality. Eventually, snag population dynamics data will be available for both pine and hardwood snags in mixed pine-hardwood forest habitat.
4. **Availability, suitability, and use of trees and snags as foraging sites for woodpeckers** on the Stephen F. Austin Experimental Forest (SRS-4251-2.5). Initiated in 1984 to run until at least 2005. The first component of this study examined the quality of hardwood snags and use of them by woodpeckers as foraging habitat in bottomland hardwood forests. The results of this part of the study have been published. The second phase of the study will quantify the same variables but with pines in upland pine habitat. Phase two of this study is on hold pending sufficient funding to implement the research.

5. **Pileated Woodpecker (*Dryocopus pileatus*) behavior and habitat use in mature longleaf pine and bottomland hardwood forests** on the Stephen F. Austin Experimental Forest and Angelina National Forest (SRS-4251-2.15). Initiated in 1992 to run until 1996. Two papers have been published from this study and some data are still currently being analyzed for additional papers.
6. **Prothonotary Warbler (*Protonotaria citrea*) nest box selection and reproductive success in eastern Texas** on the Stephen F. Austin Experimental Forest (SRS-4251-2.16). Initiated in 1997 and is still running. The study examines selection and use of various types of artificial nest sites by Prothonotary Warblers to explore the possibility that portions of boxes made for Wood Ducks (*Aix sponsa*) could also be used by Prothonotary Warblers as nesting sites.
7. **Long-term study on responses of hillside seepage bogs and longleaf pine-bluestem savannahs to burning frequency and season** (SRS-4251-4.3). Initiated on the Angelina National Forest in 1993 to run until 2012. This study also evaluates the effects of fire frequency on rare plants in oak barrens associated with longleaf pine forests on the Angelina National Forest.
8. **Habitat selection by canebrake rattlesnakes (*Crotalis horridus*) and Louisiana pine snakes (*Pituophis ruthveni*)** on the Angelina and Sabine National Forests (SRS-4251-4.5). Initiated in 1992. Data are still being collected in this long-term study, which will likely run until 2012. Telemetry studies on these two rare species are being used to examine their movement patterns, geographic distribution, and habitat selection. The Louisiana pine snake appears to be a critically rare species because of the loss of well-burned pine forest habitat and mortality associated with vehicle use of relatively dense forest road systems that occur within the species' shrinking habitat.
9. **Study on the distribution and status of the alligator snapping turtle (*Macroclmys temminckii*)** in Texas (SRS-4251-4.7). To be initiated in 2000 and conducted in part on the Stephen F. Austin Experimental Forest until 2005. This study evaluates the current distribution status of alligator snapping turtles in eastern Texas and compares it with records of historically known occurrences of the turtle in order to evaluate if populations of the species have declined and a geographic range contraction has occurred. There is the potential to use radio telemetry to monitor movement patterns of turtles on the Stephen F. Austin Experimental Forest.
10. **Long-term study on amphibian community succession and recruitment to artificial ponds on the National Forests in eastern Texas** (SRS-4251-4.8) to be conducted on the Stephen F. Austin Experimental Forest and Davy Crockett National Forest. Initiated in 2000, and runs until at least 2015. This study will examine the anuran species (frogs) that use wildlife ponds on national forests and, through the creation of new ponds, explore the succession of anuran species and predators in newly created artificial ponds.

11. **Long-term study of Red-cockaded Woodpecker use of seedtree cuts** on the Angelina National Forest (SRS-4251-5.1). Initiated in 1984 to run until at least 2009. This study previously documented the value of seedtree and shelterwood cuts to RCWs, but has been extended to monitor the long-term value of these sites to woodpeckers as the new pine forest regenerates under the residual pines left during irregular seedtree and shelterwood harvesting. There is a potential problem in these stands for the regenerating pines to form a dense midstory that would be unacceptable to the RCW.
12. **Long-term study of the Losses of Red-cockaded Woodpeckers cavity trees to bark beetles** on the Angelina National Forest (SRS-4251-5.7). Initiated in 1986 to run until at least 2009. This study examines the high infestation rate of active RCW cavity trees by southern pine beetles (*Dendroctonus frontalis*) relative to infestation rates of control pine within and outside cavity-tree clusters. Factors possibly related to bark beetle infestation rates are stand disturbance, stand structure, and resin wick volatiles from cavity trees. Results thus far indicate that southern pine beetles do preferentially attack active RCW cavity trees and that nest trees of the preceding breeding season have the highest probability of being infested. Use of artificial cavity inserts to augment the supply of suitable cavities for woodpeckers does not increase the risk or rate of infestation by southern pine beetles.
13. **Avian response to southern pine ecosystem restoration in Red-cockaded Woodpecker clusters** on the Angelina National Forest (SRS-4251-5.5). Initiated in 1994; data were collected through 1996 and are currently being analyzed. This study examines the relative species richness and abundance of birds in longleaf pine and loblolly-shortleaf pine habitats with and without the presence of a developed hardwood midstory to determine any possibly positive or negative effects intensive RCW management is having on forest bird communities.
14. **Arthropod communities on the boles of longleaf pines** on the Angelina National Forest (SRS-4251-5.6). Initiated in 1995 with data collected through 1998; data are currently still being analyzed. This study examines arthropod communities on the boles of longleaf pines as affected by pine tree age and hardwood midstory conditions adjacent to pines. Only arthropods on the lower boles of the pines (3, 6, and 9 m above the ground) are being studied, as this area of the bole is important foraging habitat for female RCWs.
15. **Red-cockaded Woodpeckers and cavity competitors** on the Angelina and Davy Crockett National Forests (SRS-4251-5.3). Initiated in 1990. Field components were completed by 1994 and some papers are already published, however, still working on some aspects of the data. This study examines use of both active and inactive RCW cavities by all cavity occupants during spring, late summer, and winter. Thus far, we have not detected any negative impact by any cavity user on the RCW.

16. **Red-cockaded Woodpecker foraging behavior and nestling provisioning** on the Angelina and Davy Crockett National Forests (SRS-4251-5.4). Initiated in 1990. Data are still currently being analyzed. Results from portions of this research have been produced as a M.S. thesis. Other aspects of the study are still being analyzed. The study examines how RCWs partition foraging resources among various group members and quantifies what habitat is used for foraging versus what is available for use.
17. **Effects of midstory foliage on Red-cockaded Woodpecker foraging behavior and foraging habitat selection** on the Angelina and Davy Crockett National Forests (SRS-4251-5.2). Initiated in 1989. Data were collected over three years and are still being analyzed. The study evaluates possible negative effects the presence of hardwood midstory may have on RCW foraging behavior.

Forest Health

1. **Southern Pine Beetle Inhibitors.** The USDA Forest Service (FS), in conjunction with the Texas Forest Service, University of Georgia, and Virginia Tech, has developed operational techniques for using verbenone to suppress southern pine beetle (SPB) infestations. Verbenone, an anti-aggregation pheromone of the SPB, is tacked to trees around the front of expanding infestations. Verbenone has just been registered for use by the U.S. Environmental Protection. Phero Tech Inc., the company receiving the registration, is beginning to pursue markets for verbenone in the southeast U.S. The FS is currently conducting a risk assessment for verbenone. When complete, the FS will supplement or amend the FEIS for the Suppression of the SPB, and verbenone can then be used in SPB suppression projects on federal lands. Research continues on new elution devices and methods to simplify application. Forest Health Protection and FS Research have also examined the potential of 4 aa, a host compound with repellent properties to SPB, for the protection of individual trees at risk of attack from SPB. Under stringent testing, 4aa failed to protect a preset percentage of at-risk trees, so further research is needed.
2. **Southern Pine Beetle Detection.** The Forest Health Technology Enterprise Team has developed an electronic aerial sketch-mapping system that has been field-tested in Texas for southern pine beetle detection. The system allows the spotter to record SPB spots by marking a point on a computer screen corresponding to the spot location on a geo-referenced, moving map display. The maps and coordinates are downloaded, and the spots are located for ground-checking using GPS units. The system is being refined, and should be available for operational use within the year.
3. **Area-wide Southern Pine Beetle Suppression.** Forest Health Protection is investigating the effectiveness of trap trees for reducing SPB infestations. During the current period of endemic SPB activity in Texas, target pines within treatment blocks are baited with SPB attractant in November, and monitored

through April. Infested trees are felled and removed. The number of SPB infestations detected the following summer in treatment and check blocks will be compared.

Research Needs

Following are topics identified by staff on the National Forests and Grasslands in Texas needing research attention.

1. Uneven-aged management of pines in Texas, specifically survival and growth rates with varying amounts of hardwood competition. Studies have been done in other locales, but nothing for Texas and these soil types.

Other Projects

The NFGT cooperates with local universities and other entities to conduct research. This usually involves sharing resources and benefits all parties. The Ecological Classification System Report, water monitoring of the windstorm area, the trail inventory for Longleaf Ridge, Wildlife Management Area Stamp Trends, and the Public Private Ventures Studies are all examples of the versatility of these management tools. These studies provide valuable information to NFGT management and are a vehicle for university students to conduct meaningful research while pursuing advanced degrees. The data collected and evaluated is filed at the appropriate school and is available for use by the Forest Service. For instance, "Vegetation Composition on the Turkey Hill and Upland Island Wilderness Areas" by George Minta Legrande provides a vegetation classification of the two wilderness areas and establishes a baseline from which successional changes within the areas can be monitored through time.

APPENDIX F

Responses to *Forest Plan Appendix G* Questions

In a Declaration dated September 5, 1997 in the matter Sierra Club, et al v. Glickman, et al, Forest Supervisor Raum Raum stated that actions would be taken to address the Court's concerns. Item 2, beginning on page 13, stated that the forest would answer each specific monitoring question outlined in Appendix G of the 1996 Revised Forest Plan, along with additional elements identified in his declaration. Below are answers that comply with that commitment.

1a. Are threatened, endangered, or sensitive species and unique plant communities being properly identified?

Yes, by various biological specialists. Many field-going non-biological personnel are trained to recognize the highest profile TES species. Numerous species of protected plants are usually quite inconspicuous in their appearance. The Nodding Nixie, for example, is so small that even spotting it is only possible on hands and knees.

a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

All projects that pose any disruption to TES species, go through scoping and biological evaluation. Known locations are identified in advance by specialists or are prompted for further examination. The NFGT efforts could be strengthened by the addition of hydrologic and botanic specialists.

b. Where did we get the information to address this particular question?

Process records and program manager observations.

c. Is the question in response to specific monitoring required by the National Forest Management Act (NFMA)?

Yes, with reference to species diversity, Management Indicators and T&E record objectives.

d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes, affirms that training and manpower are critical issues.

Is available training sufficient to meet diverse needs of biologists and rangers?

Yes, on programmatic disciplines, like species program management and GIS, but not with reference to endemic species and issues, as noted above.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Not applicable.

- b. Where did we get the information to address this particular question?

Current Continuing Education catalog and Resources shop records indicating that the last field training for Biologists/Technicians was held in 1996.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No.

Is consultation between other federal and state agencies effective?

Yes, with the exception of state coordination on sensitive species. All other forests depend on their respective state "Heritage" programs to track non-T&E species according to global rank. Any species with a ranking of G3 or higher, automatically becomes Forest Sensitive by USFS policy. Texas no longer has a Natural Heritage Program and therefore no support base in monitoring sensitive species and ranks. It then becomes incumbent upon limited forest personnel to monitor these species and determine trends.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Not applicable.

- b. Where did we get the information to address this particular question?

Common knowledge.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

1b. How is the habitat of any listed species being affected?

Habitats for all listed species use are being maintained, improved, or increased as determined by actual surveys and management indicators.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Habitat monitoring is done by determination of acres of habitat or number of streams.

- b. Where did we get the information to address this particular question?

B.E. records, Forest TES list, *the Plan* Appendix D, CISC, and survey records.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are viable populations of indicator species being sustained?

