United States
Department of
Agriculture

Forest Service
Southern Region

Revised Land and Resource Management Plan

National Forests & Grasslands in Texas

1996

Commonly Used Acronyms and Abbreviations

AC	Acres
ADA	Americans with Disabilities Act
AMS	Analysis on the Management Situation
APD	Application for Permit to Drill
ASQ	Allowable Sale Quantity
ATV	All Terrain Vehicle
AU	Animal Unit
AUM	Animal Unit Month
BA	Basal Area
BF	Board Foot
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practices
BTU	British Thermal Unit
CCC	Civilian Conservation Corps
CEQ	Council on Environmental Quality
CF	Cubic Feet
CFR	Code of Federal Regulations
CISC	Continuous Inventory Stand Conditions
CMAI	Culmination of Mean Annual Increment
COR	Contracting Officer Representative
DBH	*Diameter at Breast Height*
DEIS	Draft Environmental Impact Statement
DFC	Desired Future Condition
EA	Environmental Analysis
ECS	Ecological Classification System
EIA	Energy Information Administration
EIS	*Environmental Impact Statement*
EO	Executive Order
EPA	Environmental Protection Agency
FDR	Forest Development Roads
FEIS	Final Environmental Impact Statement
FLRMP	Forest Land and Resource Management Plan
FM	Farm-to-Market
FORPLAN	Forest Planning Model
FS	Forest Service
FSH	Forest Service Handbook
FSM	Forest Service Manual
FY	Fiscal Year
GIS	Geographic Information System
GNP	Gross National Product
HABCAP	Habitat Capability Model
HMA	Habitat Management Areas
HRM	Heritage Resource Areas
ID	Interdisciplinary
IDT	Interdisciplinary Team
IMPLAN	Input/Output Model
IPM	Integrated Pest Management
KV	Knutson-Vandenburg
LTA	Landtype Associations
LTSY	Long Term Sustained Yield
MA	Management Area
MAUM	Thousand Animal Unit Month
MBF	Thousand Board Feet
MCF	Thousand Cubic Feet
MI	Management Indicator
MIL	Management Intensity Level
MIS	Management Indicator Species
MM$	Million Dollars
MMBF	Million Board Feet
MMCF	Million Cubic Feet
MMR	Minimum Management Requirement
MOU	*Memorandum of Understanding*
MRVD	Thousand Recreation Visitor Day
MWFUD	Thousand Wildlife/Fish User Day
NA	No Action
NC	No Change
NDF	Nondeclining Flow
NEPA	National Environmental Policy Act
NFGT	National Forests and Grasslands in Texas
NFMA	National Forest Management Act
NFS	National Forest Systems
NMSO	New Mexico State Office
NPB	Net Public Benefits
NRCS	National Resource Conservation Service
NRHP	National Register of Historical Places
NRI	Nationwide Rivers Inventory
ORV	Off Road Vehicle
PAOT	Persons at One Time
PETS	Proposed, Endangered, Threatened, Sensitive Species
PL	Public Law
PNV	Present Net Value
R-8	Region 8 (Southern Region, USDA Forest Service)
RARE II	*Roadless Area Review and Evaluation*
RCW	Red-cockaded Woodpecker
RD	Ranger District
RIM	Recreation Information Management
RM	Roaded Modified
RN	Roaded Natural
RNA	*Research Natural Area*
ROD	Record of Decision
ROG	Recreation Opportunity Guide
ROR	Reserved and Outstanding Rights
ROS	Recreation Opportunity Spectrum
RPA	Forest & Rangeland Renewable Resources Planning Act
RVD	Recreation Visitor Day
S&G	Standards and Guidelines
SAF	Society of American Foresters
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SHPO	State Historical Preservation Office
SMZ	Streamside Management Zone
SPB	Southern Pine Beetle
SPM	Semiprimitive, Motorized
SPNM	Semiprimitive, Nonmotorized
SRI	Soil Resource Inventory
TACB	Texas Air Control Board
T&E	Threatened and Endangered
TEA	Transaction Evidence Appraisal
TNHP	Texas Natural Heritage Program
TORP	Texas Outdoor Recreation Plan
TPWD	Texas Parks and Wildlife Department
TSI	Timber Stand Improvement
TSL	Traffic Service Level
TSPIRS	Timber Sale Program Information Reporting System
USDA	United States Department of Agriculture
USDI	United States Department of Interior
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Survey
VM	Vegetation Management
VQO	Visual Quality Objective
WFUD	Wildlife and Fish User Day
WROS	*Wilderness Recreation Opportunity Spectrum*
WSR	Wild and Scenic River

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Appendices

Annotated List of Standards and Guidelines

This section and all Standards and Guidelines are ordered alphabetically as follows

Air Quality - Directions and coordination actions to ensure clean air

Aquatic Resources - Management and construction standards for perennial water bodies to include fisheries and aquatic vegetation

Biological Diversity - General direction for ecosystems to provide diversity for old growth, riparian areas, native plants, snag retention, threatened and endangered species, ecological classification and use, special habitats, and management indicators

Chemicals - Chemical use, primarily herbicides for vegetation management

Cultural Resources - Protection, management, and inventory of archeological and historic resources to include interpretive activities

Facilities - Design, management, and closure guidance for roads and trails supporting various programs Other facilities information is found in Appendix E and Management Areas 10a and 10b

Fire - Directs both prescribed fire and wildfire suppression actions, fire preparation, and rehabilitation, to include soil and water protection needs

Integrated Pest Management - Includes all pest related problems, but primarily Southern Pine Beetle

Lands - Describes land ownership adjustment, acquisition, exchange, easements, boundary line management, legal claims, and encroachments

Minerals - Leasing, drilling, permitting, and production guidelines for ensuring resource protection

Planning - NEPA and Planning direction

Range - Includes vegetation and livestock management for livestock development on both forests and grasslands

Recreation Management - Provides recreation opportunity spectrum, interpretation, trails, and ORV guidance, to include safety and information management of users

Scenic Resources - Provides visual resource direction and visual quality objectives for various management actions

Silvicultural Practices - Vegetation management systems and methods for forest habitat, tree species diversity, site preparation, snag density, and reproduction actions

Soil and Water - Ensures clean water and soil productivity through protection measures, erosion control, wetlands protection, and stream course identification

Wildlife - Provides management specificity for single or groups of species, and for game habitat development and management purposes

Chapter I
Forest Plan Introduction

Purpose

This revised National Forests and Grasslands in Texas (NFGT) Plan is needed to fulfill 36 Code of Federal Regulations (CFR) 219 10(g) requirement to revise Plans on a 10-year cycle, or at least every 15 years The Five-Year Review of the current Plan, also required by this section, determined conditions and demands of the public had significantly changed. The current Plan, approved May 20, 1987, was appealed On June 17, 1988, the Federal District Court of the Eastern District of Texas issued a permanent injunction enjoining the Forest Service from failing to implement certain practices within 1,200 meters of red-cockaded woodpecker (RCW) cluster sites The Forest Service appealed the District Court's decision, and on March 4, 1991 the Fifth Circuit Court of Appeals upheld the District Court's ruling on the takings and jeopardy issues, but also found that the District Court improperly prescribed details for management of RCW habitat on the NFGT The Fifth Circuit ordered the Forest Service to prepare a plan for management of the RCW The court-ordered Comprehensive Plan is to remain in effect until the court agrees with a new Plan developed in consultation with appropriate agencies

In response to administrative appeals and ongoing litigation, in 1988 the Chief of the Forest Service remanded the 1987 Forest Plan to consider the effects of changes in RCW management and other issues Because the court-ordered RCW management strategy affected one-third of the Forest, the Chief determined that a revision or amendment would be necessary This Revision presents the level of goods and services and the special values to be provided into the next decade This Revised Plan changes and clarifies management direction making it more usable by managers and the interested and affected individuals working as partners and owners of these public lands

This NFGT Revised Forest Plan guides all natural resource management activities for the Angelina, Davy Crockett, Sam Houston, and Sabine National Forests, and the Caddo and Lyndon B Johnson (LBJ) National Grasslands, and specifically establishes

* The Forest-wide multiple-use goals, objectives, and desired future condition for the Forests and Grasslands, including estimates of the goods and services expected

* The management area prescriptions, including associated standards and guidelines, and probable proposed practices to maintain, enhance, or restore natural ecosystems
* The identification of land suitable for timber production and the allowable sale quantity (ASQ) for timber, and the other resource outputs and values from that land
* The quality control checks through monitoring and evaluations that are needed to determine how well standards and guidelines are working, and whether goals remain appropriate throughout the Plan period
* The preservation, protection or enhancement of appropriate important historical, cultural and natural aspects of the National heritage

The law specifically states that Plan decisions establish

* Forest-wide multiple use goals and objectives, 36 CFR 219 11(b),
* Forest-wide management requirements, 36 CFR 219 27,
* Management area direction, 36 CFR 219 11(c),
* Lands suitable for timber production, National Forest Management Act (NFMA) Section 6(g)(2)(A) and 36 CFR 219 14, and establishment of ASQ 36 CFR 219 16,
* Monitoring and evaluation requirements, 36 CFR 219 11(d),
* Recommendations for Wilderness, Wild and Scenic Rivers, 36 CFR 219.17, and
* Lands available for lease via 36 CFR 228 102 (c) and (d) The decision to lease is also being made, 36 CFR 228 102 (e)

Relationship To Other Documents

This Revised Forest Plan details implementation procedures for this Plan's EIS Alternative 8, the selected alternative Alternative 8 was developed between draft and final to address public comments.

The Regional Guide provides regional standards and guidelines that were considered in formulating this NFGT Plan

Previous monitoring and evaluation results are published in the annual reports, Monitoring and Evaluation of the Land and Resource Management Plan from 1987 - 1990, 1991, 1992, and 1993 The Five-Year Monitoring and Evaluation Report and Analysis of the Management Situation (AMS) included the 1992 report The AMS document provided a substantial background for the Forest Plan Revision process

The Plan incorporates, by reference, standards and guidelines from the following three Regional programmatic decisions

1 The FEIS and ROD for the Suppression of the Southern Pine Beetle dated April 6, 1987, as amended,
2 The FEIS and ROD for Vegetation Management in the Coastal Plains/Piedmont dated February 27, 1989, as amended, and

3 The FEIS and ROD for the Management of the Red-cockaded Woodpecker and Its Habitat on National Forests in the Southern Region, dated June 21, 1995

These documents may, however, be referenced from time to time in this Plan to address further specific issues. They are available for review at the Forest Supervisor's Office, 701 North First Street, Lufkin, Texas 75901.

Activities and projects to be carried out pursuant to this Plan's direction will be analyzed in compliance with NEPA, as well as other applicable statutes. The NEPA documentation for these projects will be "tiered to" the accompanying EIS, as provided for in 40 CFR 1502 20

Implementation Of The Plan

The Revised Plan implementation process shall use a systematic, interdisciplinary two step approach in all project proposals This approach will ensure the integrated use of the natural and social sciences, along with the environmental design arts in planning and decision making Implementation of projects shall attain the widest range of beneficial uses of the environment without degradation, risk to health and safety or other undesirable and unintended consequences. This will be accomplished by studying, developing and describing appropriate alternatives to the proposed courses of action

The Forest Plan will be implemented through program development and budgeting and the annual work planning processes. These processes translate goals, objectives, and standards and guidelines into on-the-ground results

This Revised Plan establishes a programmatic framework for management and administration of the NFGT It sets general and specific goals and objectives for management, then establishes standards and guidelines to follow in pursuit of this direction It also establishes monitoring requirements to help determine how well the standards and guidelines are working and whether the stated goads and objectives remain appropriate throughout the Plan period

There are two steps of decision making in National Forest system planning. This Revised Plan represents one step of decision making

Site-specific project planning to implement the goals and objectives of the Revised Plan is the second step of decision making. The site specific, or project planning step, is needed to fulfill the statutory obligations arising from the National Environmental Policy Act, the Endangered Species Act, the Clean Water Act, and other laws and regulations Project level analysis is guided by the Revised Plan and is very site specific in order to proceed with any project implementation It is impractical to prepare a Forest Plan and Environmental Impact Statement of sufficient specificity to identify and adequately analyze all projects or activities which may occur in the planning period

Forest Plans are not a simple collection of projects to be carried out during the life of a Forest Plan Instead, Forest Plans establish a framework for future decision making, using Forest Plan management direction through goals and objectives as a gateway for compliance with environmental laws at the project and activity level

Public involvement and participation will be a vital part of development, review, and accomplishment of project implementation This, along with monitoring and evaluation, shall determine whether desired future conditions of NFGT ecosystems are being achieved, or if there is any significant accomplishment toward that end result

Monitoring and evaluation activities will be essential to ensure standards and guidelines were properly set and being met to achieve the desired ecosystem results, while practicing good stewardship Project planning will validate or adjust Plan estimates based on public needs, wise use of the resources, and maintenance or enhancement of NFGT values

Plan Structure

The Forest Plan is divided into five chapters. This Chapter 1, the Forest Plan Introduction, covers purpose, implementation of the Plan, relationship to other planning documents, Plan structure, and a description of NFGT lands

Chapter 2, the AMS (with the Plan's response to issues), outlines the present condition of the resources and values, and discusses how conditions are expected to change with the Plan's implementation while responding to major issues, management concerns, and opportunities This chapter is combined with and in concert with the Plan's response to specifically identified issues

Chapter 3, Research Needs and New Ideas, discusses research and investigation of recent and ongoing projects. It identifies important areas that require close investigation as the Forest moves into areas of less traditional activities which are stressed in Ecosystem Management

Chapter 4, Goals and Objectives, provides direction for management, including a charter, mission statement, goals, desired future condition, management objectives, standards and guidelines, and management area descriptions. This collectively defines the where, what, and how for management over the planning period It also contains the goals, management practices, and standards and guidelines for specific areas Management area direction is specific to each management area map found in this document

Chapter 5, Implementation of the Revised Plan, describes how projects and activities will be put into practice It also lists techniques that will be used to monitor implementation of the Plan, and addresses frequency and accuracy of monitoring This monitoring and evaluation will be a major assessment of Plan implementation

Appendices contain material necessary to understand and use the proposed Forest Plan The appendices found in this document are.