It will take more than a three-year reporting period to account for anomalies and truly assess viability trends since populations cycle naturally and we have had some recent drought years. Initial indications are that viable populations are being sustained for most species. Viable populations are questionable for Navasota Ladies Tress, Sabine Shiner, and Scaly Sand Darter. The Navasota Ladies Tress is closely monitored and the need for a prescribed burn has been

identified. Additional monitoring and surveys are needed for the Sabine Shiner and Scaly Sand Darter. These surveys need to identify possible sources of sedimentation, which appears to be the main threat to the species, followed by appropriate erosion control mitigation.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Same as above.

- b. Where did we get the information to address this particular question?

FY 97-99 wildlife monitoring table, survey data, and forest fisheries database.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

What are the viability trends for selected species?

The LRMP Appendix D G-2 indicates the reporting of this item is on a five year frequency and is therefore premature. We know about some trends that were evident before the 1996 LRMP, but there has not been sufficient time to assess any *Plan* influence on these trends.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Plan?

Not applicable.

- b. Where did we get the information to address this particular question?

Not applicable.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Not applicable.

Are Navasota Ladies'-tresses populations increasing?

No. Surveys for the past two years have failed to reveal any plants in prior or new locations.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Pre-project surveys and assessments as above.

- b. Where did we get the information to address this particular question?

USFS and TNC field records.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Is RCW augmentation successful?

Yes.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Post-translocation surveys.

- b. Where did we get the information to address this particular question?

Annual RCW Report and translocation reports.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Is 1-5percent/year increase in RCW obtainable?

Only with significant increases in funding and personnel to prepare new habitats.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Not applicable.

- b. Where did we get the information to address this particular question?

WFRP report and USFWS RCW population report.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are corridors available and RCW genetic exchange taking place between private lands and NFGT?

Yes, on lands adjoining timber companies, but not private owners.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Annual RCW coordination meeting.

- b. Where did we get the information to address this particular question?

RCW meeting report.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

1c. Are natural processes shaping the wilderness character rather than man's influence?

Yes. The desired future condition of wilderness is to protect the wilderness character including, but not limited to, solitude, physical challenge, and primitive recreation opportunities. Resource management activities are limited to protection of critical habitat for federally listed threatened or endangered species, trails, signing for user safety and to those existing uses that do not affect existing wilderness attributes.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Limits of Acceptable Change (LAC) plans have been completed for the Angelina and Sabine National Forests. These plans guide all projects to be implemented in Wilderness. LAC plans for the Sam Houston and Davy Crockett have yet to be completed. Funding for the LAC plan for the Sam Houston National Forest should be a priority as the Little Lake Creek Wilderness has numerous issues and concerns and is located in an "urban forest".

- b. Where did we get the information to address this particular question?

LAC plans and Davy Crockett and Sam Houston National Forest Rangers.

- c. Is the question in response to specific monitoring required by the NFMA?

No. Wilderness monitoring is directed by the Wilderness Act, Forest Plans, and by wilderness specific LAC plans.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No. The question is too broad. Natural Processes include fire in certain ecosystems. Wilderness specific LAC plans specify monitoring but LAC plans, although completed, have not been implemented on the Angelina and Sabine. LAC plans have yet to be completed on the Sam Houston and Davy Crockett.

Are any activities harming natural processes?

The Wilderness Act directs that natural processes shape the wilderness character. Due to the size of the NFGT Wilderness Areas, and the surrounding private lands, fire has been unnaturally excluded. Completed LAC plans for the Angelina and Sabine call for prescribed fire, yet these plans have not been implemented.

No, low recreation use is not degrading the vegetative, soil and water values of wilderness areas.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Visitor use is monitored through self-visitor registration.

- b. Where did we get the information to address this particular question?

Recreation Information Management (RIM) and LAC plans.

- c. Is the question in response to specific monitoring required by the NFMA?

No. The NFGT question refers specifically to visitor use.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

The above question is too broad. LAC plans are needed for each wilderness and funding and personnel is needed to appropriately implement existing LAC plans and develop LAC plans where none exist.

Are wilderness RCW clusters declining?

Yes. The Little Lake Creek Wilderness and Upland Island Wilderness each have one active cluster remaining, which has been the case since 1997. Little Lake Creek contained as many as five clusters in 1990.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Clusters are surveyed every year as per Appendix G.

- b. Where did we get the information to address this particular question?

District records.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

1d. Is landscape diversity being maintained?

Yes, see Chapter II. Monitoring Results, Findings and Evaluations, Issue A. Ecosystem Condition, Health and Sustainability, Sub-Issue 1. Biodiversity and the topics Vegetation Management, Age Class and Old-Growth Inventory.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

First and third year regeneration checks were used to determine if regeneration of desired tree species is being achieved. See Chapter II. Monitoring Results, Findings and Evaluations, Issue A. Ecosystem Condition, Health and Sustainability, Sub-Issue 1. Biological Diversity, and the topic Regeneration Check for further information.

- b. Where did we get the information to address this particular question?

Information was summarized from PEP (Plantation Evaluation and Performance) Reports that are on-file in the Forest Supervisor's Office.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes. The question is necessary as it provides a "measuring stick" to gauge against forest type establishment acres.

1e. Are significant longleaf and shortleaf pine ecosystems being successfully restored as per restoration priority levels?

Restoration has been limited due to court injunctions. See 1g.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Implementation of projects was monitored through TRACS-Table 20 that identifies stands being restored through harvest.

- b. Where did we get the information to address this particular question?

The information benchmark is from EA and project plans.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes. The question is necessary as it provides a “measuring stick” to gauge the restoration progress of longleaf ecosystems.

Are restored acres producing the desired habitat?

Restored areas are developing as expected.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Implementation of restoration work is monitored through first and third year survival checks maintained in the Forest Supervisor’s Office.

- b. Where did we get the information to address this particular question?

The information was obtained from PEP (Plantation Evaluation and Performance.)

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

The question is necessary as it provides a “measuring stick” to gauge the restoration survival progress of longleaf and shortleaf ecosystems.

1f. Are riparian areas being managed to provide important corridors for biological exchange between mature forest areas?

Yes, management is providing protection of these areas to ensure their prevalence.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Adherence to protection criteria for areas under MA 4 (Streamside Management zone) in the *Plan*. This is a five-year monitoring item.

- b. Where did we get the information to address this particular question?

Biologists responses, project inspections, Supervisor Office (SO) reviews.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No. These areas are managed under MA-4 that will provide these corridors.

Are target species using the riparian areas?

Yes, but we don’t have data on all target species use of these areas.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Project inspections.

- b. Where did we get the information to address this particular question?

Landbird monitoring data, squirrel and turkey counts.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No, it is a duplication of the monitoring for Management Indicator Species.

Are management techniques achieving the desired results and trends?

Plan direction is to manage for older forest conditions within riparian areas. No significant amount of active management has been done in riparian areas since the *Plan* was implemented. This is a five-year monitoring item.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Not applicable. A five-year monitoring item.

- b. Where did we get the information to address this particular question?

Not applicable.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No, direction is primarily to let these areas mature, with very little active management. Even the five-year monitoring interval is too soon to identify trends due to the maturing forest.

Are streams and corridors maintaining desired wildlife, plants, and fish populations?

Surveys and sampling reveal no trend to reduction of populations. Fish populations are restricted from some stream reaches due to passage impediments at road crossings. Water quality samplings reveal satisfactory water conditions.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Project reviews and surveys.

- b. Where did we get the information to address this particular question?

BE reviews, landbird surveys and forest fisheries database.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No, monitoring the Management Indicator Species will provide this information.

1g. Are fire dependent ecosystems being managed to maintain, improve, or restore the desired ecological processes?

Fire is an important natural force that shaped the coastal plains ecosystems. The NFGT concentrates its burning in areas that historically experienced frequent, low-intensity surface fires. NFGT burned 71,367 acres in FY 97, 36,809 acres in FY 98, and 87,130 acres in FY 99.

Prescribed burning is used on the National Grasslands to manage fire dependent ecosystems. Fire and grazing are critical disturbance factors in these ecosystems. For many years, fire had been removed from these systems, with the exception of about 300 to 500 acres being burned each year. In FY 1999, 7,500 acres were burned. In FY 1998, 5,400 acres were burned.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

District personnel observe fire intensity and fire behavior on the day of the burn to ensure that objectives in the burn plan are met. They also visit the area after the burn to record post-burn observations. S.O. personnel visit a sampling of burned areas each year to review the burning program and further discuss success in meeting objectives.

- b. Where did we get the information to address this particular question?

Records kept at TICC document the acreage burned each year. Those acres are also reported in an annual fire report to the Region. Written reviews are kept on file that document S.O. visits to districts.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

This question is important in determining effectiveness of NFGT management.

Is frequency and timing of burning sufficient to achieve desired results?

During preparation of the *Plan*, an analysis performed by the Forest FMO indicated that approximately 500,000 acres in NFGT are appropriate for prescribed burning on about a 4-6 year cycle. That would mean that about 100,000 acres should be burned each year to maintain proper frequency. Historical burning on NFGT has been far below that total. It could be concluded that frequency is not adequate to achieve desired results. More acres should be burned each year. NFGT fire personnel have also determined that more growing season burning should be carried out to better achieve desired results.

The results of the burns on the National Grasslands have been positive. Prescribed fire helped to control some of the encroaching species, such as eastern red cedar. It has also helped to “set back” other species, such as plum and sumac, putting these brush species into an earlier seral stage. This makes the species more available for wildlife, increases species diversity in general, increases available herbaceous material, increases ground cover, and increases preference and palatability of grass.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Records on acres burned each year are compared to desired totals to achieve proper frequency. Burned areas are assessed through personal visits to compare effects of dormant season vs. growing season burning.

- b. Where did we get the information to address this particular question?

Information was obtained same as in b. above.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

This question is important in determining effectiveness of NFGT management.

Are vegetative species and conditions acceptable and meeting the desired conditions?

The *Plan* outlines goals to increase the acreage of shortleaf and longleaf pines. Due to the 97 District Court Injunction there has been little or no opportunity to effect changes in forest type conditions.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

CISC records show the breakdown of forest species and conditions.

Implementation of vegetative treatments are monitored through pre-commercial thinning, prescription burning, restoration practices and tree harvesting.

See the descriptions of Precommercial Thinning, Prescribed Fire, and Species Restoration information in Chapter II of the Report.

Tree harvesting treatments are monitored through timber sale contract inspection reports. Between 1997-1999, there were 44,490 acres inspected for contract compliance.

- b. Where did we get the information to address this particular question?

From CISC data base, from TRACS, MAR and Timber Sale Contract Inspection Reports.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes, the question is germane to validating that objectives, standards, guidelines and desired future conditions in the *Plan* are being met.

1h. Are non-public lands being acquired to enhance important resources or consolidate lands for important ecosystems?

Yes. Proposals for land exchanges comes to the NFGT in several ways. The Forest Service actively looks for tracts for land that fall within the guidelines of acquisition. Private and public recommendations are also received. These proposals are prioritized with high priority going towards enhancement of resources and consolidation.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Monitoring of project implementation is done with consultation with District Rangers, Forest Supervisor and Regional Office Staff. Accomplishment is recorded in the Management Attainment Report.

- b. Where did we get the information to address this particular question?

Consultation with Lands Team Leader.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

It is important that all land acquisitions meet the intent of the program based on the Land Management Plan and Congressional direction. There are private and political sensitivities that must also be addressed hence it is necessary to monitor this program area.

To the extent funding and private lands are available, are lands being acquired as needed to meet program objectives?

Lands are not being being acquired as needed and as per *Plan* direction because of lack of budgets and personnel.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Same as “a” in 1h.

- b. Where did we get the information to address this particular question?

Same as “b” in 1h.

- c. Is the question in response to specific monitoring required by the NFMA?

Same as “c” in 1h.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Same as “d” in 1h.

2a. Is a balance of dispersed and developed recreation opportunities from low scale development to upper scale development being provided within public demand?

Yes. However, due to budget limitations, we have not been able to maintain recreation facilities to the standard we and the public would like, but we are taking steps to provide better facilities and maintenance of these facilities. See Chapter II. Monitoring Results, Findings and Evaluations, Issue B. Sustainable Multiple Forest and Range Benefits, Sub-Issue 1. Outdoor Recreation Opportunities.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Compare project plans with the *Plan* priority list in Appendix E.