Appendix A - Ecological Classification System,
Appendix B - Mineral Operations Clauses and Attachments,
Appendix C - Timber Sale Schedule,
Appendix D - Endangered, Threatened, and Sensitive Species,
Appendix E - Infrastructure;
Appendix F - Soil Tolerance Tables,
Appendix G - Monitoring Schedule,
Appendix H - Budget, and
Appendix I - Old Growth

Additional information, incorporated through references, can be reviewed at the Forest Supervisor's Office, 701 N First Street, Lufkin, Texas 75901

Forests and Grasslands Descriptions

The NFGT is comprised of 637,475 acres in four Forests, and 38,100 acres in two Grasslands The National Forests are located in the "Piney woods" of east Texas, surrounded by private timberlands owned by small landowners and some of the major corporations such as Champion International, Louisiana-Pacific, and Temple Inland The National Forests are in the Humid Temperate Domain, Subtropical Division, Southeastern Mixed Forest province of R G Bailey's Ecoregion Classification System The Grasslands are in the Prairie Division and Prairie Parkland Province Local relief for both areas range from 100 to 600 ft , and 80 percent of the areas are gently sloped. Streams are generally slow moving and carry a sediment level that leaves water color brown and murky Precipitation averages around 35 to 40 inches on the Grasslands, and up to 60 inches annually in the Forest areas Major population centers within two hours driving time of the Forests include Houston and Beaumont, Texas and Shreveport, Louisiana The two Grasslands are within one hour driving time of the Dallas-Fort Worth metropolitan areas, in North Central Texas.

The Angelina National Forest (153,174 acres) is located in Angelina, Jasper, San Augustine, and Nacogdoches counties It is east of Lufkin and divided by Sam Rayburn Reservoir Significant attributes of this pine and hardwood forest include the Upland Island and Turkey Hill Wildernesses, the Bannister Wildlife Management Area, Old Aldridge Sawmill Site, Stephen F. Austin Experimental Forest, and eight recreation sites Many miles of forested lakeshore along Sam Rayburn Reservoir provide a variety of recreational opportunities

The Davy Crockett National Forest (162,021 acres) is located in Trinity and Houston counties, west of Lufkin and east of Crockett, Texas Significant attributes of this pine and hardwood forest include the Big Slough Wilderness Area, Ratcliff Lake Recreation Area, the 4-C Hiking Trail, the Piney Creek Horse Trail, the historic mill and townsite of Ratcliff, Alabama Creek Wildlife Management Area, and the Neches River on the eastern boundary

The Sabine National Forest (160,609 acres), adjacent to Louisiana, lies primarily in Sabine, San Augustine and Shelby counties, with small portions in Newton and Jasper counties San Augustine, Hemphill and Pineland, Texas are the major area communities Attributes of this pine-hardwood forest include Indian Mounds Wilderness, seven recreation sites, and several oil and gas wells. Toledo Bend Reservoir, with its many miles of forested lakeshore, is adjacent to the eastern side of the Forest.

The Sam Houston National Forest (161,670 acres) lies in Montgomery, San Jacinto and Walker counties, about 60 miles north of Houston Conroe, Huntsville and Cleveland, Texas are cities near this National Forest. Lake Conroe is a significant water feature on the western portion, with several miles of shoreline having Forest ownership Interstate Highway 45 divides the Forest and four-lane U S Highway 59 lies along the eastern edge. The Forest has five recreation areas with Double Lake and Cagle being heavily used by recreationists. Other attributes include Little Lake Creek Wilderness, Big Creek Scenic Area, Lone Star National Recreation Trail, and a major endangered RCW population.

The LBJ and Caddo National Grasslands (38,000 acres) are located in Montague, Wise, and Fannin counties of north Texas and are open grasslands with scattered brush and tree cover Both the Caddo and LBJ were severely eroded, abandoned farms and ranches that the Federal Government acquired in the late 1930's The LBJ receives heavy recreation use because of its proximity to the Dallas-Fort Worth metropolitan areas. Attributes of the LBJ Grassland include a variety of wildlife, the Cross Timbers Research Natural Area, Black Creek Recreation Area, and oil and gas wells. Also included is one of nine National flood prevention projects in the nation, as amended by the Flood Prevention Act of 1944

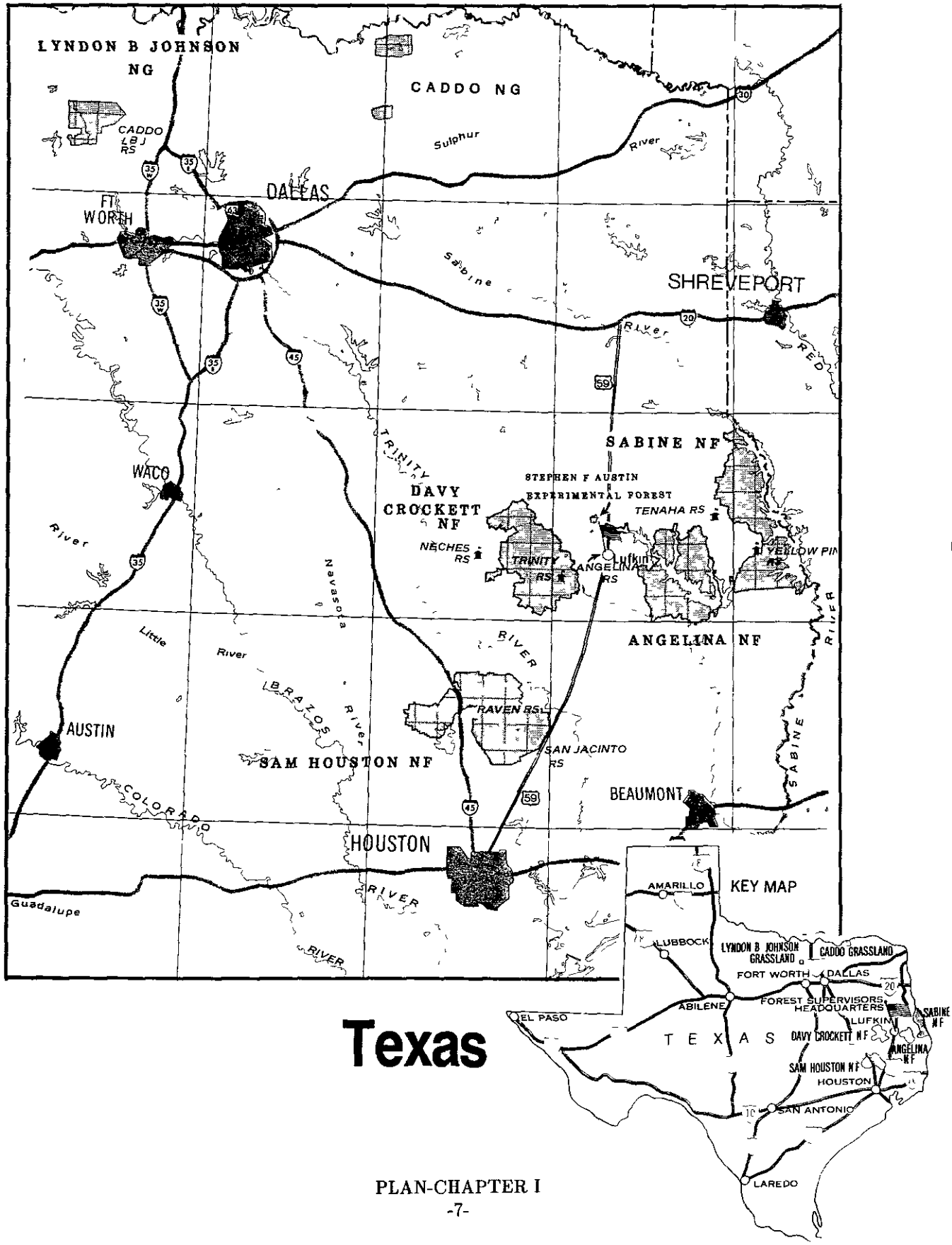
The Caddo Unit is in Fannin County near the Red River and Oklahoma. The Caddo area has forested drainages with brush covered slopes and grassy open pastures. Coffee Mill Lake, Lake Davy Crockett, and Lake Fannin provide excellent fisheries and recreational opportunities. Coffee Mill Lake and Lake Davy Crockett have campgrounds for overnight camping Lake Fannin Unit is the site of a historic rural resettlement camp.

The Forest Supervisor's Office in Lufkin, Texas directs the management of five Forests and Grasslands.

The NFGT are intermingled with private and timber industry ownerships Many isolated parcels of a few acres to several hundred acres occur throughout all districts. Access and rights-of-way management are extremely complex.

Detailed resource situations are discussed in other sections of this Plan, and in the EIS.

National Forests & Grasslands



Texas

Chapter II
Analysis of the Management Situation and Plan Response to Issues

Overview

1987 Forest Plan

The National Forests and Grasslands in Texas (NFGT) Land and Resource Management Plan and Final Environmental Impact Statement (FEIS) were approved on May 20, 1987

In response to appeals and litigation, the Chief of the Forest Service remanded the NFGT Forest Plan to consider the effects of changes in red-cockaded woodpecker (RCW) management and other issues Because the court-ordered RCW management strategy affected approximately 176,000 acres, almost one-third (1/3) of the National Forests in Texas land, the Chief ordered a Plan Revision This is the NFGT Forest Plan Revision

The 1987 Plan was amended seven times to adopt other document decisions, clarify direction, and change standards The first amendment adopted changes in RCW management, two amendments incorporated decisions made in the Vegetation Management EIS for the Coastal Plain/Piedmont; one amendment clarified the direction for the use of four-wheeled drive vehicles, and another changed a standard and guideline for managing rights-of-way The sixth amendment changed direction to allow for construction of the Haley's Ferry Recreation Area on the shoreline of Toledo Bend Reservoir The seventh amendment incorporated habitat management area guidelines for areas outside RCW 1200 meter zones

Monitoring and Evaluation

Implementation is monitored and evaluated continuously through reviews made by the NFGT Interdisciplinary (ID) Team, Staff Officers, District Rangers, and Resource Specialists Monitoring allows us to see if we are staying within the standards and guidelines of the Forest Plan, if we are producing the goods and services we anticipated, and if our standards and guidelines are resulting in the desired future condition (DFC) envisioned for the NFGT

Previous monitoring and evaluation results are published in the annual reports, Monitoring and Evaluation of the Land and Resource Management Plan for 1990, 1991, 1992 and 1993 The Five-Year Monitoring and Evaluation Report and Analysis of the Management Situation (AMS) included the 1992 report The AMS document provided substantial background for the Forest Plan Revision process Organized by issues identified during the scoping process, the following summary identifies details from the AMS

BIODIVERSITY ISSUE – 1987-1992

The National Forest Management Act's (NFMA) requirements for maintenance of diversity have been clarified and strengthened since the 1987 Forest Plan was approved The essence of this legal clarification strives for biodiversity to be managed over landscapes, stands, and for the more uncommon species This concern is directed at protection and management of native species, in contrast to exotic species that may occur in the planning area A significant consideration in this Revision is the inclusion of management that will ensure the protection of old-growth forest stands and exemplary plant communities.

Seventeen plant communities were identified in an extensive report from the Texas Natural Heritage Program (TNHP) These communities and many other sensitive or Federally protected species involve new thinking in this Forest Plan These biodiversity related concepts also affect considerations for management of riparian areas, inclusions, streamside management zones, wetlands, and other areas that require special management Management direction in this Revision reconsiders the *Management Indicators* concept as it relates to the more explicit concerns for the full range of species and communities that comprise the many ecosystems on NFGT.

VEGETATION MANIPULATION ISSUE – 1987-1992

The 1987 Plan prescribes clearcutting for 60% of the regeneration harvests The Chief's 1988 decision on administrative appeals of the 1987 plan changed this direction to request that decisions to harvest by even or uneven-aged harvest methods be made on a project-level basis Much less has been clearcut, and a little less has been seed-tree or shelterwood cut than was called for in the 1987 Plan Commercially thinned acreage has increased; however, much of this was thinned for RCW to different specifications than prescribed in the 1987 Plan. More acres have been regenerated than planned because acres regenerated through treatment of southern pine beetle (SPB) were not included in the 1987 Plan estimate Fewer acres have been prescribed burned than predicted, primarily because the shift of resources to management for RCW, the impact of smoke management direction, inadequate budget, and unfavorable weather conditions Chemicals have only been used a little,

but use of chemicals may need to be increased when more uneven-aged management is initiated

Pine-hardwood ecosystems are the most common found on the Forest The 1987 Forest Plan called for pine and hardwood management types on the Forest, but not pine-hardwood or hardwood-pine Management was designed to retain up to 30 percent pine in hardwood stands, and up to 30 percent hardwood in pine stands Forest policy changed in 1991 to clearly state the objective that clumps of hardwoods will be retained to achieve a 30 percent hardwood component in pine stands

SPECIAL MANAGEMENT AREAS ISSUE – 1987-1992

The 1987 Plan provides for one Research Natural Area (RNA), five Wilderness Areas, five Scenic Areas, and one Protective Corridor Historical uses have impacted the existing RNA Additional RNAs have been proposed, but had not been evaluated until the Revision was announced The Scenic Areas have been managed to protect their scenic qualities. Some boundaries need to be delineated and acreages need to be adjusted SPB control in scenic areas has been controversial Additional Scenic Areas, many Special Management Areas or Special Interest Areas, as well as Botanical Areas have been proposed since 1987 Five of the 16 areas of the Forest considered during Roadless Area Review and Evaluation (RARE II) became wilderness in 1984 No other new roadless areas have been acquired or have developed on the Forest Three of the 16 areas are now Scenic Areas During scoping, Longleaf Ridge was proposed by the public as wilderness, as was the Big Creek Scenic Area Approximately 2,000 acres more of the Forest is wilderness today than shown in the 1987 Plan due to land purchases Control of SPB in wilderness for any reason has been controversial Prescribed fire may be needed to maintain some ecosystems in wilderness areas Monitoring indicates recreation use in wilderness has been about 10 percent of capacity The Neches River is the only wild and scenic river candidate currently managed with a protective corridor Texas Parks and Wildlife Department is the lead agency in evaluating the river as a wild and scenic river A number of additional river and stream segments have also been suggested for wild and scenic consideration

OFF-ROAD VEHICLES (ORV) ISSUE – 1987-1992

ORV use and control is a controversial issue on the NFGT Public land in Texas is extremely limited, and NFGT offers some of the few areas in the State to pursue this recreational activity Additional constraints have been put on ORV use due to potential impacts of this activity on the RCW Fifty-five miles of designated ORV trails exist on NFGT; however, approximately 250 additional miles of undesignated trails are located on the Forests No additional permanently marked ORV trails have been constructed since the Forest Plan was approved in 1987

Without a designated trail system, ORV use is prone to conflict with other recreational activities and can lead to resource damage ORV use on the limited facilities available is very heavy, particularly on the Raven District of the Sam Houston National Forest

RED-COCKADED WOODPECKER (RCW) ISSUE – 1987-1992

This species has had a major effect on the management of southern forest lands The 1987 Plan prescribed management for the RCW on 80,000 acres. Since the District Court's orders, 176,000 acres have been managed for RCW. This has significantly altered the Forests' planned outputs Significantly more wildlife habitat improvement for RCW has been accomplished than was forecast in the 1987 Plan. RCW populations which were in slow decline have stabilized and increased in the last few years

INTEGRATED PEST MANAGEMENT (IPM) ISSUE – 1987-1992

Integrated pest management includes many things, but most of the public comments and management efforts on the NFGT have focused on the prevention and control of the SPB Outbreaks of these insects have had a major influence on outputs in recent years The October 23, 1990 *Notice of Intent* for the Forest Plan Revision **excluded reconsideration of decisions made in the Southern Pine Beetle EIS regarding control of SPB** from the scope of the analysis These were excluded because no new information was known which might change decisions made in the *Record of Decision for the Southern Pine Beetle EIS* However, changes are made in the areas of risk reduction, prevention and application of Integrated Pest Management (IPM) techniques in special areas This change was noted in the revised *Notice of Intent* published in the Federal Register on July 23, 1992

Major SPB epidemics occurred in 1984, 1985 and 1989, with lesser epidemics in 1990 through 1993 Other large epidemics are expected to occur in the future. Many techniques have been employed to reduce SPB risk and control outbreaks to reduce severe epidemics. Major controversies have arisen over recent control of SPB in wildernesses, and to a lesser extent, in scenic areas

ROADS AND TRAILS ISSUE – 1987-1992

Due to the impacts of RCW management, appeals, litigation, and budgetary limitations the timber sale program and consequently the timber sale roads construction program have not proceeded at planned levels Much of the Forests' road network is in place, consequently, most of the road work projected in the 1987 Forest Plan was reconstruction The miles to be constructed versus reconstructed is not clear in the Forest

Plan Forest roads construction and reconstruction has not proceeded at planned rates Road closures, obliteration, traffic management, and maintenance requirements are not clearly addressed in the Forest Plan Concerns for road impacts on water, wildlife, recreation, economics of commodity production, scenery, and solitude is included in the Forest Plan Revision

Trails serve primarily a recreational function on the NFGT Funding for maintenance and repair of trails has been limited, but it has not been a major impact on trail use One of the major concerns is for the protection of trails and trail areas from other management activities (such as SPB control actions and from conflicting types of trail use). Trail construction has proceeded at a faster pace than planned, largely due to the help of volunteers or partners

COMMUNITY STABILITY ISSUE – 1987-1992

The impact of the NFGT on local communities is a major concern to government and private interests Detailed information on this subject is contained in the 1991 *Socio-Economic Overview* that was developed for the AMS of this Forest Plan Revision In general, there are considerable differences between the characteristics of the more urban counties in the Sam Houston National Forest and the LBJ National Grasslands, and the rural counties of the Caddo National Grasslands and the other Forests With reduced timber harvest and grazing and minerals leasing levels, receipts to the Treasury have been less than expected Payments to the counties have been much less than projected, although for most of the Forest, payments exceeded the taxes paid from comparable private lands This directly affects the more rural counties which depend, to a greater degree, on these returns for school, road, and bridge funding. In the most dependent counties, payments have comprised up to about 4 percent of the school budgets and over 35 percent of the road and bridge budget Most county payments are generated by timber harvest and oil and gas receipts Recreation payments comprise a very small portion.

WILDLIFE AND FISHERIES ISSUE – 1987-1992

U S Forest Service (USFS) management on the NFGT has a great influence on the wildlife and fisheries resources Since the Forest Plan was approved, more species have been identified as sensitive or protected; from 3 in 1987 to over 50 This includes more endangered and threatened, numerous Category 2 species, many State listed, and sensitive species These species have traditionally been associated with the forested environment, however, some species now are recognized on the Grasslands

Land management accomplishments for wildlife and fish have been substantially greater than projected in the Forest Plan Structural and

non-structural improvements for wildlife have exceeded Forest Plan projections, which for the most part have been the result of RCW management and cooperative management with other agencies. Fisheries improvements have not been at planned levels Improved coordination between the NFGT and other State and Federal wildlife agencies has resulted since the 1988 court order

RECREATION ISSUE – 1987-1992

The NFGT manages almost 35 percent of the Federal recreational lands in Texas. The most popular recreation activities in the NFGT area are walking, developed camping, fishing, and sightseeing. Considerable differences exist state wide in the supply of recreation opportunity per capita. In general the Angelina, Davy Crockett, and Sabine National Forests rank comparably high, while the Sam Houston and LBJ rank relatively low. Urban areas supply the majority of users The Sam Houston and the LBJ have a high recreational demand due to close urban proximity yet these have a low supply of opportunity to meet this demand In contrast, the Angelina, Davy Crockett and Sabine NFs have a high recreational supply or potential with lower recreational demand

Recreation use has generally been slightly below Forest Plan projections Use is expected to increase roughly 15 percent over the next 10 years Recreation Information Management (RIM) reports indicate an increasing trend in almost all uses. With the construction of new roads and trails, the areas of the Forest providing a semi-primitive recreation opportunity have declined. Overall recreation use is still well below estimated capacity.

Some recreation areas on the Forest are in poor condition, and are utilized very little. Other areas are better maintained and receive heavy use Campground construction is well behind what was scheduled in the Plan, mostly due to budget shortfalls Recently, more emphasis has been placed on interpretive programs, signing, and upgrading recreation entrance areas Hunting has also been increasing on the wildlife management areas and other NFGT lands. A major concern in hunting is the confusion in regulations between the wildlife management areas and the remainder of the Forest. Hunters also conflict with other recreational users.

With increasing road and trail densities and recreation use, visitors' expectations for visual quality have greater impacts on management today than when the 1987 Plan was developed

Law enforcement and management of people using Forest lands continues to be a major concern of the public and USFS managers Poaching, litter control, ORV abuse, and illegal or indiscriminate shooting are occurring on the NFGT The number of violations and incidents reported

has been rising since the Plan was implemented Funding to fully implement law enforcement programs at Forest Plan levels has been low More efficient law enforcement deployment, monitoring capabilities, and a proactive prevention program is desirable

Cultural resource inventories have not proceeded at the planned rate Despite that, no sites eligible for listing on the National Register are known to have been adversely impacted Manpower and budget have not been sufficient to allow general, Forest-wide surveys as envisioned in the 1987 Forest Plan This shortfall in manpower and funding has not been sufficient to fully comply with the regulatory mandates of 36 Code of Federal Regulations (CFR) 800 In addition, the Forest Plan program level impairs the ability to quickly react to urgent situations, such as SPB control needs

RESOURCE SUSTAINABILITY ISSUE – 1987-1992

State monitoring indicates air quality meets National Air Quality Standards, except for ozone levels in Montgomery County The 1991 Fire Management Analysis shows the fire budget in the Plan is about 20 percent below the most efficient level Although the Plan contains little direction on fireline construction and rehabilitation, fire suppression is working well Less soil and water inventory has been completed than planned, but there have been no adverse impacts since project implementation has been less than anticipated Although watershed improvements have been implemented near Plan levels, much work remains Monitoring indicates water quality in the tested sites complies with all State standards Shoreline erosion on the major reservoirs has seriously impacted some facilities Research indicates the impacts of grazing and timber harvest on water quality are within prescribed limits, when implemented using best management practices The Plan contains insufficient soil and water standards for ORV trails and some local erosion and sedimentation has occurred Range improvements and use are well below Plan levels Surveys assessing range condition need to be completed and/or updated on many allotments. These surveys indicate range condition on some of the Forests is unsatisfactory. Historically, non-native species have been widely used on the Grasslands The Plan contains few standards and guidelines directing the level and season of use in different ecosystems Demand for grazing is expected to remain fairly stable on the Grasslands, while continuing to decline on the Forests

The NFGT provides a small portion of the timber supply within the market area, although this portion (and particularly the quality sawtimber) is extremely important to some businesses The industrial and non-industrial private forest lands in the market area could potentially meet the demand for raw material given sufficient inducement, however, the non-industrial private forest lands have historically not done so Timber harvest levels have been well below those projected in the

1987 Plan, but the volume of timber sales has been steadily increasing since 1988 Management for RCW on nearly 170,000 acres of the Forest, recent SPB epidemics, and appeals and litigation have been significant factors impacting timber harvest levels

MIX OF GOODS AND SERVICES ISSUE – 1987-1992

Several new specialist positions have been added to the NFGT work force Human Resource Programs have greatly exceeded Plan projections Forest budgets have only been about 70 percent of planned, although some programs have been better funded than others.