- b. Where did we get the information to address this particular question?

Not applicable.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes. See 36 CFR 219.27(b)(6), 219.21(a)(2) & (3).

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

2b. Are management activities meeting the VQO?

Most management activities meet the VQO. See Chapter II. Monitoring Results, Findings and Evaluations, Issue B. Sustainable Multiple Forest and Range Benefits, Sub-Issue 1. Outdoor Recreation Opportunities and the topic Visual Quality Objectives.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Review of project plans and field visits, if necessary, by Landscape Architect and other members of ID team.

- b. Where did we get the information to address this particular question?

See above.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes. See 36 CFR 219.27(c)(6), (d)(1).

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Have actions accomplished the intended need and met mitigation standards?

Yes, in most normal situations.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Field visits and coordination with appropriate ID team members.

- b. Where did we get the information to address this particular question?

See above.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No. This is answered by the question above.

Is the form, line, color, and texture of activities meeting acceptable design quality?

These elements determine design quality and are part of the VQO designations. The planning process provides the opportunity to determine if mitigation measures are necessary to maintain these elements.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Field visits and coordination with appropriate ID team members.

- b. Where did we get the information to address this particular question?

See above.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No.

2c. Are openings and harvesting activities performed to enhance scenic quality?

Yes, in normal situations.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Review of project plans and field visits by Landscape Architect and other members of the ID team.

b. Where did we get the information to address this particular question?

See above.

c. Is the question in response to specific monitoring required by the NFMA?

Yes. See 36 CFR 219.27(b)(6), (c)(6), (d)(1).

d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

2d. Do project plans adequately consider other resources and minimize conflicts with other users?

Yes.

a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

All resources were involved in the planning process. District personnel were involved in planning and implementation of projects to ensure compliance.

b. Where did we get the information to address this particular question?

From the Landscape Architect involved in the projects.

c. Is the question in response to specific monitoring required by the NFMA?

Yes.

d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Is unacceptable damage occurring to the resources?

Not generally. Damage has occurred in isolated cases but mitigation measures were quickly established.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Field visits by district and S.O. personnel, including but not limited to engineers, designers, law enforcement, ORAs, botanists, biologists, etc.

- b. Where did we get the information to address this particular question?

From the Landscape Architect.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are there unacceptable conflicts with other users?

Yes. The primarily occur on the National Recreation Hiking Trails. These trails are reserved for hiking only. Occasionally, they are used by horses and ORVs.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Through trail users, law enforcement, and ORAs.

- b. Where did we get the information to address this particular question?

See the answer to “a” above.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

2e. Are significant archeological and historical sites being identified through the completion of inventories conducted according to the Forest Heritage Resource Plan?

Yes, although totals for FY99 were lower than normal, this was a reflection of the workload and Forest priorities, not a factor related to survey process or implementation of a particular survey strategy.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

When significant or unevaluated sites were located within or near project areas, field visits were made during and immediately after project implementation.

- b. Where did we get the information to address this particular question?

From field notes and information provided in Annual Reports on Heritage Resource Management.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, see 36CFR219.24(a)(b)(c).

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are significant heritage resources being protected from adverse impacts due to the project implementation, vandalism, and natural forces?

Yes.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Field visits; coordination with sale administrators, ORA's (special use projects) and law enforcement.

- b. Where did we get the information to address this particular question?

From field notes and information provided in Annual Reports on Heritage Resource Management.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, see 36 CFR 219.24(a)(4).

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Is application of the Forest Heritage Management Plan and resource design resulting in the identification of significant heritage resource prior to project implementation?

Yes, we have seen a steady increase in the number of sites determined eligible and ineligible since the Forest Heritage Management Plan was implemented.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

See above.

- b. Where did we get the information to address this particular question?

See above.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, see 36 CFR 219.24(c).

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

The question is necessary and appropriate.

Are heritage resources being properly identified, protected, and interpreted at selected important sites?

Yes, to the best of our ability within budgetary constraints.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

See above.

b. Where did we get the information to address this particular question?

See above.

c. Is the question in response to specific monitoring required by the NFMA?

Yes, see 36 CFR 219.24(a)(3).

d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes. See Sub-Issue - Heritage Resources in M&E Report.

2f. Is law enforcement provided at sufficient levels for visitor protection, enforcement of resource regulations, and facility protection?

No. There is a trend of increasing forest visitors particularly on the Angelina NF, Caddo/LBJ NGs and the Sam Houston NF. There is a need for an additional law enforcement officer (LEO) for the Angelina and the Sam Houston. The LEO position for the Grasslands has remained unfilled for fourteen (14) months.

a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

LEMARS (Law Enforcement Management Attainment Reporting System.)

b. Where did we get the information to address this particular question?

Same as “a” above and case tracking.

c. Is the question in response to specific monitoring required by the NFMA?

No.

d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes. It is important to monitor the law enforcement outcomes on the NFGT. The highest impacts are occurring on the Sam Houston and the Grasslands. This is due to their proximity to Houston and Dallas/Fort Worth metroplexes respectively.

Are safety and maintenance items noted in inspections of administrative facilities being accomplished?

Yes. All facilities are inspected regularly per OSHA regulations and maintenance needs are documented per Forest Service direction.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

All facilities are inspected and accomplishments recorded in project files.

- b. Where did we get the information to address this particular question?

From accomplishment reports, consultation with field engineering representatives and project files.

- c. Is the question in response to specific monitoring required by the NFMA?

No. It is a question in response to Forest policy and direction.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

It is important to monitor the planned work and accomplishments to ensure that the work is properly planned and executed with appropriate accountability in fiscal, contracting, safety and engineering methods.

Are dams operated and maintained in accordance with the Dams Operation and Maintenance Plan?

No. The Chief's directive to conduct deferred maintenance inventories has produced a clear picture of program needs. One hundred percent (100%) of all dams were inspected during FY 1999. The estimated annual maintenance need for dams is approximately \$16,000, whereas the deferred maintenance backlog is approximately \$1,300,000. Clearly a greater level of funding is needed to bring all dams under full operational compliance.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

NFGT Engineering monitors compliance of operations and inspections regularly. There is a need for greater funding to be able to operate and maintain the dams as needed.

- b. Where did we get the information to address this particular question?

From field review notes and project files.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

It is necessary to have this item continue as a monitoring item. The structures impound water that is needed for recreation and aquatic habitat.

Are trails maintained to the standards planned in the annual maintenance planning process?

Trails are identified to have maintenance activities performed on them. Not all required activities can be accomplished during a fiscal year. The amount of maintenance is budget dependent, hence the answer is no. Not all trails are maintained as identified in the planning process, but the maintenance activities do conform with current standards and guidelines.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

All projects are inspected during the life of the work being performed by qualified inspectors. The inspectors must ensure that the work is done according to design or operation and maintenance standards. The project designers are members of Forest interdisciplinary teams that ensure that projects are in compliance with the *Plan*.

- b. Where did we get the information to address this particular question?

Information is available in as-built drawings and daily dairies.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

The monitoring item can be dropped.

Are FDRs operated and maintained to the standards planned in the annual planning process?

100 percent of inventories for roads having maintenance levels 3, 4, 5 and 2 percent of roads having maintenance levels 1 and 2 have been completed. The completion of road inventories for levels 1 and 2 roads in FY 2000 will yield yet a more accurate account of total road mileage for the NFGT. The maintenance backlog assessments that were done concurrently with the inventories have yield a need of \$4,600,000 annual maintenance and \$79,500,000 for deferred maintenance.

All the roads on the NFGT are being reviewed through transportation studies and road management objectives are being documented. The transportation goal of the NFGT is to complete all inventories, document findings in the INFRA database, continue the reduction of backlogged maintenance, decommission unneeded roads and continue maintenance and reconstruction through Forest Service contracting services and cooperative work with Counties and the State with adherence to *Plan* Standards & Guidelines and Engineering controls. No major problems have been encountered.

Road Bridges and Major Culverts

Eighty percent (80%) percent of all bridges and major culverts (those having an end area of 35 square feet or more) were inspected in FY 1999. The outcome produced an annual maintenance need of approximately \$298,000 and \$1,993,00 respectively. Whereas NFGT road bridges and major culverts are structurally stable, low maintenance applications due to funding levels will continue to accelerate their deterioration. These structures have inspection cycles of two to three years. NFGT Engineering will continue to report deficiencies to the Regional Office and work towards a replacement program that will not allow catastrophic failures. The annual maintenance estimates are based on the 80 percent.

- a. How did we monitor implementation of projects to ensure compliance w with the 1996 Revised Forest Plan?

Implementation is monitored through various means. All projects are assigned a project manager, contracting officer's representative or inspector. These personnel always have good documentation on each road project. There is also a compliance review performed during the life of the project and at the closeout. Engineering reports are filed for major projects (i.e. > \$250,000.)

- b. Where did we get the information to address this particular question?

Information to address this question was provided by the Forest Engineer based on NFGT methods of doing work.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

It is important to continue the monitoring of this infrastructure because of the interaction with the natural resources, public safety and fiscal accountability.

Are frequency, magnitude of safety problems, and risks at a low level?

Annual condition surveys are completed and are used to help determine road maintenance priorities. The frequency and magnitude of safety problems are at a low level. All efforts are made to secure funding from all available sources. The concern for public safety is paramount and will not be compromised. If there is a need to replace a structure and funding is not available, the road is closed.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

All structures that include roads, bridges and major culverts reside in an inventory. Good project files are maintained for all new work, especially contract work.

- b. Where did we get the information to address this particular question?

Information for this question was provided by the Forest Engineer and can be verified by inspection of project files.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

The question is necessary and this area should be monitored due to the sensitivity of public safety, engineering and fiscal accountability.

Are administrative facilities replaced as needed for health and safety of employees?

The *Plan* lists three facilities that are scheduled for replacement: Angelina office and work center, Davy Crockett office, and Sabine office. It also states that one facility will be replaced per *Plan* period. The NFGT completed the construction of the Angelina work center in FY 99 and is scheduled to complete the office during FY 2000, hence meeting the requirements of the *Plan*. Efforts are underway to replace the two remaining facilities.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Implementation of projects is monitored as a Regional initiative. All completed projects have a project file complete with an engineering report and as-built plans and specifications.

- b. Where did we get the information to address this particular question?

Information for this question is obtained from the Forest Engineer and based on Regional listings and methods of doing work.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

The question may not be relevant as stated. Administrative facilities are not just replaced for the safety of employees, but for many other reasons such as structural usefulness, accommodation of public needs, obsolescence, changing in the workforce, function, age, etc.

2g. Are equal opportunity regulations and opportunities being met?

Due to significant budget reductions, court injunctions and agency downsizing, the Forest has not met all minority placement goals. There has been insufficient filling of vacancies to allow placement accomplishment.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Projects are not appropriate for implementation monitoring. The Forest uses the annual Change in Workforce EEO file to monitor accomplishment.

- b. Where did we get the information to address this particular question?

The annual Change in Workforce EEO file.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No.

2h. Are public lands properly identified and access provided for use and enjoyment?

Access is sufficiently available to provide for use and enjoyment of the public. Because of the scattered ownership, identifying public land is sometimes difficult. A signing effort is being implemented as part of the ongoing landline maintenance.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Implementation is monitored through District records. The work is primarily accomplished with District force account crews. All work is performed in compliance with NFGT-wide guidelines for landline maintenance.

- b. Where did we get the information to address this particular question?

Information was obtained from district records and MAR accomplishments.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Monitoring is appropriate, however, it should focus more on identification near private properties. There are continuing encroachment problems that need to be addressed through monitoring.

Do resource project plans identify needed access for management and users?

Yes, all project plans identify travel and access management needs using the interdisciplinary planning process.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

The access component of project planning is a “check-off” item within the entire planning process. Project plans are verified through contract inspections.

- b. Where did we get the information to address this particular question?

The information for this question was obtained from the Lands Staff Officer.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

This monitoring item is not significant at the moment, however, due to the new Roads Policy, access and travel management will receive added emphasis.

3a. Are ecosystems being maintained or enhanced to help meet social and economic benefits?