Forest lands available for timber production have not been reduced substantially, but the volume of wood that can be produced is lower. One-third of these lands now managed for RCW means that less wood can be produced from them The acreage available for forage production has not changed significantly

The NFGT provide a variety of resources for communities including, recreation, wilderness, wildlife, range, timber, and minerals A summary of the findings from the Socio-Economic Overview for the National Forests and Grasslands in Texas of the significant market and non-market resources will give the reader an understanding of the existing and expected future demand for the NFGT

Recreation - The NFGT offers both developed and dispersed recreation Developed recreation includes camping, picnicking, swimming, boating, hiking, and nature trails Dispersed recreation includes fishing, hunting, hiking, boating, off-road vehicle use, horseback riding, and primitive camping. Dispersed recreation has dominated recreation use on the National Forests in Texas. Hunting and fishing have been traditionally popular activities and together accounted for a significant percent of the use

Recreational consumption of land activities is projected to increase by the year 2000 Activities projected to have more than a 20 percent increase are backpacking, day hiking, and developed camping Canoeing, walking for pleasure, photography, horseback riding, sightseeing, pleasure driving, and picnicking are estimated to increase between 10 to 20 percent. Many of the users will be from urban areas (See AMS, Recreation Supply and Demand)

Wilderness - Five wilderness areas are established on the National Forests: Big Slough (3639 acres) on the Davy Crockett National Forest, Upland Island (13390 acres) and Turkey Hill (5286 acres) on the Angelina National Forest, Little Lake Creek (3810 acres) on the Sam Houston National Forest, and Indian Mounds (11037 acres) on the Sabine National Forest Use is highest on the Upland Island Wilderness A recent study of the Upland Island Wilderness indicates that hunting is

the primary activity among both day users (77 3 percent) and overnight users (85 7 percent)

Wildlife - Wildlife is important for consumptive use such as hunting as well as non-consumptive use such as wildlife observation Many species of wildlife exist on the NFGT. Population surveys for deer indicate white-tailed deer population of 10,000 animals or one deer per 60 acres on the National Forests Distribution of the deer population varies Some counties have populations as low as one deer per 75 acres and some as high as one deer per 25 acres Gray-squirrel occupy hardwood bottoms and low lying areas Fox squirrel are found in mixed forest types and transition zones The eastern sub-species of wild turkey is being re-introduced to East Texas Bob white quail is found on the Grasslands The endangered RCW is found on all four National Forests The bald eagle is a winter resident and has been observed along shorelines of lakes and reservoirs in the area

Range - Grazing of domestic livestock is allowed on National Forests and on the two National Grasslands Grazing is most significant on the LBJ and Caddo National Grassland located in North Central Texas in Wise, Montague, and Fannin counties Historically, grazing has been important to the area, but demand for grazing is decreasing. In 1980, there were 218 permits issued to individuals to graze 5,651 head of cattle and to graze a total of 41,220 animal unit months (AUMs) By 1990 the total permittees dropped to 126 The number of cattle dropped to 3,216 and the number of AUMs allowed dropped to 27,530

Timber - The National Forests of Texas contain 5.3 percent of the approximately 11.6 million acres of timberland in East Texas, however over 20 percent of all East Texas sawtimber is produced on National Forest land Within the southeast portion of East Texas, where most National Forest land is located, National Forests comprise 8 percent of the commercial forest land Lands suitable for timber production total 557,441 acres or 88 percent of the total NFGT area Land that is suitable for timber management is land that is producing, or is capable of producing crops of industrial wood and not withdrawn from timber utilization The major timber species managed on the forests are loblolly, shortleaf, and longleaf pines, and upland and bottomland hardwoods

The NFGT has historically supplied three percent of the timber harvested in Texas Projections in the AMS indicate the demand for timber in East Texas will increase 10 percent by the year 2000 (See AMS, Timber Supply and Demand)

Minerals - Minerals are a valuable resource on the NFGT Income derived from minerals is largely obtained through royalties or lease fees Since all National Forest lands were once purchased from individuals or companies, mineral ownership is complex Mineral ownership on the National Forests are in three broad categories Lands where the United

States acquired some, or all, of the mineral rights when the land was purchased; land where the mineral rights were reserved permanently, or for a set period by the vendor, and lands where the mineral rights belonged to a third party when the land was purchased When mineral rights belong to a private party the Forest Service has limited control over mineral related activities Presently, the United States owns mineral rights on about two-thirds of the lands administered by the Forest Service in Texas Minerals owned by the United States include leaseable and saleable minerals Leaseables are those minerals jointly managed by the Forest Service and the Bureau of Land Management In Texas, oil and gas are most common but uranium and lignite also fall into this group.

Deposits of lignite, or soft coal, are also known to exist on and near the Davy Crockett, Angelina, and Sabine National Forests Saleables are common minerals such as sand, clay, gravel and stone which may be sold or, in certain circumstances, may be given to public agencies

The following use and capacity table shows capacity and use for recreation, wilderness, wildlife, range, timber, and minerals

USE AND CAPACITY * TABLE

Recreation	PAOT	PAOT Days	Annual Use Visitor Days
Developed	10,305	1,100,000	431,000
Dispersed	6,000,000	N/A	1,045,400
Wilderness	Visitor Days Opportunity		Annual Use Visitor Days
	75,000		11,000
Wildlife & Fisheries	WFUD Opportunity		Annual Use WFUD
Consumptive	N/A		1,239,600
Non-Consumptive	N/A		13,000
Range	AUM Capacity		AUM Use
Forest	20,950		13,500
Grasslands	30,750		25,500
Timber	MCF Available		MCF Harvest
	18,400		18,400
Minerals	U S Leasable Acres		Leased Acres
	479,700		200,000

PAOT - Persons at one time
PAOT Days - PAOT's X days available for use
WFUD - Wildlife and fish users days
AUM - Animal unit months
MCF - Thousand cubic feet

* All use and capacity estimates were derived from 1992 5 year review/AMS and 1991 Socio Economic Report for NFGT

PLANNING ISSUE – 1987-1992

Annual and Five-Year Monitoring and Evaluation Reports have been completed, and a detailed *Socio-Economic Assessment* was prepared in 1991 In addition, cooperative projects with The Nature Conservancy, the TNHP, the Kisatchie National Forest, and others were initiated to consolidate available information regarding the management of the ecosystems and sensitive plant species found on the NFGT Numerous research projects pertinent to the NFGT have been initiated These include studies concerning wildlife, timber management, uneven-aged management, forest pest management, streamside management zones, grazing, and water quality

MINERALS ISSUE – 1987-1992

The NFGT has an abundant supply of oil and gas resources. Other minerals, such as lignite and uranium, are also found under portions of the Forest; however, these have not and probably will not be mined Gravel from the Forests has been removed in the past, but the number of permits has declined Much of the oil and gas resource on the Forest is found in old, partially depleted fields New technology such as horizontal drilling has recently rejuvenated activities in some areas This technology allows better access to minerals, but will probably only result in modest increases in production on the Forests The case load for mineral leases and permits is a function of demand which has been lower than projected in the Forest Plan

Due to changes in laws and regulations, the USFS has more responsibility in minerals management today than in the past Funding for minerals has also been below projected levels Demand for oil and gas on the NFGT has and will continue to be high because of existing and potential occurrences The demand for exploration is a function of economic and political factors. The number of producing wells has remained somewhat stable over the last five years The number of existing wells has declined, and some abandoned wells creating environmental hazards were plugged Mineral resources provide an important source of revenue for the Federal Treasury, local governments, as well as material for roads

LANDS ISSUE – 1987-1992

The NFGT encompass about 675,572 acres Additional land acquisition was planned, however, funding for land purchase has been limited Land exchanges are also falling well behind Plan objectives Property line location and maintenance are proceeding at close to the planned rate Rights-of-way acquisitions are somewhat behind Plan objectives The attainment backlogs in lands are primarily due to funding shortfalls, however, this backlog has not created any difficulty in project implementation

Monitoring identified several minor concerns pertaining to lands The Big Thicket Preserve expansion from recent legislation directs about 5,000 acres of National Forest lands to be exchanged to private owners and corporations for lands they lost to the Preserve Property boundary identification has been adequate for administrative purposes, however, the public has experienced some difficulty in identifying Forest and Grassland boundaries Another concern is that the objective for rights-of-ways includes road needs, but not trail needs Also, the 1987 Plan did not provide for outfitter and guide services in wilderness areas

Plan Responses to the Issues

This section addresses scoping, the 15 major issues, and how this Plan will respond to these issues

Scoping and public involvement, the first phase of Revision, were done in late 1990 and identified what should be kept and what should be changed in the existing Forest Plan Initial public involvement for the Plan Revision elicited more than 4,400 comments representing many diverse viewpoints about Forest management The NFGT ID team, comprised of resource specialists, reviewed all comments and identified 15 issues, 53 sub-issues, and about 500 unique comments. The 15 major issues are.

Plan Response

1) **BIODIVERSITY** deals with maintaining the natural mix of plant and animal species on the NFGT. These concerns and sub-issues include, but are not limited to NATIVE VERSUS EXOTIC SPECIES, MANAGEMENT INDICATORS, OLD GROWTH, UNIQUE, RARE OR SPECIAL ECOSYSTEMS, ECOSYSTEM MANAGEMENT; AND SPECIES DIVERSITY These topics will be considered and addressed in the Revision

Areas where changes are addressed include

Direction to manage for native or desirable non-native plant and animal species, communities, and ecosystems on the National Forests and Grasslands in Texas.

The Plan uses a detailed Ecological Classification System (ECS) in describing direction for land management practices (see Plan Appendix A) This system provides background information to base decisions during future Plan implementation The ECS relationship can be found in overall Plan direction, Desired Future Conditions, and Management Area standards and guidelines

Management direction for non-native or exotic plants and animals.

Specific standards and guidelines regulating management of and for both desirable and non-desirable non-native species are found in Forest-wide standards and specific Management Area standards for Forested and Grassland Ecosystems

Identification of historical plant communities and management considerations for present plant communities to include restoration.

The ECS, as described in this Plan, incorporates historical vegetation patterns and existing vegetation (See Plan Appendix A)

Protection and management of old growth.

Old-growth components are described in each major resource management area, and developed in detail through descriptions in the Forest Plan (See Plan Appendix I)

More specific management for riparian areas, wetlands, and other ecosystems that require special management.

Management Area 4 (MA-4) fully describes and details management and protection of riparian areas

Expanded species listings and use of Management Indicators in management activities.

The Management Indicator concept has been expanded to species and communities monitored through a variety of activities These indicators will be used to gauge management efforts that will be used to restore and manage the plant and animal communities (described in EIS Appendices F and H), endangered, threatened, and sensitive species population improvements, as well as traditional species that provide a wide-range of recreational and commercial benefits

Plan Response

2) VEGETATION MANIPULATION deals with the silvicultural systems and range management techniques, methods and tools used to manage vegetation that affect Forests and Grassland area on the NFGT This includes topics such as USE OF PRESCRIBED FIRE, EVEN-AGED VERSUS UNEVEN-AGED MANAGEMENT, PESTICIDE USE, AND OTHER SILVICULTURAL TREATMENTS In addition, this issue includes the sub-issue of pine-hardwood management which deals with management of mixed pine and hardwood forests All of these topics are of widespread and long-standing interest to the public and the NFGT

Changes included in this Plan are summarized below

An enhanced prescribed burning program based on costs which accurately address the needs for fire management, wildlife improvement, range improvement, and timber management.

A prescribed burning program that is more closely tied to ecosystem capabilities.

Prescribing fire in some wildernesses for fuels reduction and maintenance of fire-dependent ecosystems.

Specific standards and guidelines for prescribed fire are found in management areas and Forest-wide direction; use of fire in wildernesses is provided with the development of burning plans that would amplify the natural fire processes that have not been allowed to develop since establishment

Establishes a mix of harvest and regeneration systems in the Revision.

This Plan provides direction for all Forest silvicultural management systems, uneven-aged, even-aged, and two-aged The Desired Future Condition of forested areas describes a diversity within stands, and between stands, throughout the Forest

Establishment of mixed management types on some of the Forest.

Regeneration of forested areas will be based on the ECS which takes into account historical communities and existing conditions This decision basis will allow for a full range of diversification depending on the management emphasis for each area, and the desired condition management will attempt to achieve

Incorporates direction from the *Vegetation Management Environmental Impact Statement* regarding use of herbicides.

Plan Response

3) SPECIAL MANAGEMENT AREAS cover Wilderness, Scenic Areas, potential Wild and Scenic River Corridors, Research Natural Areas, Botanical Areas and other Special Areas These topics again have been of long-standing interest to the public in Texas The environmental analysis for the Revision of the Forest Plan considers various combinations of additional land allocations into these types of special areas The Special Management Area land allocations made in the past are not reduced, but some areas have been expanded or dealt with differently through management direction in the Revision

Areas where changes are addressed include

Formal evaluation of the seven proposed Research Natural Areas (See EIS Appendix G).

Elimination of conflicts and clearer direction to protect and manage areas.

Easily identifiable boundaries of Scenic and other Special Areas.

Clear direction for control of SPB in Special Areas.

Re-examination for possible wilderness designation of the 11 areas from the previous Roadless Area Review and Evaluation (RARE II), Longleaf Ridge, and others for a total of 17 sites. (See EIS Appendix D).

Clear Wilderness standards and guidelines for SPB control.

Clarified direction in Management Areas for different ecosystems in Wildernesses, Protective Corridors, and other Special Management Areas.

Added management requirements for Wilderness ecosystems that address threatened and endangered species protection.

Summary of eligibility for potential Wild and Scenic classification of the Forest's streams and rivers.

Identification of exemplary plant communities which are managed and protected as a special Management Area.

Plan Response

4) **OFF-ROAD VEHICLES (ORV)** or off-highway vehicles are of wide-spread interest This is particularly true in Texas, where the National Forests provide the only significant public ORV recreation opportunity.

Areas where changes are addressed include

Better monitoring of ORV impacts on soil and water.

Clear zoning and regulations for ORV use.

Specific standards and guidelines to reduce impacts of ORVs.

Guidance for conflict reduction through permitting and enforcement.

Plan Response

5) **MANAGEMENT FOR THE RCW** is at the heart of the Forest Plan Revision. The basic direction for RCW management is provided in the recent EIS for the Management of the Red-cockaded Woodpecker and its Habitat on National Forests in the Southern Region, with modifications to enhance the bird's situation in Texas Management in this Plan for the RCW in Texas is consistent with direction being implemented throughout the Southeastern National Forests. Local decisions regarding management emphasis in RCW management areas are detailed in this Plan

Areas where changes are addressed include

Clear statement of a strategy for RCW on the NFGT.