Since we have not been able to implement the Plan on approximately 500,000 acres across the NFGT because of court injunctions and limited budgets, it is not possible to assess this particular goal.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

See response to 3a above.

- b. Where did we get the information to address this particular question?

Not applicable.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No.

Are trends in ecosystems' elements stable or increasing?

This item will more appropriately be assessed at the five-year monitoring period.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Not applicable.

- b. Where did we get the information to address this particular question?

Not applicable.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No.

Are the landtypes showing positive characteristics of sustainability?

Yes. Efforts are continuing despite the limitation mentioned in response to other questions in this appendix, to ensure sustainability of all land types. See Chapter II. Monitoring Results, Findings and Evaluations, Issue A. Ecosystem Condition, Health & Sustainability.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

See the chapter referenced above.

- b. Where did we get the information to address this particular question?

In a variety of ways, including but not limited to: watershed scale analyses, regeneration/stocking checks, pre- and post-treatment type monitoring, and though other methods as described in Chapter II, Issue A, Ecosystem Condition, Health & Sustainability.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

3b. Are resource programs being managed in the most cost-efficient manner?

Severe budget cuts have had an impact on the forests' ability to manage all resource programs for the desired future condition envisioned in the development of the *Plan*, as have continuing and ongoing court injunctions. Therefore, since these events have largely dictated much of our management direction, it is not possible to adequately assess the question of best cost effectiveness.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

See 3b above.

- b. Where did we get the information to address this particular question?

Not applicable.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are efforts to reduce per unit costs effective?

Based on our current situation, as explained in 3b above, we are limited in our ability to best manage for most effective unit costs.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Not applicable.

- b. Where did we get the information to address this particular question?

See 3b.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are cost efficiency measures achieving the desired results?

See response to the first question in this section, and to 3b above.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

See responses above.

- b. Where did we get the information to address this particular question?

Not applicable.

c. Is the question in response to specific monitoring required by the NFMA?

No.

d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No.

3c. Are landownership adjustments improving management and consolidation?

Yes. The adjustment strategies adopted through national, regional, and local (NFGT) policies primarily improve management and consolidation. The strict guidelines are being used uniformly throughout the NFGT.

a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

This is not a situation that requires “project” monitoring.

b. Where did we get the information to address this particular question?

Not applicable.

c. Is the question in response to specific monitoring required by the NFMA?

No.

d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

This monitoring item can be eliminated.

Do acquisitions, exchanges, and disposals result in a net boundary reduction?

Yes. All acquisitions, exchanges and disposals have resulted in a net boundary reduction. This has been displayed by the total inventoried landlines that are on record.

a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Professional surveys occur during all landownership adjustment projects; all projects are reviewed for compliance with regulations.

- b. Where did we get the information to address this particular question?

Project files.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

This monitoring item can just be a tracking item of total acres.

3d. How well are landline boundaries being established, maintained, and protected from obliteration?

The NFGT is achieving approximately 50 percent of the planned landline mileage. The degree of quality has not been sacrificed regardless of funding. The only problem is associated with the amount of funding that is received to accomplish the work. The NFGT has entered into a MOU with timber companies that have common boundary lines with the Forest Service. This will ensure better compliance.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Project work is monitored by accomplishment that is documented in district project files. Yearly plans-of-work are prepared.

- b. Where did we get the information to address this particular question?

Information is obtained from District coordinators supported by documented work in the project files.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

The monitoring of this item should continue. There are many problems associated with not having a sound boundary management program.

3e. Are acquired rights-of-ways provide more efficient management of public lands?

Yes. This is accomplished by having better access points to the national forest which results in a reduction in cost.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Through accomplishment reports. The need for rights-of-way is determined when the activity is being planned. Most of the rights-of-way are for timber and minerals projects.

- b. Where did we get the information to address this particular question?

From individual project files.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

This monitoring item can be dropped.

Do acquired rights-of-way provide more efficient management of public lands?

All acquired rights-of-way have proven to contribute to the efficiency of public land management.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Same as above.

- b. Where did we get the information to address this particular question?

Same as above.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

This monitoring item can be dropped.

3f. Is the transportation system cost-effectiveness being increased?

Cost-effectiveness of the transportation system is produced by the following methods:

1. Elimination or closure of unneeded roads and trails;
2. Proper design for construction/reconstruction of roads, trails and bridges; and/or
3. Providing only that which is needed for the intended purpose and for the protection of the natural resources.

Cost effectiveness numerical values have not been determined in order to accurately answer the question. The Forest constantly scrutinizes the transportation system for need, purpose and adequacy.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

All proposed projects receive constant review by Forest Service interdisciplinary teams during the planning and implementation stages.

- b. Where did we get the information to address this particular question?

The information is available from planning and contract documents.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Effectiveness of the transportation system is a good measure; however, the standards for this are not quite clear. It will be necessary to clarify the effectiveness measure such that the public can benefit from this monitoring item. Therefore, recommend keeping this item.

Are FDRs constructed/reconstructed and operated in accordance with compartment project plan?

FDRs are constructed/reconstructed and operated based on the EA, Road Management Objectives and Road Design Criteria. The *Plan* provides for standards and guidelines which are incorporated in the EA.

Roads were constructed per FW-051 through FW-055, reconstructed and maintained per FW-056 through FW-057, and obliterated per FW-058.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Road construction/reconstruction and operations are inspected by engineering personnel for each project.

- b. Where did we get the information to address this particular question?

The contract information is documented in each project contract.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, projects are developed using the EA requirements.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are FDRs constructed/reconstructed and operated in accordance with the Recreation Area Design Narrative?

Yes, they are checked within 10 years, as required by law, and documented. The requirements of the Recreation Area Design Narrative are included in the EA. The majority of the recreation roads have been constructed. The program work consists of maintenance and minor reconstruction to abate unsafe road conditions and structures. Construction and reconstruction projects on FDRs always have short and long range Road Management Objectives which also account for cyclic restoration and surface replacements.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Inspections during and after completion of each road are documented for contract project requirements.

- b. Where did we get the information to address this particular question?

The EA, RMO and contract daily diaries are completed based on approved project plans. Final reviews of the projects include determination of work accepted under terms of the contract.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, construction inspections are required to ensure that the contract plans are being obtained as required by the EA based upon NFMA requirements.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes, recreation standards have to be incorporated into the EA and construction project plans.

Are roads planned and constructed as temporary being obliterated and revegetated as per requirements?

Temporary roads required for a timber sale are closed and revegetated as hauling is completed.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Temporary roads are constructed as part of a timber sale contract. These roads are located by the Forest Service and constructed by the timber purchaser. They are inspected during construction and at the final completion of each timber sale.

- b. Where did we get the information to address this particular question?

All timber sale contracts require inspection and approval of temporary roads. Information on the construction of temporary roads is obtained from timber sale records and contract diaries.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, temporary roads are included in the EA development.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes, temporary roads require site-specific environmental requirements in accordance with the approved EA and forest-wide vegetation standards require a stand of vegetation on all disturbed areas.

3g. Is fire protection to public and private property and human life being performed in a cost-effective manner?

The 1996 National Fire Management Analysis System (NFMAS) report identified staffing and funding levels for NFGT that would result in the “most efficient level” (MEL) of fire protection and suppression. Funding in WFPR in FY 97 was \$1,097,000, or approximately 35 percent below what was needed for MEL. Funding in FY 98 was \$730,000, or about 55 percent below MEL. Funding in FY 99 was \$675,000, or 60 percent below MEL. At these funding levels the NFGT has been unable to adequately staff personnel and acquire and maintain equipment to be prepared for a normal wildland fire season.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

This is monitored by comparing budget levels for each year with inflation-adjusted amounts in the NFMAS analysis.

- b. Where did we get the information to address this particular question?

This was obtained from budget information for FY 97-99.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

This question is important in determining effectiveness of NFGT management.

3h. Are partnerships, cooperative agreements and volunteer programs being encouraged?

Yes. The NFGT has several partnerships, cooperative agreements and volunteer programs that enhance our regular workforce and result in work accomplishments

that would not otherwise be done. See Chapter II. Monitoring Results, Findings and Evaluations, Issue B. Sustainable Multiple Forest and Range Benefits, Sub-Issue 1. Outdoor Recreation Opportunities, Volunteer Time/Value for further information.)

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Projects are monitored during the planning and implementation stages by on-site visits of project managers and accomplishments are documented.

- b. Where did we get the information to address this particular question?

Project reports and file.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are requests to volunteer and support programs being processed? How are the districts and the SO soliciting people and groups to assist the Forest Service?

Yes. Solicitations are done through various means; i.e. through agreements with universities and other entities, by publicizing special initiatives, and through cooperation with user groups.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

See Chapter II. Monitoring Results, Findings and Evaluations, Issue B. Sustainable Multiple Forest and Range Benefits, Sub-Issue 1. Outdoor Recreation Opportunities, Volunteer Time/Value for further information.

- b. Where did we get the information to address this particular question?

Same as "a" above.

c. Is the question in response to specific monitoring required by the NFMA?

No.

d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No.

3i. Are programs for recreation based markets and rural development being developed?

Recreation Based Markets

The NFGT does not have a specific program developed for recreation-based markets. However, individual recreation based programs are developed. These programs are changing to meet the demands of the public. This includes, but is not limited to, increased development of the trail systems, electrification of developed recreation campsites, and help from outside sources for operation and maintenance of developed recreation areas, such as two campgrounds operated by concessionaires (Chapter II. Monitoring Results, Findings and Evaluations, Issue B. Sustainable Multiple Forest and Range Benefits, Sub-Issue 1. Outdoor Recreation Opportunities).

NFGT personnel annually staff exhibit booths at recreation based venues in Austin and Houston, such as the Texas Parks & Wildlife – Wildlife Exp, and the REI Recreation Fair, to educate Texas residents of all that the NFGT has to offer.

Rural Development Program

The following table illustrates the number of rural development grants awarded in Texas and funding amounts by fiscal year, as well as the amount of non-federal funds and in-kind matching provided by the grantees, for fiscal years 1997 through 1999.

Table F-1
Rural Development Grants Awarded in Texas

Fiscal Year	No. of Grants Awarded	Federal Funds	Non-Federal Funds & In-Kind Matching	Total
1997	1	\$15,000	\$16,550	\$31,550
1998	2	\$16,500	\$41,535	\$58,035
1999	1	\$5,000	\$5,400	\$10,400
Total	4	\$36,500	\$63,485	\$99,985
Ave./Year	1.3	\$12,167	\$21,162	\$33,328

Instead of each federal dollar being leveraged with twenty-five cents of non-federal resources, the average over the three-year period has been one federal dollar being leveraged by \$1.74 of non-federal resources.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Recreation Based Markets - Currently, there is no recreation based markets program to monitor. Monitoring of individual recreation based programs is accomplished through means depending on the nature of the project.

Rural Development Programs - Grant funds are held in the Regional Office until grants are awarded. Funds are transferred directly from the Regional Office through the Grants Award Officer to the grantee. Financial status reports and itemized expense reports are required of the grantee to ensure that funds are properly expended. The Rural Community Assistance Program Coordinator in the Supervisor's Office makes periodic contacts with the grantees to provide assistance and monitor progress.

- b. Where did we get the information to address this particular question?

Recreation Based Markets - From the M&E report.

Rural Development Programs - The information to respond to this question was found in the files maintained for Rural Resource Conservation and Development and Rural Development in the S.O.

- c. Is the question in response to specific monitoring required by the NFMA?

Recreation Based Markets - No.

Rural Development Programs – No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Recreation Based Markets - Yes.

Rural Development Programs - Forest and Grassland-wide Management Objective 3i of the *Plan* states, "Support development of innovative ecologically and environmentally sound based markets through rural development and community assistance programs." This monitoring question is necessary and appropriate to ensure that this objective is being addressed.

Are recreation based markets and rural programs improving rural economics and social conditions?

Recreation Based Markets

With the decrease in on-the-ground recreation funding and loss of personnel the past several years, many of the changes needed to keep up with public demand have not kept pace. Many developed recreation areas in the more remote rural areas associated with the Angelina and Davy Crockett NFs, receive less use due to the conditions of facilities and lack of upgrades such as electrification of campsites. Four of these developed recreation areas are scheduled to be evaluated for closure.

The opposite is occurring in the local communities near the larger metropolitan areas of Dallas/Ft. Worth and Houston. Many of these communities are becoming the new bedroom communities for the cities. The Sam Houston NF and the Caddo/LBJ Grasslands are becoming weekend and day-use playgrounds. These designated "Urban Forest" areas are experiencing the need for increased facilities. Thirteen developed recreation areas are planned for construction on the Sam Houston and Caddo/LBJ Grasslands. To date, only two of the projects are nearing completion.

Rural Development Programs

The impact of economic recovery and rural development grants upon rural economies and social conditions is not always immediate. Over the past decade a number of Rural Development and Economic Recovery grants have been made affecting numerous rural communities throughout east and north-central Texas.

The impacts of some projects are immediate and local, while others have long-term and widespread effects. Several projects involved leadership development and have long-lasting benefits to rural communities by training local leaders to identify and address local concerns. Other projects have attempted to build additional resource-based manufacturing capability, such as the Willis Pine Shake Mill project, and have potential to build local employment and enhance the tax base. Another type of project funded in 1996 and completed in 1997, was a survey to determine if there are expansion opportunities within the forest products industry within east Texas. This project was conducted by the Deep East Texas Development Association in the interest of developing employment and

investment opportunities, and produced a list of industries that could be recruited to the east Texas area. This list was published in a report entitled, “The 1997 East Texas Forest Products Study & Survey: A Cross Match Targeted Marketing Study for the East Texas Forest Products Industry and An Existing Business Retention and Expansion Survey of Forest Products Companies in East Texas.”

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Recreation Based Markets - Projects are implemented based on the priority list in Appendix E of the *Plan*.

Rural Development Programs – See the response to the first question under item 3i.

- b. Where did we get the information to address this particular question?

Recreation Based Markets - The *Plan*, the M&E Report, and research for the Fee Demonstration Business Plan.

Rural Development Programs – See the responses to the first question under item 3i.

- c. Is the question in response to specific monitoring required by the NFMA?

Recreation Based Markets - No.

Rural Development Programs – No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Recreation Based Markets - Yes.

Rural Development Programs – Yes.

How many new jobs result from programs?

Recreation Based Markets

Concessionaries at Double Lake Recreation Area on the Sam Houston NF and Ratcliff Lake Recreation Area on the Davy Crockett NF have employed several temporary and full time employees for operation and management activities. However, overall creation of additional new jobs in the remote rural areas, as a result of recreation-based programs, is unknown but highly unlikely at this time.

Rural Development Programs

Unknown.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Recreation Based Markets - To date, no monitoring method has been developed.

Rural Development Programs – See the response to the first question under item 3i.

- b. Where did we get the information to address this particular question?

Recreation Based Markets - The *Plan*, M&E Report, and the Landscape Architect.

Rural Development Programs – See the response to the first question under item 3i.

- c. Is the question in response to specific monitoring required by the NFMA?

Recreation Based Markets - No.

Rural Development Programs – No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Recreation Based Markets - Yes.

Rural Development Programs – While the creation of jobs may not be the best measure to reflect the accomplishments of the Economic Recovery Program, it is one that most people can readily understand and appreciate. However, due to the complexity in measuring job creation, it is a question best answered during the Five-year Review/Analysis of the Management Situation described in 36 CFR 219.12(e).

3j. Are districts/SO providing HRP employment opportunities to the public? How many employment opportunities were created?

Yes. Vacancies are routinely posted in the SO and the districts in an area that is accessible to the public. All vacancies are posted at the website www.usdajobs.opm.gov including internal vacancies. This website is readily

available to the public by personal computer. All job opportunities are outreached for at least 14 days. This outreach is made available to target groups and anyone else interested in vacancies.

Due to budget constraints, recent job opportunities have been limited. A breakdown of opportunities follows: FY 96 – 1; FY 97 – 10; FY 98 – 9; FY 99 – 4.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

The Human Resources department readily distributes this information to districts and others, and works with supervisors in filling vacancies and desired methods.

- b. Where did we get the information to address this particular question?

Human Resources

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No – hiring practices and equal employment opportunities are monitored through Departmental and Agency Human Resource Programs.

3k. Are land use authorizations being issued only after all opportunities are explored to provide goods and services?

Yes. There is a decision checklist that is used by all units. This check list is used as a policy instrument in the Southern Region. Special Use permits are only issued to those meeting all criteria set forth in Forest Service policy.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Monitoring is accomplished by the review process currently in place. Units transmit all proposals to the Supervisor's Office for review and approval.

- b. Where did we get the information to address this particular question?

All permit applications are filed and available for examination in the Supervisor's Office.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Perhaps monitoring in the NFMA sense is not necessary for land use authorizations. However, the currently used check-and-balances procedure ensures compliance with policy in the approval of requests.

Are the results of applying the application decision guidelines fair and equitable considering the needs of the public?

Yes, we believe they are fair and equitable. The same standards apply to all. There are improvements being planned by the Forest Service and they will be addressed in the Cost Recovery Legislation.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

The NFGT has not monitored this compliance.

- b. Where did we get the information to address this particular question?

Not applicable.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No.

4a. Are renewable resources being managed to prevent long-term loss of future productivity of the land?

Yes, when management has been permitted under current court injunctions. The TFS conducted Implementation Monitoring of BMPs on selected timber sales. This included SMZs; proper location and spacing of surface water control structures (water bars and dips); and implementation of erosion control plans. Also, Implementation Monitoring was conducted by the Watershed Specialist. An Interdisciplinary Team of National Forests in Texas employees conducted assessment of various resources (soils, wildlife, plants) on selected timber sales.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Through field visits and administration of timber sales and other ground disturbing activities.

- b. Where did we get the information to address this particular question?

Through timber sale administration records and onsite data collected by an interdisciplinary team consisting of a Silviculturist, Soil Scientist, Wildlife Biologist, Botanist, and a photographer.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are National Forest streams consistent with state antidegradation policies and meeting water quality standards?

Yes.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Water quality monitoring was conducted on 13 streams by the Angelina and Neches River Authority and Stephen F. Austin University. During the monitoring period, within each watershed of the stream monitored, there were several projects conducted including timber harvesting, road construction, prescribed burns, and recreational use (ORVs).

- b. Where did we get the information to address this particular question?
Through water quality analysis and field observations.
- c. Is the question in response to specific monitoring required by the NFMA?
Yes.
- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?
Yes.

Are any public lands defined with declining productivity?

No, except for those that have severe erosion. These areas include the gully systems on the Caddo/LBJ NGs and those areas on the NFs where surface mining for gravel has occurred. These areas are in need of restoration.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?
Not applicable. This is a long-term monitoring item.
- b. Where did we get the information to address this particular question?
Not applicable.
- c. Is the question in response to specific monitoring required by the NFMA?
Yes, 36 CFR 219.27
- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?
Yes, as a long-term validation monitoring item.

4b. Are huntable wildlife populations being provided without any detriment to viable populations of the many no-game species?

This is a five-year monitoring item which is not yet due for reporting.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Not applicable.

- b. Where did we get the information to address this particular question?

Not applicable.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No.

Is hunting successful and are non-game populations viable?

Hunting has been generally successful and not known to affect viability of non-game populations.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

This monitoring question doesn't relate to implementation of projects so the question is inapplicable.

- b. Where did we get the information to address this particular question?

Hunter survey/population surveys.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No. This question cannot be meaningfully answered. Hunting is successful for those who obtain the quarry they are pursuing and unsuccessful for those who fail. Absent a 100 percent success rate, hunting cannot be categorized as “successful” or “unsuccessful” for all game species combined.

4c. Are age class distributions and species diversity being achieved in even-aged stands forest wide?

Age class distribution is skewed towards the 61-90 year age class for southern yellow pine. If the court injunction on timber harvest continues, the 0-30 age class will become deficient.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Implementation monitoring is done by contract administration, professional oversight, first and third year regeneration checks, and certification of successful reforestation.

- b. Where did we get the information to address this particular question?

Age classes and species information is obtained from the CISC database.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

It is an appropriate question to monitor as it relates to desired future condition status.

Is the desired ecosystem diversity being achieved?

Overall, ecosystem diversity is being achieved. However, restoration of native pine-dominated ecosystems (longleaf-bluestem series and shortleaf-oak forest) have been significantly slowed by court injunction. The unbalanced age class distribution in southern yellow pine will become a problem in the future if regeneration harvests continue to be enjoined.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Through on-site visits and timber sale reviews by the Forest and the Region.

- b. Where did we get the information to address this particular question?

Information was obtained from site visit reports and timber sale review reports.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, as pertaining to monitoring diversity and desired future condition.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

It is an appropriate question to monitor as it relates to desired future condition status.

What age classes exist and in what acreage amounts?

See **Appendix H** for a complete listing of age class distribution by forest type.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

A comparison of percent change in acres by Forest Type by Age Class provides a monitoring tool to measure forest type dynamics. There are 32 forest types over 609,940 forested acres with 15 age class category possibilities by forest type.

- b. Where did we get the information to address this particular question?

Information was obtained from CISC runs for 1997 and 1999.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, from the standpoint of maintaining forest health and forest habitat diversity.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

It is an appropriate question to monitor as it relates to desired future condition status and habitat diversity.

Are age classes and species diversity being achieved on uneven-aged acres?

Regeneration is not yet being achieved in the 1988 court-ordered 1,200-meter uneven-age RCW areas. Regeneration and species diversity development is as expected in other unevenage areas.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Projects that received an individual selection or group selection tree harvest were monitored through timber sale administration.

- b. Where did we get the information to address this particular question?

Information is obtained from harvest inspection reports.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, in terms of providing a barometer on forest health, habitat diversity and ASQ.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

The question is appropriate to monitor as it relates to desired future condition and habitat diversity.

Are age classes within stands achieving the desired reverse “J” curve configuration?

No. No stands have been under unevenage management long enough to develop the desired age distribution.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Implementation was monitored through the field inventory and prescription process.

- b. Where did we get the information to address this particular question?

Information for selecting trees for cutting/leaving was obtained with the use of the BDQ Method (basal area, maximum diameter and constant ratio of trees in successions of diameter classes).

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, in terms of providing a barometer on forest health, habitat diversity and desired future condition (DFC).

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

The question is appropriate to monitor as it relates to desired future condition and habitat diversity.

4d. Is there a continual flow of high quality pine and hardwood being produced?

Harvest trends show that the flow of pine and hardwood from the national forests is sporadic.

Table F-2
Pine and Hardwood Harvested
National Forests in Texas
(MMBF)

FY	Pine	Hardwood	Total Harvested
1997	37.5	1.7	39.2 MMBF
1998	117.6	0.5	118.2 MMBF
1999	28.2	0.2	28.4 MMBF

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

The quantity of both pine and hardwood harvested (cut) every quarter and every fiscal year (FY) can be obtained from the ATSA *Timber Cut & Sold* report.

- b. Where did we get the information to address this particular question?

From the ATSA Timber Cut and Sold reports for those fiscal years.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes, to monitor meeting goals (on page 42) and Objective 3-a “Maintain future management options by sustaining ecological processes and ecosystems to help meet social and economic demands of the public” (page 303). However, the pine and hardwood does not have to be only “high quality” to meet the objective. Low quality pine and hardwood can also be used by the local forest products industry.

How do timber outputs compare to Plan estimates?

In the body of the M&E Report under Issue B. Sustainable Multiple Forest and Range Benefits, Sub-Issue 5. Timber, Table 22 on page 111 shows we are unable to achieve the timber outputs estimated in our *Plan*.

Implementation of the *Plan* has been severely curtailed by the injunction on timber harvesting on the National Forests in Texas issued by U.S. District Court Judge Schell on August 14, 1997. Only 22 percent (75.5/340.2) of the planned timber harvesting has been implemented. Other than the salvage of storm damaged timber during Spring-Fall 1998, the only timber harvesting occurring under the court injunction has been the thinning within 1200 meters of red-cockaded woodpecker cavity trees in accordance with the court order issued by U.S. District Court Judge Parker on June 17, 1988.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

The quantity of timber sold every quarter and every fiscal year can be obtained from the ATSA *Timber Cut & Sold* report... to compare to the ASQ in the *Plan*.