Detailed management and monitoring direction.

Direction within Management Area 2 (MA-2) will provide the opportunity to greatly expand habitat conducive for species like the RCW. The Forest conditions created by this management strategy will also provide an ecological condition for a variety of wildlife and plant species

Plan Response

6) **INTEGRATED PEST MANAGEMENT (IPM)** generally focuses on prevention and control of the SPB This Plan will continue to implement the actions detailed in the Record of Decision for the Southern Pine Beetle Environmental Impact Statement This Plan also deals with clear preventive management techniques, such as thinning to lower densities in older Forest stands, and restoring a much larger area to longleaf pine (a species that is less susceptible to the SPB than other native pine species). Additional direction for SPB control and IPM in Special Management Areas are also described.

Areas where changes are addressed include.

Clarifies how this Forest directs and implements the Southern Pine Beetle Environmental Impact Statement.

Describes SPB control techniques to ensure reduced conflicts in all Management Areas with other resources; especially Wilderness and other Special Areas.

Plan Response

7) **ROADS AND TRAILS** includes the number and miles of roads and trails, access needs, maintenance needs, closures, and roadside or trailside management. There is broad interest in these topics

Areas where changes are addressed include

Incorporation of travel and access management direction.

Clear road construction and reconstruction objectives.

Clearer management or location of trails to separate conflicts in trail use.

Improved maintenance standards for roads and trails.

Plan Response

8) **COMMUNITY STABILITY** is of great importance to our neighbors and local communities How the NFGT are managed has a significant impact on local economies and county budgets for roads and schools The environmental analysis for the Forest Plan Revision considers the effects of management upon the local economies and county budgets

Areas where changes are addressed include

The impacts of each alternative on returns to counties in the EIS are clearly stated. The Plan's preferred alternative and benefits to our neighbors is described in detail.

Returns to all counties, and to more Forest dependent counties, were emphasized.

Plan Response

9) **WILDLIFE AND FISHERIES** encompasses game, non-game, threatened and endangered, sensitive, extirpated and introduced fish and wildlife species. The wildlife and fisheries resources provided by the NFGT are of great recreational and aesthetic importance This Plan continues direction to work with State and Federal agencies responsible for management of species on NFGT lands

Areas where changes are addressed include

Consideration for the many sensitive and protected species to include existing, extirpated, and exemplary plant communities.

Clear monitoring guidance for management indicators, plants, animals, and other sensitive species.

Better habitat capability (HABCAP) models for Management Indicators and other species of concern.

A strategy for fisheries inventory and management on lakes, streams, and ponds.

Additional considerations for species listed as threatened, endangered, and sensitive species.

This Plan incorporates direction for at least 57 species of threatened, endangered, and sensitive species, in contrast to 3 species addressed in the 1987 Plan

Plan Response

10) **RECREATION**, as an issue in this Plan, includes many topics traditionally considered as recreation such as camping and hiking It also includes topics related to the other social areas such as hunting, cultural resources, and law enforcement (which may not always be thought of as recreational issues) Management strategies are well-coordinated with other agencies in order to provide a workable solution to the many demands by the public

Recreational plans include developed sites, type of development, and priority recommendations. This assessment will guide repairs, closures, reconstruction, or modification of existing campground problem areas such as those with shoreline erosion.

Provides a strategy for signing, standardized rules, accessibility, and high visibility conveniences such as water, restrooms, and other facilities.

Reduces conflicts between hunters and other users through certain standards and Management Area allocations.

Better monitoring of hunting and other recreational activities to define potential overuse, indiscriminate shooting, and other violations.

Provides direction for law enforcement.

Directs recreation use and interpretive programs for better integration of multi-use programs.

Directs a cultural inventory program to ensure compliance with the Heritage Program Agreement and Heritage Resource Management.

Plan Response

11) **RESOURCE SUSTAINABILITY** deals with one of the prime responsibilities of the USFS The basic elements of soil, water, and air are discussed in this issue, ensuring goods and services are provided within the capability of the land for sustained long-term multiple resource productivity

Areas where changes are addressed include

Clearly directs standards for air quality, fireline construction and reconstruction, and ORV trails.

States fire management objectives and integrates fire management analysis.

Clarifies methods for watershed improvement.

Directs monitoring for range condition and analysis.

Directs use, season of grazing, management for non-native, and native range forage species.

Revises grazing projections on the Forest reflecting current and expected demand.

Incorporates modeling for RCW management and mixed forest management types in the Revision.

Provides direction to ensure sustainable timber harvest levels.

Reassess the Allowable Sale Quantity (ASQ) and Timber Sale Program levels.

Plan Response

12) MIX OF GOODS AND SERVICES centers around successes and problems in implementing the current Forest Plan, and what is the appropriate mix of competing goods and services that should be in the Revision

Areas where changes are addressed include

Clearly describes the Desired Future Condition of the Forests, Grasslands, and each Management Area.

Clarifies management intent and direction.

Details the Plan budget to account for all Management Areas.

Clarifies rangeland suitability.

Plan Response

13) PLANNING includes all areas directly related to the planning process This issue includes new techniques, innovative ideas, or research needs the Forest should address The planning process and areas involving the public are included in this issue

Areas where changes are addressed include

More detailed monitoring and evaluation, including monitoring for social and economic impacts of implementation.

Included in the Plan is direction for more research into aquatic systems, biodiversity, and the historical vegetation found on the NFGT.

Identification of research needs that would benefit the implementation of this Plan and Ecosystem Management.

Plan Response

14) **MINERALS** deals with what type of minerals exploration and development decisions are made in the Revision, the impacts of these decisions, and what these decisions are In general, more specificity in terminology is found in this Plan

Areas where changes are addressed include

Budgets and output projections reflect current trends and projected demand.

The minerals resource, minerals exploration and development, the impacts of minerals activities, and supply and demand projections are described.

Management direction ensures all protected species, not just RCW, are protected in areas affected by mineral activities.

Additional guidelines for reclamation and revegetation activities are included.

Standards and guidelines for minerals exploration and development in Wilderness areas to meet legal rights of private landowners are addressed.

Identifies the leasing decisions for minerals, and stipulations, if any, for these leases in each Management Area.

Prohibits permits for iron ore gravel.

Plan Response

15) **LANDS** concerns special use permits, rights-of-way, land purchase, land exchanges, and property boundary management topics Most of the management direction existing in the 1987 Plan related to lands is unchanged.

Areas where changes are addressed include

The provision for outfitter and guide services in Wilderness areas is addressed.

Clearer rights-of-ways objectives are described to include trails.

Landownership adjustment plans and priorities have been revised.

Chapter III
Research Needs/New Ideas

Research is a continual part of land management planning and implementation Questions raised by Forest Service personnel, land managers, and the public concerning Forest issues and management practices generate current research needs The results of research activities, whether on Federal or private lands, are used by Forest Service managers to improve management and monitoring activities and implement new standards and guidelines for activities

Legal and Policy Requirements

The Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) requires the Forest Service develop, as part of its overall program, a National program of forestry research every five years [Forest Service Manual (FSM) 4070 1] Current research activities on the Forest are occurring within this framework

Research needs are many times identified during monitoring and evaluation activities that occur regularly during project implementation and assessment. (See Plan Chapter V). Effectiveness and validation monitoring is most appropriate when performed in conjunction with or by the National Forests and Grasslands in Texas (NFGT) many research "partners". These levels of monitoring will be very important to validate or change the many assumptions that are involved in our efforts to develop an ecological approach to management

The Forest Service policy for formulating and documenting research programs is: [FSM 4070 3]

1. "Ensure that the annual research planning and budgeting recommendations are consistent with the National program of forestry research set forth in the RPA Program and program planning direction from the Deputy Chief for Research."

2. "Emphasize evaluation of anticipated research accomplishments, costs, and benefits, and integrate the findings of such evaluation into annual and long-term research program planning and implementation "

3 "Coordinate forestry research among stations and with other agencies and organizations to solve Forest and range problems of Regional and National importance."

4 "Make research results available promptly, provide necessary interpretations and assistance in the application of these results to achieve effective management, use, and protection of all Forest and range resources "

Though some research needs are met through project monitoring and evaluation by the Forest, most research activities on the NFGT are conducted by the Southern Forest Experiment Station (headquartered in Asheville, North Carolina) and by universities throughout the south Projects usually originate from these sources, or the Forest Supervisor in Lufkin may ask for special studies The research needs identified for Forest Service Research in the Revised Forest Plan must be developed within the framework of these policy guidelines The need to include research needs in the Forest Plan is contained in 36 Code of Federal Regulations (CFR) 219 28, Rules and Regulations, dated September 30, 1982

Previous Research Needs

Current research needs are derived from the results and unanswered questions of previous research problems, as well as from the necessity to investigate new ideas or concerns in land management. This section details and summarizes some the previous research needs and the studies conducted in response to those needs.

The research needs identified in the 1987 Forest Plan were·

- "Determine both the short and long-term effects of off-road vehicles."
- "Develop technology for extracting iron-ore gravel and restoring the pits into productive sites."
- "Accurately determine the amount of competition which exists between wildlife and domestic livestock for available forage."
- "Determine better methods (techniques) for artificial hardwood regeneration."
- "Botanical inventories of understory plant species."
- "Value of hardwood stringers and clumps for wildlife benefits."
- "Effects of wilderness management on local fauna and flora "
- "Control and study of acid rain."

– "Southern pine beetle control."

Interim Research Questions

In 1989, the Southern Forest Experiment Station developed a list of research problems for the wildlife habitat and silviculture research unit (RWU-4251) which included:

What effects do extent and composition of streamside management zones (SMZ) have on wildlife habitats and what silvicultural systems will produce desired conditions within SMZ?

What specialized habitat components are required by cavity nesting wildlife and what management options provide these components?

What are the effects of alternative silvicultural practices employing uneven-aged management on wildlife habitat and on wildlife communities?

What technology is needed to manage sensitive wetlands and relict communities?

Current Research Studies

A study is being conducted on the Raven Ranger District to determine if air pollution levels are affecting indicator plants. A portion of the Stephen F. Austin State University (SFASU) Experimental Forest near Nacogdoches, Texas, has been selected as an intensive field study site for determining the response of shortleaf pine and indigenous hardwood species to ozone and acid rain under ambient and experimental conditions This study is a cooperative effort between the Forest Service and the Environmental Protection Agency.

A plant inventory of four Forests and two Grasslands which identified rare and endangered species, exemplary natural communities, and other special natural features, was completed in 1990.

The Southern Forest Experiment Station has a wide array of research studies which could pertain to management practices on the Forest. Three projects dealt with the value of hardwood stringers for wildlife benefits "Streamside Zone Width and Wildlife Populations", "White-tailed Deer Use of Riparian Zones and Adjacent Pine Plantations in East Texas"; and "Wildlife Values of Streamside Management Zones in the Ouachita Mountains, AR" Other studies have examined deer and cattle grazing on Louisiana pine-bluestem range and compared wildlife communities under even-aged and uneven-aged management and in mixed pine-hardwood stands

Research Work Unit (RWU-4251), located in Nacogdoches, Texas, has also extensively studied the red-cockaded woodpecker (RCW)

through such projects as RCW use of seed-tree regeneration areas in east Texas; inoculation of mature pines with red-heart fungus in RCW recruitment stands; interaction of southern pine beetle (SPB) and RCW in pine forest ecosystems; and interactions between RCW, cavity competitors, and habitats in east Texas. Other projects are related to upland longleaf pine ecosystem and bog management through proper application of prescribed fire

The Forest Insect Research Unit in Pineville, Louisiana modeled pine resistance to SPB attack and evaluated the effects of pine density and the presence of hardwoods on the rate of SPB infestation development

Texas Forest Service

The Texas Forest Service (TFS), under the supervision of entomologist Dr Ron Billings, conducts annual SPB surveys (usually during March and April) Trap catches of SPB and its primary predator, a clerid beetle, are used to predict the severity of SPB infestations for that year. The TFS, in association with Forest Health, is also experimenting with behavioral chemicals (particularly verbenone - an inhibitor), as a method of SPB spot control. Early results indicate that spot growth in small infestations can be stopped using behavioral chemicals alone Larger or more active spots may require some tree felling to completely shut down spot expansion The TFS and Forest Health are also testing verbenone for the protection of RCW cavity trees

University Studies

Texas A&M University

Texas A&M University, in cooperation with Forest Service Research (RWU-4201), conducted watershed studies on the Angelina National Forest. Initiated during 1978, this study was designed to evaluate the affects of various site preparation and grazing treatments on non-point source pollution on small forested watersheds These studies, as documented in the Texas National Forest FSM 2210 file, are titled: *"Cooperative Project for Multiple Use Forest Range Management", "Project for Range Resource Evaluation Management Demonstration and Study of Multiple Use Influences"; "A Small Forested Watershed to Assess Nonpoint Source Loading from Intensive Forestry Practices in East Texas"; "Southern Range Evaluation Project Assessment of Nonpoint Source Pollution from Livestock Grazing on Clearcuts in East Texas"*, and *"Range Assessment Testing (RAT) Evaluation in the South"*

Stephen F. Austin State University

Stephen F Austin State University (SFASU) recently completed an extensive study of the affects of oil and gas development on stream fauna and chemistry. They are also working with the Forest Service on ecological surveys of oxbow lakes in east Texas and Louisiana, stream fish surveys on the Davy Crockett National Forest, and mussel surveys on the Angelina and Davy Crockett National Forests

The University of Arkansas, the University of Georgia, and Virginia Polytechnic Institute (with assistance from Forest Health), have and are conducting studies on the NFGT dealing with relationships of SPB with fungus and parasites, winter biology of SPB, and the response of bark beetles to behavioral chemicals.