- b. Where did we get the information to address this particular question?

From the ATSA Timber Cut and Sold reports for those fiscal years.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, the question pertains to “Determine if timber sales are within the *Plan*’s ASQ (36 CFR 219.27(c) (2))”

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes, to monitor whether we are meeting (or exceeding) our timber output.

4e. Are grazing opportunities being provided at demand levels on the grasslands, while de-emphasizing grazing on the forests?

Plan direction is to de-emphasize grazing on the National Forests in Texas. Permittees for national forest units were informed in writing of this program change in FY 1998 with yearly reminders of the 02/28/2001 deadline for grazing cattle. Grazing permit administration will continue on the Caddo-LBJ Grasslands.

Grasslands’ AUMs have largely remained the same as previous levels. The Grasslands often receive requests from those interested in acquiring permits. New permits have not increased, to maintain flexibility with current permittees so that burning and watershed restoration goals on the district can be achieved.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Range surveys and transects.

- b. Where did we get the information to address this particular question?

Same as item “a” above.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Is the Range Program achieving the expected forage utilization?

Yes, overall utilization on allotments meet *Plan* standards and guidelines.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Not applicable.

- b. Where did we get the information to address this particular question?

Not applicable.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are AUMs at the appropriate range carrying capacity level?

Yes, AUMs on the Grasslands are at the appropriate level. Modifications have been made in grazing authorizations to alter the time of grazing. This has allowed for increased rest on allotments which assures more growth occurs prior to grazing.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Not applicable.

- b. Where did we get the information to address this particular question?

Allotment records.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

4f. Has management resulted in a decrease of susceptibility to SPB and other pests?

Thinnings have reduced the SPB hazard. However, the continuing aging of pine stands with little regeneration increases SPB susceptibility. See the SPB Spot Summary found in Chapter II. Monitoring Findings, Results and Evaluations, Issue A. Ecosystem Condition, Health and Sustainability, Sub-Issue 2. Forest Health, under the Integrated Pest Management section.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Projects with thinnings to reduce the risk of SPB were reviewed on-the-ground through timber sale reviews.

- b. Where did we get the information to address this particular question?

Information was obtained from timber sale review reports and SPBIS Reports.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, from the perspective of maintaining forest health.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are pest incidents decreasing with applied IPM programs?

They appear to be, although SPB and most pests are cyclic in nature. SPB infestations have not reached the levels experienced in the mid-1980s.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Not applicable.

- b. Where did we get the information to address this particular question?

Projects with thinnings to reduce the risk of SPB were reviewed on-the-ground through timber sale reviews. Information is obtained from timber sale review reports and SPBIS Reports.

c. Is the question in response to specific monitoring required by the NFMA?

No.

d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

4g. Is the prescribed burning program improving forest and grassland resource production?

This is a five-year monitoring item. See 1g. for current information.

Quantitative information is not available to answer this question. However, observations by district personnel indicates that forest conditions have improved significantly in areas that have been burned repeatedly on a 3-5 year cycle. This is probably most noticeable in RCW cluster sites. In the late 1980's, researchers identified the ingrowth of hardwood midstory as a leading cause of RCW population densities. Since that time, the NFGT has been diligent about burning these sites on a fairly frequent cycle. The amount of midstory has been noticeably reduced. The Grasslands units have also embarked on an aggressive burning program in recent years to fight back cedar and brush encroachment. There has been a noticeable improvement in grassland conditions.

a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

By visual observations during post-burn visits.

b. Where did we get the information to address this particular question?

No recorded information is available to answer this question.

c. Is the question in response to specific monitoring required by the NFMA?

No.

d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No, not as written since it is very subjective and can't be answered quantitatively. However, monitoring of all vegetative management is needed to determine if the treatments are helping landscapes progress towards their respective DFC.

Are ecosystems showing improvement or being sustained by burning practices?

This is a five-year monitoring item. Information is not available.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Not applicable.

- b. Where did we get the information to address this particular question?

Not applicable.

- c. Is the question in response to specific monitoring required by the NFMA?

Not applicable.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

4h. Are projects implemented according to project design, Forest Plan S&Gs, and associated NEPA documents?

The appropriate specialists and staff review projects before implementation to ensure compliance with the *Plan*, which incorporates the applicable laws and regulations. On-site inspections are conducted to ensure contract compliance. These inspections are documented in the project folder.

Timber program reviews were conducted on the Sam Houston NF in 1999 and on both the Angelina and Sabine NFS in 1997, and on the Davy Crockett NF in 1996 that revealed that the Districts and Forest are doing a good job of planning, preparing, and administering timber sales. No serious deficiencies in the implementation of the *Plan* were observed.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

As stated above.

- b. Where did we get the information to address this particular question?

As stated above.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are the standard and special requirements providing the protection needed and anticipated?

The Standards and Guidelines in the *Plan* were designed and incorporated to provide adequate protection. The Standards and Guidelines are analyzed in the Environmental Impact Statement for the *Plan*. Although the erosion control requirements are effective, conditions beyond our control, i.e. drought or heavy rainstorms, can adversely affect erosion.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Through on-site inspections.

- b. Where did we get the information to address this particular question?

Through documentation of on-site inspections and contract administrators and project reviews.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are any detrimental conditions being documented (i.e. spills, water contamination)?

Incident reports of oil/gas/saltwater spills are filled out by the on-scene coordinator and reported to the appropriated agency and the Forest Service Regional Office in Atlanta, Georgia. See Chapter II. Monitoring Results, Findings and Evaluations, Issue A. Ecosystem Condition, Health and Sustainability, Sub-Issue 3. Watershed Conditions at the section titled Oil Well Spills and Salt Water Discharge for a summary of spills.

To ensure our erosion control work for timber projects is satisfactory and not adversely affected by severe weather, we issued direction to better monitor erosion control work (August 27, 1999, 2450 S.O. Memo). We are instituting the following three monitoring elements to assure that erosion control work is satisfactory and remains effective:

1. Post erosion control work inspections, especially after severe weather, to promptly correct deficiencies found.
2. A final inspection report approximately one year after completion of any erosion control work. This inspection is necessary even if the timber sale contract has been completed and closed.
3. Identification of the party responsible for taking action to correct any deficiencies found. For example, ORV traffic during wet weather may be responsible for rutting roads and cutting through the erosion control structures that a timber sale purchaser constructed.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Following above direction.

- b. Where did we get the information to address this particular question?

Staff Officers located in the Supervisor's Office.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

5a. Are state water quality standards of antidegradation being met per Forest Plan through implementation of standards and guidelines?

Yes; however, total dissolved solids values are intermittently elevated at limited sites.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Grab samples were taken by an employee of the Angelina and Neches River Authority and/or students from Stephen F. Austin State University. A Forest Service employee was onsite periodically when grab samples were taken.

- b. Where did we get the information to address this particular question?

Water quality monitoring was conducted on 13 streams by the Angelina and Neches River Authority, and Stephen F. Austin University (SFAU) by the grab sample field method. All water quality analyzes were performed by using Environmental Protection Agency (EPA) approved methods or laboratories that were approved by EPA.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, 36 CFR 219.23 and 219.27.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are National Forest streams consistent with state antidegradation policies and water quality standards?

See item 4a.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Not applicable.

- b. Where did we get the information to address this particular question?

Not applicable.

c. Is the question in response to specific monitoring required by the NFMA?

No.

d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No, it repeats 4a.

Are turbidity and chemical analysis appropriate to evaluate and show that water quality is maintained in compliance with state standards?

Yes.

a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

By direct participation of Forest Service employees when monitoring samples were collected. Laboratory analyses were conducted on 12 parameters, including turbidity and chemical analysis. Analyses indicate that we are maintaining State water quality standards.

b. Where did we get the information to address this particular question?

Through water quality monitoring by Angelina and Neches River Authority and SFAU. All water quality analyzes were performed by using Environmental Protection Agency (EPA) approved methods or laboratories that were approved by EPA.

c. Is the question in response to specific monitoring required by the NFMA?

Yes, 36 CFR 219.12(k)(2) and 219.27.

d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

5b. Are management practices protecting municipal and other potable water supplies?

Yes, however, there is a documented case of a spring (developed for collection of drinking water) on the Sabine NF that exhibited unnaturally high conductivity levels.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

By implementation of watershed improvement prescriptions designed to reduce the amount of sediment produced by watersheds that are in Watershed Condition Class III (a watershed that has at least \$3,000.00 of capitol improvement needs).

- b. Where did we get the information to address this particular question?

Onsite water quality monitoring using water quality test meters and observations after watershed improvement projects are completed.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, 36 CFR 219.23 and 219.27.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Do activity mitigation measures assure consistency with state antidegradation policies and water quality standards?

Yes, through implementation of Best Management Practices (BMPs).

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Through functional assistance trips to assure implementation of those standards and guidelines designed to maintain water quality and soil productivity.

- b. Where did we get the information to address this particular question?

Through field observations and technical reports.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes, 36 CFR 219.23 and 219.27.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

Are soils being restored to the level that meets the intent of the 319 section of the Clean Water Act?

Yes, an ongoing effort is being implemented on the Caddo/LBJ National Grasslands and the National forests to restore eroding areas.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

Through implementation of watershed improvement prescriptions on those watersheds with severe erosion problems. Since the implementation of the *Plan*, we have restored 175 acres of severely eroded lands.

- b. Where did we get the information to address this particular question?

By field observations on functional assistance trips.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

Yes.

5c. Is soil productivity and water quality being maintained or improved?

Yes.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

By implementing State approved BMPs and *Plan* Standards and Guidelines.

- b. Where did we get the information to address this particular question?

Field data.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No, this question was answered with 4a and 5a.

Are any sites losing productivity or is any stream water quality being degraded?

Yes, some streams on all four forests show intermittent elevated conductivity levels.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

SFASU is conducting water quality monitoring within the forest trying to determine the source for the high conductivity.

- b. Where did we get the information to address this particular question?

Through water quality analysis.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No, this was addressed under 4a and 5a.

5d. Does the Forest Service prescribed fire and smoke management program meet NAAQS/Texas FS smoke management objectives?

Yes. Prescribed burn plans identify many parameters that must be met before a burn can be implemented. Some of these parameters, such as mixing height and transport winds, are in place specifically to ensure adequate smoke dispersal. Desired wind direction is also identified to avoid having smoke move directly from the burn into areas that might cause conflicts. Firing methods are employed that are designed to burn the area as quickly as possible to reduce the duration of smoke production. These parameters and planning criteria are in place to meet NAAQS/Texas FS smoke management objectives.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

The District Ranger reviews and signs burn plans. The SO also reviews a sample of district plans to ensure proper parameters are identified. On the day of the burn weather forecasts are reviewed to ensure that all parameters will be met. A small test burn is set to observe smoke dispersal patterns. On-site weather readings are taken during the burn to ensure that conditions do not change.

- b. Where did we get the information to address this particular question?

A Forest supplement to the 5140 manual lists burning parameters. District burn plans identify conditions that must be met. NWS weather forecasts are maintained at TICC.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

This is a valid question that is important in NFGT management.

Does the air meet NAAQS and state standards?

There have been no actual measurements taken to address this question. As with the previous question, we use parameters and planning criteria in the prescribed burning program to minimize smoke production and to optimize smoke dispersal. We follow all established procedures and policy to ensure that air meets NAAQS and state standards.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

No monitoring was done.

- b. Where did we get the information to address this particular question?

Not applicable.

- c. Is the question in response to specific monitoring required by the NFMA?

Yes.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

This information would be beneficial to monitor effects of prescribed burning.

Is the vegetation in the forest being impacted by ambient ozone concentration?

There have been no studies done in the last three years to answer this question.

- a. How did we monitor implementation of projects to ensure compliance with the 1996 Revised Forest Plan?

No monitoring was done.

- b. Where did we get the information to address this particular question?

Not applicable.

- c. Is the question in response to specific monitoring required by the NFMA?