Stephen F. Austin Experimental Forest Studies

The SFASU Experimental Forest, administered by the Southern Forest Experiment Station - Nacogdoches Unit (RWU-4251) in cooperation with SFASU School of Forestry, is the site of several multiple-use studies. Current studies at the Experimental Forest include use of artificial nest boxes and snags by cavity-nesting birds, development of fungal diseases in inoculated trees, and snag population dynamics These will provide better information for wildlife habitat needs when performing forest management practices Beginning in 1991, most of the upland pine stands on the Forest are also being treated to provide an array of even and uneven-aged silvicultural treatments for further research and demonstration purposes.

Past research at the Experimental Forest has focused on the effects of forest stand composition on bird communities, requirements of cavity nesting wildlife, white-tailed deer habitat requirements and seasonal browse preferences, and the effects of different types of site preparation on pine regeneration and wildlife habitat

Current ongoing studies here and elsewhere should help establish management practice guidelines This includes guidelines for prescribed burning, riparian area management and other wet areas, insect and disease control, wildlife plantings, nest box installations, old growth, bottomland hardwood management, snag retention, pine-hardwood management type, pine shelterwood, regulated single-tree selection for uneven-aged stand structure, group selection in upland pine-hardwood habitat, seed-tree management, clearcutting, uneven-aged stand management, and for a natural control area with no activities.

The following is a partial list of publications from the past seven years which detail work either accomplished on the NFGT, or which directly pertain to forest management on the NFGT.

PUBLICATIONS

Billings, R F. 1988. Forecasting southern pine beetle infestation trends with pheromone traps. Pp. 295-305 *in* Payne, T L & H. Saarenmaa, eds. Integrated control of scolytid bark beetles Proc. XVII International Congress of Entomology, Vancouver, B. C. Canada.

Conner, R. N., & D. C Rudolph. 1991. Effects of midstory reduction and thinning in red-cockaded woodpecker cavity clusters Wildl. Soc Bull. 19 63-66

Conner, R. N., A E. Snow & K A O'Halloran. 1991 Red-cockaded woodpecker use of seed-tree/shelterwood cuts in eastern Texas. Wildl Soc. Bull 19: 67-73

Conner, R N 1989 Injection of 2,4-D to remove hardwood midstory within red-cockaded woodpecker cluster areas Res Pap SO-251. New Orleans, LA USDA, Forest Service, Southern Forest Experiment Station 4p.

Conner, R. N & D C Rudolph 1991. Forest habitat loss, fragmentation, and red-cockaded woodpecker populations Wilson Bull. 103. 446-457

Dickson, J G & J. H Williamson 1988. Small mammals in streamside management zones in pine plantations Pp 375-378 *in* Szaro, R C., K. E Severson & D. R. Paton, tech. coords. Proc of Symp Management of amphibians, reptiles and small mammals in North America July 19-21, 1988, Flagstaff, AZ USDA Forest Service Gen Tech Rep. RM-166 Rocky Mountain Station, Fort Collins, CO

Dickens, J C., R. F. Billings & T. L. Payne 1992 Green leaf volatiles interrupt aggregation pheromone response in bark beetles infesting southern pines. Experentia 48 523-524.

McCullough, J.D , B Guthrie, U. B. Martin, L Mason & G Rogers. 1994 Monitoring project to determine effects of oil and gas development upon stream ecosystems in the Sabine National Forest Stephen F. Austin State University, Dept of Biology Misc Publ.

Payne, T L & R F Billings. 1989. Evaluation of (S)-verbenone applications for suppressing southern pine beetle (Coleoptera· Scolytidae) infestations J of Economic Entomology 82: 1702-1708.

Payne, T L., R. F Billings, C W. Berisford, S. M. Salom, D M. Grosman, M J Dalusky & W W Upton. 1992. Disruption of Dendroctonus frontalis (Col., Scolytidae) infestations with an inhibitor pheromone J Applied Entomology 114 341-347

Ross, W G , D L Kulhavy & R N Conner. 1992 Evaluating susceptibility of red-cockaded woodpecker cavity trees to southern pine beetle in Texas Pp 547-553 *in* Brisette, J C ed Proceedings of the 7th biennial southern silvicultural research conference; November 17-19, 1992, Mobile, AL Gen Tech Rep SO-93 New Orleans, LA USDA Forest Service, Southern Forest Experiment Station

Rudolph, D. C , H Kyle & R N Conner. 1990 Red-cockaded woodpeckers vs rat snakes the effectiveness of the resin barrier. Wilson Bull 102 14-22

Rudolph, D C , R. N Conner, D. K Carrie & R R Schaefer. 1992. Experimental reintroduction of red-cockaded woodpeckers The Auk 109. 914-916

Rudolph, D. C & R. N. Conner 1991 Cavity tree selection by red-cockaded woodpeckers in relation to tree age. Wilson Bull 103· 458-467.

Salom, S. M , R. F. Billings, W. W. Upton, M. J Dalusky, D M. Grosman, T. L. Payne, C. W. Berisford & T. N. Shaver. 1992. Effect of verbenone enantiomers and racemic endo-brevicomin on response on Dendroctonus frontalis (Coleoptera Scolytidae) to attractant-baited traps Canadian J Forest Research 22: 925-931.

Thill, R E & A. Martin Jr 1989 Deer and cattle diets on heavily grazed pine-bluestem range. J Wildl. Manage. 53 540-548.

Current Research Needs

The RWU-4251 has tentatively identified five research problem areas for study that pertain to NFGT, but are applicable throughout the south:

1 Habitat relationships and effects of silvicultural practices on birds and other sensitive species and communities in riparian forests of the western Gulf Coastal Plains.

2. Specialized habitat components required by cavity nesting wildlife and the management options which provide these components

3. The effects of uneven-age management on habitat and wildlife communities.

4. The management options appropriate for fire climax pine forests and which are consistent with Ecosystem Management and maintenance of threatened, endangered, and sensitive (TES) species

5 Effects of forest habitat management on RCW and associated vertebrate and arthropod communities

The Forest has also developed a list of suggested research needs, many of which are included in the problem areas given above

1. Habitat requirements and ecosystem function.

a. Where such knowledge is lacking, determine specific habitat requirements, demographics, life history processes, and habitat capability models TES species.

b. Develop better predictive models of species composition and community structure associated with the developing ecological classification types on the National Forests

c Conduct Research Natural Area baseline studies of natural processes, conditions, and habitat quality

2. Species response to change in habitat conditions.

a Better identify and quantify how long-term Ecosystem Management for RCW recovery will affect other animal and plant communities, populations, and species

b Determine the long and short-term effects of longleaf pine/bluestem and shortleaf pine/bluestem restoration on RCW population recovery as well as overall biodiversity

c Determine the response of selected TES (and other wildlife and aquatic species, and plants) to changes in habitat quality and quantity due to natural succession, Forest Service vegetation management, and human disturbance.

d Examine benefits and detriments of stream habitat structures

3. Vegetation management methods to achieve desired habitat conditions.

a Identify the best methods and timing to control woody vegetation in bog and prairie communities, and to maintain and enhance these plant communities

b Determine how to use livestock to manage vegetation to create and maintain desired plant and animal habitat conditions

c Determine how prescribed fire programs change the structure and function of landscapes

4. Monitoring methods for species and habitats.

a Develop better techniques to effectively monitor and evaluate ecological community productivity, and other characteristics of these communities

b. Initiate community level verification of species composition (plant and animal) using the adopted Ecological Classification System for the NFGT

c Develop monitoring and evaluation techniques using appropriate indicators, species, guilds, and assemblages for each of the known ecological communities on NFGT

d. Develop a community level ecosystem analysis model using Biological and Conservation Data System (BCD) and Geographic Information System (GIS) data systems for both Kisatchie and the NFGT (west Gulf Coastal Plains), including appropriate adjacent private lands.

e Begin development of habitat capability models (HABCAP) for Proposed Endangered, Threatened, and Sensitive Species (PETS). Coordinate and assist in monitoring RCW and other PETS species

f Develop statistical methodology for PETS surveys (plants, animals and fish). Aid in collecting data, compiling existing information, and integrating this data into GIS and BCD compatible data bases.

g. Coordinate native plant propagation sources and techniques for use on revegetation and restoration projects

h. Verify presettlement plant communities patterns and associations with soils, geology and other abiotic variability, and design a GIS based model for restoration applications that is compatible with existing forestry programs and techniques.

i Ascertain the distribution of mussels and fish on the Forest to determine species in need of protection.

j Monitor affects of Forest Service activities on aquatics and water quality.

5. Forest Health.

a. Determine effects of uneven-aged management and community restoration on forest health problems, particularly the SPB

b Develop new techniques of SPB control for use in sensitive areas, including biological control and the use of behavioral chemicals

c Improve SPB detection and prediction techniques, and expand the spot growth model for use in all forest types.

d. Continue to examine the interrelationship between the different forest health problems and further investigate the factors which predispose forests to pest problems

e Determine how SPB infestations in wildernesses affect fuel loading and influence fire frequency and intensity.

New Ideas

New ideas arise from problems and opportunities on the Forest, and research and development projects are necessary to test and implement these new ideas The Chief of the Forest Service has encouraged employees to develop their ideas into actions. In this context, America's Great Outdoors Initiative and Ecosystem Management, which encompass all resource opportunities, were developed

The Ecosystem Management philosophy involves "a different way of thinking about managing the NFGT, emphasizing ecological principles to sustain their many values and uses " This strategy includes emphasizing land stewardship for sustained productivity of all Forest values and uses, finding out what the citizens want from their NFGT; partnerships with researchers, educators, and private parties to better serve the people, and flexibility for resource managers to use creativity, experience, and knowledge to demonstrate leadership for managing land and resources for people Ecosystem management, therefore, encourages innovation and foresight from Forest Service land managers.

Some Ecosystem Management projects being implemented on the NFGT are.

1 Wildlife habitat ecosystems are being developed on strip mined gravel sites [proposed San Jacinto Wildlife Demonstration Area (see Chapter IV for more information) on the San Jacinto Ranger District] to include primary habitat for neotropical birds. Studies are being conducted to determine what bird species use the area and the potential for other species' use of this site. This Sunoco Project emphasizes public involvement and participation Project activities focus on birding, wildlife viewing, nature study, and Threatened and Endangered (T&E) species recovery

   Special emphasis will be placed on current agency initiatives and partnership programs. Projects are designed within the objectives of· Every Species Counts, Get Wild, and Rise To The Future; with results publicized accordingly. Project emphasis areas within the Get Wild initiative are· Making Tracks for turkey, Animal Inn for

wildlife dependent on dead wood, Answer The Call for quail; and Eyes On Wildlife for wildlife viewing and appreciation. Partners in Flight is the conservation initiative for neotropical migrating birds.

Administrative studies and monitoring emphasis will be on neotropical migrant birds through the development of permanent census plots and habitat development. This project is generating much interest as the features are designed and developed.

2. A conservation education interpretive program on Forest ecosystems and plant succession relationships is being implemented on three Ranger Districts through a partnership with SFASU. This program is being targeted toward fifth grade level students at various local schools. The primary goal is to provide a better understanding of basic ecological principles like plant succession, tropic levels, food chains, and the need for various Forest management practices.

3. Eastern wild turkey are being restocked on suitable habitat areas. After being eliminated from Forest areas in East Texas, the wild turkey is again flourishing with the help of the Wild Turkey Federation, Texas Parks and Wildlife Department, and the Forest Service.

4 The Texas Natural Heritage Program (TNHP) identified several unique plants and plant communities on the Forest (Orzell 1990) These areas contribute to the maintenance and enhancement of biological diversity. Specific management strategies for these identified areas are to be developed in cooperation with the Nature Conservancy, Texas Parks and Wildlife, and the Forest Service.

5. Red-cockaded woodpecker (RCW) clusters are being created by transferring both male and female pairs to a new site with artificial cavities. This was thought to be an impossible idea a few years ago. RWU-4251 studies should provide new methodologies in reestablishing RCW populations to normal levels. These techniques are currently being implemented by Districts

6. Uneven-aged management strategies are being implemented on some compartments, along with extensive use of prescriptions applying seed tree treatments RWU-4251 studies should provide many of the answers to questions concerning relative merits of even and uneven-aged management (employing single tree selection) for wildlife studies being initiated under the Ouachita National Forest initiatives RWU-4251 and help from many other cooperators will greatly expand on knowledge on effects of pine and mixed pine-hardwood management under an array of even and uneven-aged silvicultural practices.

Chapter IV
Goals and Objectives

Introduction

This chapter of the Forest Plan outlines the direction for managing the National Forests and Grasslands in Texas (NFGT) This management direction includes the following segments

Mission Statement and Goals: Identifies direction through a mission statement and supporting goals to ensure multiple resource sustainability for the future

Desired Future Condition: Describes the NFGT Ecosystems of the future through implementation of this Plan

Management Objectives: States objectives for each goal established within the framework of the U S Forest Service Charter and Mission Statement and described by the NFGT

Forest and Grassland-Common Standards and Guidelines: The bounds or constraints within which all management activities will be implemented by this Plan. These standards apply to all areas of the Forests and Grasslands

Management Area Prescriptions: Direction from Forest and Grassland goals and objectives, desired future condition, and specific standards and guidelines that are unique to each management area identified in this Plan

Philosophy: The NFGT will carry out sound resource management that recognizes the importance of the natural processes that sustain healthy, diverse, and productive natural ecosystems The Land and Resource Management Planning process and the implementation of Forest Plans will provide a balance of social, economic, and ecological outcomes and sustainable outputs for the public in the long term This direction will be the directive by which the NFGT establishes and directs management through this Forest Plan.

Mission Statement and Goals

The NFGT has established the following mission statement

To maintain, improve, or restore, healthy and naturally diverse ecosystems which sustain those resources and values that contribute to the ecological, social, and economic needs of the public Given this mission, the NFGT will

* Manage for long-term sustainability of diverse ecological systems, to include native and desirable non-native species plants and animals, which occur in the planning area,
* Direct management through application of the processes that sustain ecosystems and provide multiple resources for the future,
* Identify and manage for some ecosystems which are unique or recognized as declining within east and north Texas,
* Use an ecological approach to management through the use of an Ecological Classification System (ECS) which provides improved resource capabilities and considerations;
* Enhance threatened, endangered, or sensitive (TES) species through restoration of the processes and habitats these populations require, and

Strategic Goals: The NFGT has established five strategic goals which will guide the Forest Supervisor and District Rangers during the implementation of this Plan These goals are as follows

1 Biological Environment–Sustain the biologically diverse ecosystems that provide the many natural resources both living and non-living, that occur on these NFGT lands in north and east Texas,

2 Social–Provide social and cultural benefits for the American public and the many Forest and Grassland users from a recreational, environmental, and aesthetic perspective,

3 Economic–Continue economic benefits that contribute to the support of communities within the planning area,

4 Production–Through sound Ecosystem Management practices, maintain the continual flow and the long-term productivity and sustainability of renewable natural resources without long-term detriment to other resource values, and

5. Physical Environment–Implement practices that ensure clean air, soil productivity, and water quality, which are key to the sustainability of all other resources

Desired Future Condition

A Desired Future Condition (DFC) is an expression of resource goals that have been established for (1) An entire planning region, or for (2) a specific area of the NFGT The second or specific area described can be an administrative area or unit, or specific management areas within these units Just as Forest Plan decisions are based on established mission and goals, the DFC of an area is a narrative or pictorial description of the desired state for the area This concept of DFC for a Forest or Grassland is beneficial in planning projects that maintains or move a specific area towards that condition

It is important to describe the future NFGT in terms of the physical and biological processes, the environmental setting, and the human experience. These descriptions must both be easily defined in narrative form and with the use of pictures The concept of DFC is an important improvement in the way all of us communicate our thoughts about the future Forest A mutual visualization of the area aids in discussions, making it easier to voice our likes and dislikes to improve our management strategies This chapter will provide desired future conditions for the entire NFGT as a whole Later in this chapter, each management area will have a specific DFC described for that area

The NFGT desired future conditions contain the following factors

* Areas of the Forest will generally develop older forest conditions, including bottomland hardwoods, mixed forest uplands and upland pine areas with an open character of longleaf, shortleaf, and loblolly pine stands.

* Areas of potential old-growth forest will be identified throughout the life of the Plan, managed and allowed to develop through time

* Bottomland hardwoods along rivers and streams will be managed for the development of an older forest character.

* Habitat for species groups that depend on mature forests will be more common

* Timber harvest will continue in ways that are environmentally and visually acceptable, providing more continuous canopy areas and structural diversity

* Native species and communities are maintained or restored through provision of all Forest and Grassland successional stages, however, some early succession species or groups may not be as common as at present levels

* Examples of natural succession on Forest and Grassland ecosystems will be demonstrated through more areas that are managed for special attributes

* Some wilderness areas, in the absence of fire, develop into dense thickets–eventually becoming an area of few old pines with an increasing dominance of many shade-tolerant hardwood species

* Enhancement of ecological communities will be evident through management techniques such as silvicultural practices, prescribed burning, grazing, and watershed improvement

* Longleaf pine forests increase through restoration and management, providing contiguous habitat areas for populations like the Louisiana pine snake, red-cockaded woodpecker (RCW), and the prairie-like grasses and bogs

* Natural mortality in these older pine forests through southern pine beetle (SPB) infestations and other factors will cause more small patchwork patterns of regeneration

* Sound land management will be demonstrated on Grassland areas, enhancing the natural prairie and crosstimbers of north Texas through a variety of vegetation management projects.

* A greater sense of communication, cooperation, and partnerships between Forest and Grassland management and local communities will exist

* Opportunities for the public's involvement in planning and management will become more common.

* A range of recreational opportunities will be visible via access and signage, providing users easy access to trails, trailheads, and camping areas.

* Roads will exist to provide access to the NFGT, however, some of these roads will be for administration and management only, with limited vehicular use by the public

* Scenery along major travelways, lakeshores, and river corridors will develop and maintain a variety of scenic qualities, including some areas with an older-forest character

* Due to land exchange and acquisition programs, land ownership patterns will become more consolidated

* A sustainable flow of commodities such as timber production on the forests, forage for use by livestock on the Grasslands will continue. Mineral development will occur within environmental constraints

* Economies of local communities will be diversified and supplemented by the many natural, recreational, and social values the NFGT provide

* Improve the developed recreation areas constructed without appropriate facilities through major rehabilitation or replacement to meet demands from the adjacent Dallas-Fort Worth Metroplex and the Houston Metropolitan area

Forest & Grassland-wide Management Objectives

Strategic goal statements are further defined by the specific Forest and Grassland-wide objectives that are characteristic of each goal The objective descriptions for these goals are as follows

1. Biological Environment:

a Coordinate with other agencies, institutions, or private groups to train personnel in the identification and management of threatened, endangered, or sensitive species and unique plant communities

b Protect and improve habitat for threatened, endangered, and sensitive plant and animal species Develop habitat for threatened, endangered, or sensitive species not provided on privately owned forests and grasslands, while providing populations of other species that occur within Forest and Grassland successional stages (See Chapter V Management Indicators habitat objectives.)
Objectives for habitats are as follows·

Longleaf Pine/Little Bluestem - 96,000 acres
Shortleaf/Oak/Hickory - 170,000 acres
Beech/White Oak - 3,500 acres
Little Bluestem/Indian Grass - 25,000 acres
Bottomland Hardwood - 60,000 acres

c Manage wilderness to preserve the character of its living and nonliving components, while allowing natural processes to develop

d Implement appropriate silvicultural practices based on site specific inventory data that promotes the diversity of the landscape

e Maintain, improve, or restore unique ecosystems using ECS information and restoration of ecological processes emphasizing the fire dependent longleaf and shortleaf pine ecosystems (See Chapter V Management Indicators population objectives by species)

Objectives for these communities are

Little Bluestem/Rayless Goldenrod - 500 acres
Sphagnum/Beakrush - 300 acres

Sweetbay/Magnolia - 400 acres

f Manage riparian areas to provide vital corridors for biological exchange and connecting mature forests Manage riparian areas to protect and enhance soil, water, and vegetation

g Manage fire-dependent ecosystems and communities through a prescribe burning program, providing resource protection and ecological management needs

h Acquire lands that enhance high priority resource management biological objectives

2. Social:

a Provide a broad spectrum of dispersed and developed recreation opportunities to accommodate public demands

b Maintain and enhance the visual character of the Forests and Grasslands through visual quality objective standards

c Protect the visual qualities of the Forests and Grasslands through vegetation management techniques to enhance views and scenic quality

d Manage trails to enhance recreation opportunities, yet emphasize protection of resources and reduction of conflicts with other users

e. Identify, protect, interpret, and manage cultural heritage resources

f Protect forest visitors, forest resources, and facilities through adequate law enforcement and safety standards, and by upgrading, replacing, or closing administrative facilities to ensure the health and safety of users Provide for safe use and enjoyment of the NFGT facilities by the public

g Provide equal opportunity in employment and program delivery The United States Department of Agriculture (USDA) Forest Service prohibits discrimination on the basis of race, color, national origin, sex, religion, age, disability, political affiliation, and familial status.

h Acquire rights-of-way to provide public access to isolated National Forest System lands.

3. Economic:

a Maintain future management options by sustaining ecological processes and ecosystems to help meet social and economic demands of the public.

b. Consider economic efficiency in management of the NFGT programs

c Pursue opportunities to make landownership adjustments that improve management through lands consolidation.

d Establish, maintain and protect all landline boundaries

e. Acquire rights-of-way that facilitate efficient management

f. Manage the transportation system for increased cost-effectiveness and efficiency

g Provide cost-effective fire protection for public lands and prevent loss of human life

h Encourage volunteers, Challenge Cost Shares, Cooperative Agreements, and Partnerships in Forest Service activities.

i Support development of innovative ecologically and environmentally sound based markets through rural development and community assistance programs

j Provide employment through expanded human resource programs

k Issue those land use authorizations necessary to meet public and private needs, when no viable alternative to long-term commitments of National Forest lands exists

4. Production:

a. Manage for healthy, productive and sustainable forest and range ecosystems

b Manage for multiple resource sustainability of renewable resources, without impairment to the future productivity of the land

c. Manage habitat to provide for huntable wildlife populations, while maintaining populations of the many non-game species (See Chapter V, Management Indicators for game species habitat objectives)

d Manage Forest areas for appropriate size and age class distributions providing sound forest health and diversity.

e Provide a continual flow of high quality pine and hardwood sawtimber and other forest products

f Provide sustainable grazing opportunities by restoring and maintaining native grasses on the Grasslands that meet local needs and are economically sound, while de-emphasizing grazing on the Forests.

g. Minimize losses from insects and diseases through an integrated pest management program

h. Improve Forest and Grassland resource production through a prescribed burning program.

i Provide for exploration and development of non-renewable resources with minimal long-term detriment to future land productivity

5. Physical Environment:

a Meet all State water quality standards.

b. Protect municipal and other potable water supplies through sound management practices

c. Maintain or improve soils productivity and water quality

d Implement procedures and precautions that promote air quality consistent with Federal and State laws.

Management of the Forest

Standards and guidelines for both Forest-wide and each management area describe management under the alternative selected by the Forest Service as the **SELECTED ALTERNATIVE** This alternative is expanded upon and developed into the Revised Forest Plan The Revised Plan guides the management of the Forest for the next 10 to 15 years

Ecosystem Management

The management direction that follows in this chapter is based on an ecological approach to management This has been described and is considered in this Plan as **ECOSYSTEM MANAGEMENT** Ecosystem Management is an effort to blend the many issues addressed in this Plan into an ecologically sensitive and sensible fashion. Ecosystem Management is the means to an end – not an end in itself. We do not manage ecosystems just to preserve intrinsic values or to imitate

conditions that occurred at some time in the past We manage ecosystems for specific purposes such as producing, restoring, or sustaining certain ecological conditions, for desired resource uses and products, for vital environmental services, and for aesthetic, cultural, or spiritual values. These are the needs and desires of the public and are the issues communicated to us through social, economic, and political systems The Land and Resource Management Planning process and the implementation of a Forest Plan is where it all comes together.

Ecosystem management will require an ecological approach that ensures sustainability of all resources The NFGT will address this ecological concern through the use of an integrated ECS A Region 8 Ecosystem Classification Team was established to develop an Ecological Classification Mapping and Inventory System (ECM&I) that can be implemented regionally while being consistent nationally

The ECS mapping and classifications (described in Plan Appendix A) are the results of cooperative efforts by the NFGT and the Regional team, other National Forests and Federal agencies, state agencies, and universities

The objectives of this effort are to (1) Provide an integrated system for use in mapping, analysis, monitoring, evaluation, and database linkages, (2) provide a unifying framework for interpreting ecosystem responses to management, disturbance, and development through time, and (3) provide an information system to aid in evaluating land capabilities, interpret ecological relationships, and improve multiple-use management [See Forest Service Manual (FSM) 2060 1]

Plan Commitments

This Revised Plan commits to forest management an equitable balance of resources values, both human and environmental, and produces products, services, and conditions in a manner that sustains the biological diversity and productivity of ecosystems In other words, management of our ecosystems will be used to achieve the multiple-use sustainability, and ultimately the long-term productivity of the Forests and Grasslands

The Revised Plan establishes the framework for achieving this mixture of values, products, services, and conditions by generally describing the *desired future conditions of the NFGT overall, and more specifically* describing future conditions for each management area

The National Forest Management Act (NFMA) Regulations 36 Code of Federal Regulations (CFR) 219 require the identification of standards and guidelines for each management area These regulations, however, provide little specificity as to the difference between a standard and a guideline

A **STANDARD** in this Plan can be considered a formal commitment towards management A standard cannot be changed during Plan implementation without the procedural process called a *PLAN AMENDMENT*

A **GUIDELINE** is considered general direction and could have some latitude to be implemented at the project level Guidelines sometimes list specific exceptions or circumstances In some unusual situations, guidelines may be found to be inadequate or inappropriate after sufficient site specific environmental analysis is done When a project level, site specific environmental analysis indicates that the deviation is appropriate, the change will be fully documented and described in the project environmental analysis proposal

In order to differentiate between standards and guidelines, the print style that is used in the remainder of this chapter will make all standards **boldface**, in contrast guidelines will not be in bold or dark print, and will follow a standard in an *italicized* fashion For example

STANDARD - A formal commitment towards management.

a Guideline - General direction with latitude for implementation

The Forest-wide standards that follow apply to all U S Forest Service lands, both Forests and Grasslands They are to be applied to each management area Generally, management area standards are more prescriptive in nature so as to achieve a specific desired future condition These more prescriptive (or restrictive) standards and guidelines will apply, in contrast to more general or liberal Forest-wide standards and guidelines.