No.

- d. Based on review of the question, is that question really necessary and appropriate to monitor to ensure objectives, standards, guidelines, and desired future conditions are being met?

No.

APPENDIX G

NFMA Monitoring “Checklist” of Required Elements

Issue A. Ecosystem Condition, Health and Sustainability

Sub-Issue 1. Biological Diversity

- a. Determine if the regeneration of desired tree species are being achieved (36 CFR 219.27 (b) (6)).

Refer to pages 5-6 and Appendix F, page 55.

- b. Determine if the vegetation is being managed according to the Plan’s requirements and making progress toward achievement of the DFCs for vegetation (36 CFR 219.15 and 219.27).

Refer to pages 3-16 and Appendix F, page 15.

- c. Determine if the desired diversity of plant and animal communities is being achieved (36 CFR 219.26, 219.27 (a) (5) & (g)).

Refer to pages 16-42 and Appendix F, pages 1-3.

- d. Determine if the habitat for the Management Indicator Species is being maintained and improved to the degree consistent with the objectives established in the Forest Plan (36 CFR 219.27 (a) (6)).

Refer to pages 16-42; Appendix F, pages 3-4; and Appendix I, pages 1-6.

- e. Monitor the population trends of the Management Indicator Species, and their relationships to habitat changes (36 CFR 219.27 (a) (6)).

Refer to pages 16-42 and Appendix I, pages 1-6.

- f. Determine the progress towards recover objectives for T&E species and conservation objectives for sensitive species (36 CFR 219.19 (a) (7)).

Refer to pages 16-42; Appendix F, pages 1-6; and Appendix I, pages 1-6.

Sub-Issue 2. Forest and Range Health

- a. Identify measures needed to coordinate emissions from NFS lands with other sources to ensure air quality control and compliance with the applicable Federal, State, and/or local standards or regulations (36 CFR 219.27 (a) (12)).

Refer to pages 43-44 and Appendix F, pages 69-71.

- b. Ensure that air quality standards are maintained on FS Class I and II lands (36 CFR 219.27 (a) (12)).

Refer to pages 43-44; Appendix F, pages 69-71; and Appendix K, pages 1-5.

- c. Determine if insects, disease, and noxious weeds have increased to damaging levels (36 CFR 219.12 (k) (5) (iv) and 219.20 (b)).

Refer to pages 44-45 and Appendix F, pages 60-61.

Sub-Issue 3. Watershed Conditions

- a. Determine if the conservation of soil and water resources are being ensured and the permanent impairment of site productivity is being avoided (36 CFR 219.27 (b) (5)).

Refer to pages 59-82 and Appendix F, pages 50-51.

- b. Determine if the desired water quality and quantity objectives are being achieved (36 CFR 219.27 (b) (6)).

Refer to Appendix F, pages 50-51.

- c. Ensure compliance with State water quality requirements, monitor the effect and adequacy of the BMPs (36 CFR 219.27 (a) (4), (b) (5), & (c) (6) and 219.12 (k) (2)).

Refer to pages 77-78, 113 and Appendix F, pages 50-51 and 67-69.

- d. Determine the effects of management actions on soil quality and site productivity (36 CFR 219.12 (k) (2) and 219.27 (a) (1), (b) (5)).

Refer to pages 59-82 and Appendix F, page 51.

- e. Determine the effects of management actions on riparian values, soil and water quality, and streambank stability (36 CFR 219.27 (a) (4), (b) (6), (c) (6), & (e)).

Refer to pages 59-82 and Appendix F, page 11.

- f. Determine if temporary roads are being revegetated within 10 years of contract or permit termination (36 CFR 219.27 (a) (11)).

The Timber Sale Inspection Report, filed in the timber sale folder, documents when erosion control work has been completed. A letter from the Forest Supervisor to the District Rangers on August 27, 1999 provided additional guidance for erosion control monitoring on timber sales including post-erosion control inspections, final inspections, and identification of the responsible party for taking corrective action. This guidance will be incorporated into a Forest Supplement to the Timber Sale Administration Handbook, FSH 2409.15.

Refer to pages 78-79 and Appendix F, pages 40-41.

Issue B. Sustainable Multiple Forest and Range Benefits

Sub-Issue 1. Outdoor Recreation Opportunities

- a. Determine if the desired recreation uses, opportunities, and aesthetic values are being achieved (36 CFR 219.27 (b) (6), 219.21 (a) (2) & (3)).

Refer to pages 83-91 and Appendix F, page 17.

- b. Determine if the Forest Plan visual quality objectives are being met (36 CFR 219.27 (c) (6), (d) (1)).

Refer to page 84 and Appendix F, pages 18-19.

- c. Monitor off-road vehicle use to determine if planned use levels and management requirements are sufficient to protect the land and other resources, promote public safety, and minimize conflicts with other uses of NFS lands (36 CFR 219.21 (g)).

Refer to pages 64-66 and 89.

Sub-Issue 2. Infrastructure

- a. Ensure that any roads constructed are designed according to standards appropriate to the planned uses (36 CFR 219.27 (a) (10), (b) (7)).

Refer to pages 91-93 and Appendix F, pages 27-28 and 38-39.

Sub-Issue 3. Human Influences

No NFMA requirements, but addressed pages 97-105.

Sub-Issue 4. Roadless Areas/Wilderness/Wild & Scenic Rivers

- a. Ensure that visitor use in wilderness areas is within the estimated maximum level which allows natural processes to operate freely and not impair the values for which wilderness areas were established (36 CFR 219.18 (a)).

Refer to pages 106, 127 and Appendix F, pages 7-8.

Sub-Issue 5. Timber

- a. Determine if timber resource sale schedule is within the Forest Plan's ASQ (36 CFR 219.27 (c) (2)).

Refer to pages 110-112 and Appendix F, pages 57-58.

- b. Determine if silvicultural practices are in compliance with the Forest Plan (36 CFR 219.27 (c) & (d)).

Refer to pages 3-15 and 107-113.

- c. Determine if harvested lands are adequately restocked within 5 years (36 CFR 219.27 (c) (3)).

Refer to pages 5-6 and Appendix F, page 55.

- d. Determine if maximum harvest unit size limits are being met and should be continued (36 CFR 219.12 (k) (5) (iii), 219.27 (d)).

Refer to pages 109-112 and Appendix F, pages 57-58.

- e. Ensure that no timber harvesting occurs on lands classified as not suited for timber production, except for salvage sales or sales necessary to protect other multiple-use values where the Forest Plan establishes that such actions are appropriate (36 CFR 219.27 (c) (1)).

Refer to page 110.

- f. Determine if lands identified as not suitable for timber production have become suitable (36 CFR 219.12 (k) (5) (iii), 219.14 (d), and 219.27 (c) (1)).

Refer to page 110.

Sub-Issue 6. Forage

- a. Determine if the desired forage production objectives are being achieved (36 CFR 219.27 (b) (6)).

Refer to pages 113-114 and Appendix F, pages 58-59.

Sub-Issue 7. Other Products

No NFMA requirements, but addressed pages 115-117.

Sub-Issue 8. Heritage Resources

- a. Ensure the protection of significant cultural resources from degradation and destruction (36 CFR 219.24 (a) (4)).

Refer to pages 118-120 and Appendix F, pages 22-24.

Issue C. Organizational Effectiveness

Sub-Issue 1. Economics

- a. There needs to be a documentation of the costs associated with carrying out the planned management prescriptions, as compared with the costs estimated in the Forest Plan (36 CFR 219.12 (k) (3)).

Refer to pages 121-123.

Sub-Issue 2. Evaluating New Information

- a. Identify emerging issues, concerns and opportunities that need to be addressed (36 CFR 219.7 (f)).

When the Draft Roadless EIS is finalized, some land use classifications may change. Also, changes noted in the Texas Blowdown Reforestation Project EIS may require a Plan amendment.

- b. Determine when changes in RPA, policies, or other direction would have significant effects of Forest Plans (36 CFR 219.10 (g)).

None to date.

- c. Determine if conditions or demands in the area covered by the Plan have changed significantly (36 CFR 219.10 (g)).

The 1998 windstorm resulted in a need to reforest acreage. That is being addressed in an EIS that may result in a Forest Plan Amendment.

- d. Evaluate the effects of National Forest management on lands, resources, and communities adjacent or near the National Forest; and the effects upon National Forest management of activities on nearby lands managed by other Federal, State, or local governmental agencies (36 CFR 219.7 (f)).

Refer to pages 43-44, 74-75, 80, 83-91, 97-105, 107-113, 115-117 and Appendix F, page 45.

APPENDIX H

(Age Class Tables by Timber Types are in a separate document.)

APPENDIX I

(Management Indicator Species Tables and in a separate document.)

APPENDIX J

(Red-cockaded Woodpecker (RCW) Graphs)

There are four tables in hard copy form only that can be requested from the Lufkin office.

FY 1999 TRANSLOCATION RESULTS

<i>Recipient</i>	<i># Pairs</i>	<i># New Groups*</i>	<i># Nesting</i>
DCNF (AC WMA)	5	2-4	1
SNF (South)	2	0	0
ANF (South)	6	4 (1 single)	3
ANF (North)	6	3	2
SHNF (Big Woods)	6	6 (4 singles)	2

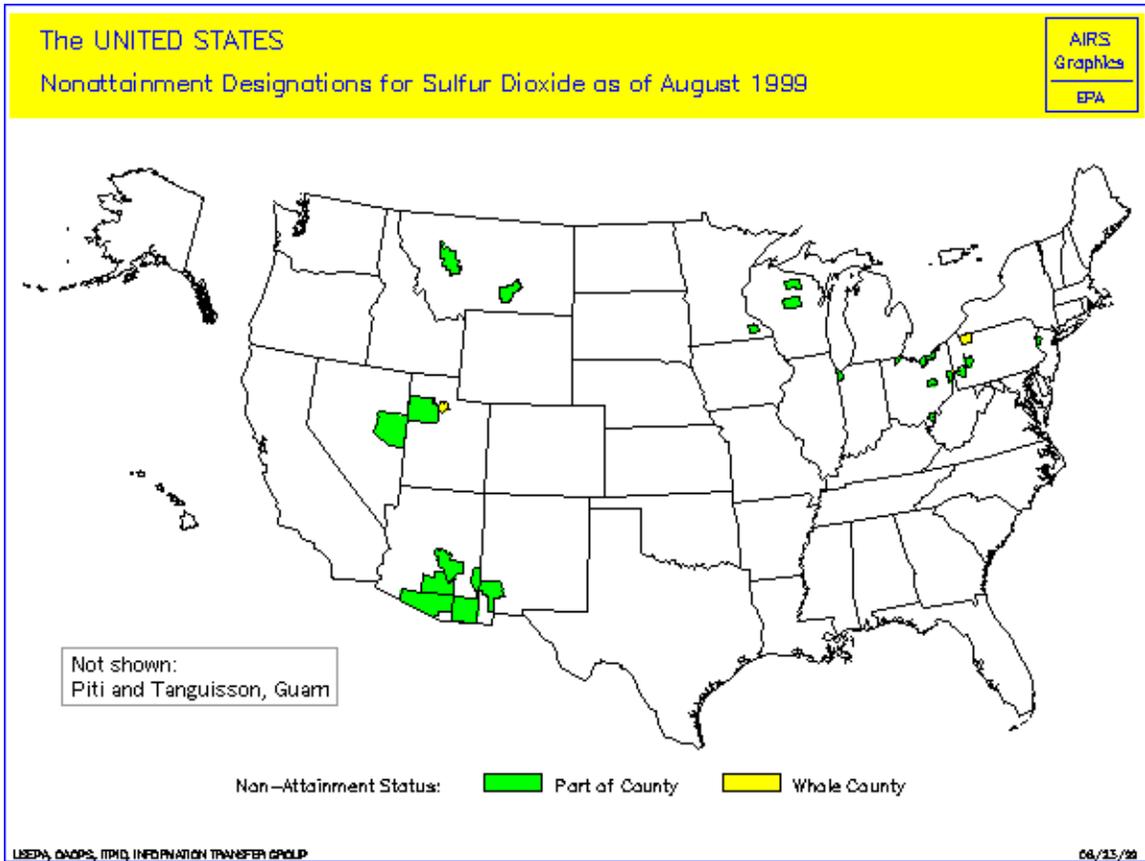
* The number of new groups consisting of at least one FY 1999 translocated RCW.

FY 2000 TRANSLOCATION PRIORITIES

<i>Sam Houston NF</i>		<i>Vernon Unit, LA</i>	
1. Ouachita	4 Prs	1. Winn	4 Prs
2. Sabine	8 Prs	2. Catahoula	8 Prs
3. Temple	4 Prs	3. Ouachita	3 Prs
4. Big Woods	3 Prs	4. Angelina	3 Prs
Total	19 Prs	Total	18 Prs

APPENDIX K

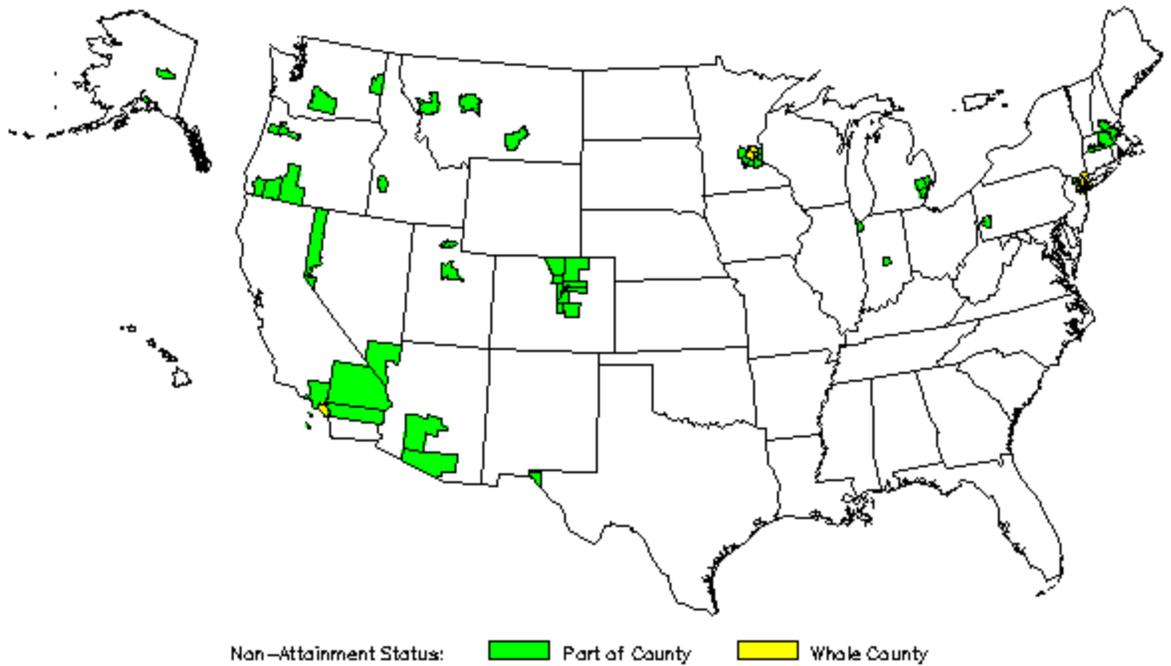
Air Graphics



The UNITED STATES

Nonattainment Designations for Carbon Monoxide as of August 1999

AIR
Graphics
EPA



Non-Attainment Status: ■ Part of County ■ Whole County

The UNITED STATES

Non-Attainment Designations for Nitrogen Dioxide as of August 1999

AIRS
Graphics
EPA

All Counties Are Attaining the Standard



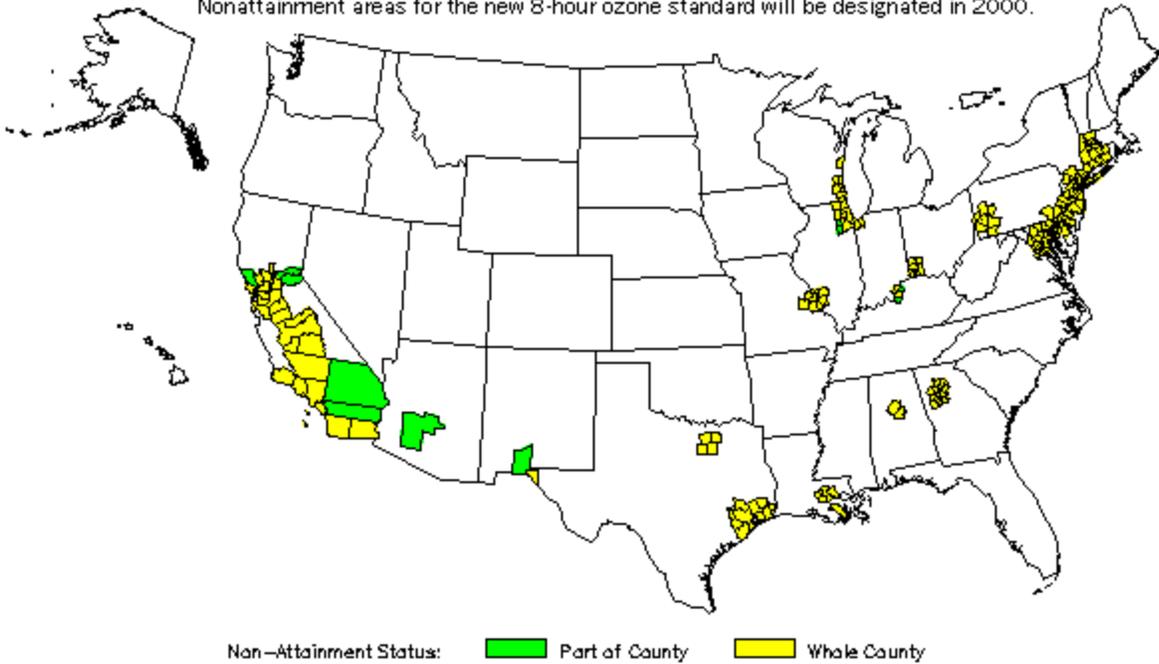
Non-Attainment Status: ■ Part of County ■ Whole County

The UNITED STATES

Nonattainment Designations for Ozone as of August 1999

AIR
Graphics
EPA

These designations are based on the 1-hour ozone standard.
Nonattainment areas for the new 8-hour ozone standard will be designated in 2000.

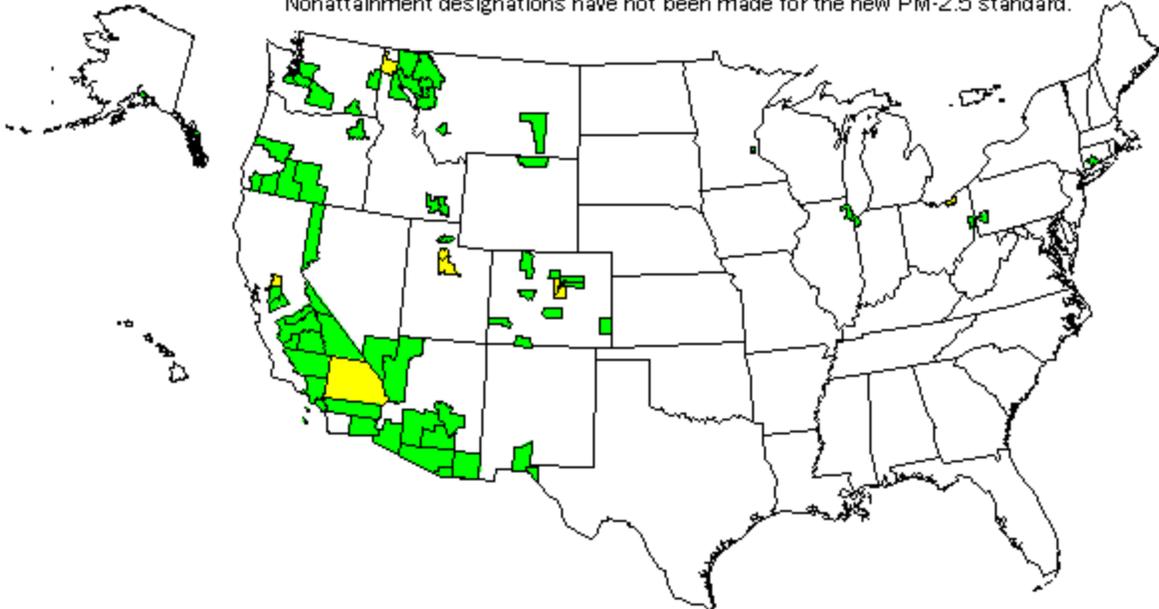


The UNITED STATES

Nonattainment Designations for PM-10 as of August 1999

AIR
Graphics
EPA

These designations are for the PM-10 standard in effect prior to July 1997.
Nonattainment designations have not been made for the new PM-2.5 standard.



Non-Attainment Status: ■ Part of County ■ Whole County

APPENDIX L

(Bald Eagle Tables)

These tables are in hard copy form only and can be requested from the Lufkin office.

APPENDIX M

(Landbird Tables)

**These tables are in hard copy form only and can be requested
from the Lufkin office.**

APPENDIX N - ACRONYM LISTING

A

AQRV Air Quality Related Value
ASQ Allowable Sale Quantity
ATV All Terrain Vehicle
AUM Animal Unit Month

B

BBS Breeding Bird Survey
BMP Best Management Practices

C

CCC Civilian Conservation Corps
CCS Challenge Cost Share
CFR Code of Federal Regulation
CISC Continuous Inventory of Stand Conditions
CY Calendar Year

D

DFC Desired Future Condition

E

ECS Ecological Classification System
EIS Environmental Impact Statement
EPA Environmental Protection Agency

F

FDR Forest Development Road
FEIS Final Environmental Impact Statement
FHWA Federal Highway Administration
FW Forest Wide

G

GIS Geographic Information System

H

HBI Hilsenhoff's Biotic Index
HMA Habitat Management Area

I

ID Interdisciplinary
IMPROVE Interagency Monitoring of Protected Visual Environment.
IMW Indian Mounds Wilderness
INFRA Infrastructure

J,K,L

LBJ Lyndon B. Johnson
LE&I Law Enforcement & Investigations
LEO Law Enforcement Officer
LRMP Land & Resource Management Plan

M

MA Management Area
MIS Management Indicator Species
MMBF Million Board Feet
MOU Memorandum of Understanding

N

NAAQS National Ambient Air Quality Standards
NAMS National Air Monitoring Stations
NEPA National Environmental Policy Act
NF National Forest
NFGT National Forests & Grasslands in Texas
NFMA National Forest Management Act
NG National Grassland
NOI Notice of Intent
NRHP National Register of Historic Places
NTMB Neotropical Migratory Birds

O

OHV Off-highway Vehicle
ORV Off-road Vehicle

P

PEP Plantation Evaluation & Performance
PM Particulate Matter
PMT Permanently Marked Trail

Q,R

RAMIS Range Administration & Management Information System
RCW Red-cockaded Woodpecker
RIFA Red Imported Fire Ant
R.O. Regional Office
ROD Record of Decision

S

SFASU Stephen F. Austin State University
S&Gs Standards & Guidelines
SLAMS State & Local Air Monitoring Stations
SMZ Streamside Management Zone
S.O. Supervisor's Office
SPB Southern Pine Beetle

T

TADRA Texas Arabian Distance Riders Association
TAMU Texas A&M University
TES Threatened, Endangered & Sensitive
TFS Texas Forest Service
TNHP Texas Natural Heritage Program
TNRCC Texas Natural Resource Conservation Commission
TPWD Texas Parks & Wildlife Department
TRC Texas Railroad Commission
TRIR Ten Percent Roads & Trails Funds
TXDOT Texas Department of Transportation

U,V

USDI United States Department of the Interior
USFS U.S.D.A. Forest Service
USFWS U.S. Fish & Wildlife Service
VQO Visual Quality Objective

W,X,Y,Z

WMA Wildlife Management Area
WSR Wild & Scenic River



USDA Nondiscrimination Statement

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disabilities, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.