Management Areas

Management areas are "areas of the Forest with similar management objectives where compatible management prescriptions are applied " The Revised Plan is based on a system where lands managed to achieve complementary objectives under the same standards are allocated to the same management area

The EIS contains a discussion of the different management areas used in formulating the alternatives The Revised Plan, a detailed and expanded version of the preferred alternative, utilizes 10 management areas. Each of the management areas are described in detail in the pages following the Forest-wide standards and guidelines. Acreage that is allocated to specific management areas for the preferred alternative is shown in the table below.

SELECTED ALTERNATIVE 8 TABLE
Approximate Management Area Acreage

No.	*Management Area Name*	*Acreage*
1	Upland Forest Ecosystems	218,000
2.	Red-cockaded Woodpecker Emphasis	250,000
3.	Grassland Ecosystems	34,500
4.	Streamside Management Zones	49,800 *
5	Major Aquatic Ecosystems	16,300
6.	Longleaf Ridge Special Area	32,300
7	Wilderness	37,200
8.	Special Area Management	15,300
9	Recreation Areas	6,600
10	Administrative and Special Use Sites	9,700
11	SFA Experimental Forest	2,600

* **Boundaries and acreages are approximate and will be determined by a site-specific analysis.**

Annotated List of Standards and Guidelines

This section and all Standards and Guidelines are ordered alphabetically as follows

Air Quality - Directions and coordination actions to ensure clean air

Aquatic Resources - Management and construction standards for perennial water bodies to include fisheries and aquatic vegetation

Biological Diversity - General direction for ecosystems to provide diversity for old growth, riparian areas, native plants, snag retention, threatened and endangered species, ecological classification and use, special habitats, and management indicators

Chemicals - Chemical use, primarily herbicides for vegetation management

Cultural Resources - Protection, management, and inventory of archeological and historic resources to include interpretive activities

Facilities - Design, management, and closure guidance for roads and trails supporting various programs Other facilities information is found in Appendix E and Management Areas 10a and 10b

Fire - Directs both prescribed fire and wildfire suppression actions, fire preparation, and rehabilitation, to include soil and water protection needs

Integrated Pest Management - Includes all pest related problems, but primarily Southern Pine Beetle

Lands - Describes land ownership adjustment, acquisition, exchange, easements, boundary line management, legal claims, and encroachments

Minerals - Leasing, drilling, permitting, and production guidelines for ensuring resource protection

Planning - NEPA and Planning direction

Range - Includes vegetation and livestock management for livestock development on both forests and grasslands

Recreation Management - Provides recreation opportunity spectrum, interpretation, trails, and ORV guidance, to include safety and information management of users

Scenic Resources - Provides visual resource direction and visual quality objectives for various management actions

Silvicultural Practices - Vegetation management systems and methods for forest habitat, tree species diversity, site preparation, snag density, and reproduction actions

Soil and Water - Ensures clean water and soil productivity through protection measures, erosion control, wetlands protection, and stream course identification

Wildlife - Provides management specificity for single or groups of species, and for game habitat development and management purposes

Forest-wide Standards and Guidelines

Air Quality

FW-001 **Management activities will maintain air quality that meets applicable Federal and State Standards and Regulations**

FW-002 **Management activities will maintain air quality in Environmental Protection Agency (EPA) determined non-attainment areas in conformity with the State Implementation Plan. Conformity determinations will be made and documented as required by the State Implementation Plan and regulations.**

FW-003 **Coordinate with appropriate authorities on actions requiring a permit for new or modified air pollution sources.**

FW-004 **Apply applicable Forest Service or State Smoke Management Guidelines during prescribed burns.**

Aquatic Resources

FW-011 **Management emphasis for man-made reservoirs, lakes and ponds capable of sustaining a fishery as recreation:**

a *Native fisheries will be emphasized, some cold water recreational fisheries management (such as trout stocking in ponds or lakes during winter months) is permitted*

b *Management priority will be based on factors which include financial and human resources, accessibility and recreational opportunity*

c *Maintain about 30 percent of the shoreline of ponds in emergent aquatic vegetation for bank protection and for fish and waterfowl habitat*

d *In ponds capable of sustaining a fishery, maintain 20 to 50 percent of the surface area in submergent aquatic vegetation for fish and waterfowl habitat*

FW-012 **Aquatic weed and pest control, including use of EPA approved biological agents or aquatic pesticides, and fisheries habitat improvements are permitted pending appropriate site-specific environmental analysis.**

Consider biological control as first priority before chemical applications are proposed

FW-013 **Construction of new impoundments, reservoirs, lakes and ponds shall follow appropriate construction standards and site specific environmental analysis.**

a *Retain 20 percent of existing woody vegetation, when available, for fish habitat in newly constructed ponds and lakes capable of sustaining a fishery*

b *Fisheries habitat is considered through retention of live or dead woody material, structural islands, or other material designed to provide adequate fisheries cover*

c *Design at least 30 percent or more of each water body shoreline to be of an approximate 3 1 grade*

FW-014 **Natural lakes, perennial and intermittent streams will be managed for native species and communities (see Management Area 4).**

FW-015 **Where beneficial uses of the aquatic resource are being impaired, investigate the cause and determine measures and/or methods needed to improve the aquatic ecological condition.**

a *Beneficial uses are designated by the State of Texas Surface Water Quality Standards More restrictive standards may be assigned as a result of site-specific analysis by fisheries or watershed specialists, or information provided by Aquatic Ecosystem Inventories Evaluation should use an ecosystem approach and ecological condition will include physical, biological and chemical parameters*

b *Implementation of measures for improvement will be done considering costs, benefits, and appropriate environmental considerations or analysis*

Biological Diversity

FW-021 **Evaluate older forest stands scheduled for entry and management that demonstrate old-growth characteristics during site-specific environmental analysis.**

a *Older Forest stands (100 years old or older) may be identified during site-specific analysis as providing opportunities for accomplishing Forest-wide old growth objectives After evaluation, stands so designated will then be managed to enhance that older forest character (see Plan Appendix I)*

b *In stands where old-growth character are present and the stand contributes to an identified need for old growth, the priority action for that stand should facilitate maintaining or improving that older forest condition unless emergency or other circumstances dictate other management strategies and desired conditions*

FW-022 **Manage all overstory and understory vegetation within SMZ's of intermittent and perennial streams and lakes, as described in Management Area 4 to ensure ecosystem integrity.**

a *Management activities such as stream crossings, recreation development, pipelines, safety hazard reduction, wildlife habitat improvements, and insect and disease control are permitted pending appropriate site-specific analysis*

b *Rivers or stream channels may be cleared of large dead woody material to the minimum extent that allows safe boat passage*

FW-023 **Maintain or re-establish ground cover, and repair areas of bare soil using appropriate native and desirable non-native plant species.**

a *Encourage re-establishment of native species as determined through site-specific analysis*

b *Watershed improvement activities or facilities may be revegetated with desirable non-natives where necessary to quickly establish a protective vegetative cover, however,*

subsequent management of these areas shall be prescribed to restore these to native plant communities

FW-024 **Retain snags and recognizable den trees during all compartment entries, silvicultural treatments, or thinnings**

Snag and hardwood den tree retention densities, and dead and down woody material will be provided through silvicultural practices used to achieve the desired future condition for each management area

Endangered, Threatened Species or Communities

FW-025 **Inventory, identify, protect and manage habitat for proposed endangered, threatened, sensitive species and exemplary plant communities.**

a *Conduct surveys for species and biological reference areas*

b *Habitat for these species and exemplary communities will be protected and managed according to approved guidelines developed by U. S Forest Service (USFS) specialists, and through consultation with other Federal and State agencies*

c *A biological evaluation will be done on all site specific projects that may affect these species*

Ecological Classification System

FW-026 **Management area direction will be guided by information based on the Ecological Classification System (ECS). Ecological units for this Plan use Landtype Association(s) (LTA's); projects developed from this Plan will utilize appropriate ecological unit information.**

Each management area has specific reference to LTA's that make up the area Projects proposed within these areas will utilize the physical and biological characteristics of the LTA, landtype and landtype phases, and Plan Appendix A information

FW-027 **Retain clumps of deciduous trees in pine regeneration areas, according to vegetation management guidelines and ECS vegetation characteristics, to meet present and future desired conditions such as species composition and den trees**

FW-028 **Manage species, habitats and plant communities using the Management Indicator (species) concept, modified through site-specific data and ECS information.**

Manage exotic species and noxious weeds to promote protection and sustainability of native species and communities

Chemicals

FW-031-1 **For application of herbicides (see integrated pest management for other chemical applications) use Standards from the Record of Decision (ROD) of the Coastal Plain-Piedmont Vegetation Management Final Environmental Impact Statement (FEIS). Those that specifically apply (as indicated by specific vegetation management VM standard) or and as amended are:**

FW-031-2 Herbicides are applied according to labeling information and the site-specific analysis done for projects This labeling and analysis is used to choose the herbicide, rate, and application method for the site They are also used to select measures to protect human and wildlife health, non-target vegetation, water, soil, and threatened, endangered, proposed, and sensitive species Site conditions may require stricter constraints than those on the label, but labeling standards are never relaxed (VM-54)

FW-031-3 Only herbicide formulations (active and inert ingredients) and additives registered by EPA and approved by the Forest Service are applied (VM-55)

FW-031-4 Herbicides and application methods are chosen to minimize risk to human and wildlife health and the environment The following criteria apply to information in table II (p. II-42 in the final Environmental Impact Statement (EIS VM-56)

Class A herbicide/method combinations are first choice

Class B combinations are used only if no Class A herbicide can meet project objectives, and then only if adverse effects are mitigated to acceptable levels

Class C combinations are used only if no Class A or B herbicide can meet project objectives, and then only if adverse effects are mitigated to acceptable levels.

Class D combinations are never used

NOTE The Regional Forester has, in this VM Record of Decision, strengthened this mitigation as follows: No Class B or C chemical may be used on any project, except with Regional Forester approval Approval will be granted only if a site-specific analysis shows that no other treatment would be effective and that all adverse health and environmental effects will be fully mitigated (VM-56)

FW-031-5 Herbicides are applied at the *lowest* rate effective in meeting project objectives and according to guidelines for protecting human (NRC 1983) and wildlife health (EPA 1986a) Application rate and work time must not exceed typical levels (appendix A, tables 4-4 to 4-6) unless a supplementary risk assessment shows that proposed rates do not increase risk to human or wildlife health or the environment beyond standards discussed in Chapter IV Typical application rates (lb/ac) of active ingredient are (VM-57) (Modified by Regional Forester 12/12/89)

	2,4-D/a	2,4-D/e	2,4-DP	DICAMBA	FOSAMINE	GLYPHOS	HEXAZ	IMAZAPYR
AL	2 0	2 5	3 0		6 0	1 5	4 0	0 75
AG							4 0	
ML	2 5	4 0	4 0	2 0	7 8	1 5	4 0	0 75
MG							4 0	
HG							4 0	
HF	2 0	2 0	1 0	2 0		1 0	4 0	0 75
HB		1 7	1 2					
HS							4 0	
HC	2 0			1 5		1 3		0 75

	FUEL OIL	LIMONENE	PICLORAM	SULFOMET	TEBUT	TRICLOPYR/a	TRICLOPYR/e
AL	0 5	0 9	0 5	0 13	1 0	4 0	4 0
AG					1 0		
ML	2 0	0 9	0 7	0 17	1 0	4 0	4 0
MG					1 0		
HG							
HF	1 5	0 9	0 4	0 06	4 0	2 0	2 0
HB	1 0	0 9					4 0
HS					4 0		
HC			0 3			4 0	

KEY
AL = aerial liquid treatment
AG = aerial granular treatment
ML = mechanical liquid treatment
MG = mechanical granular treatment
HG = manual (hand) granular treatment
HF = manual foliar broadcast treatment
HB = manual basal treatment
HS = manual soil-spot treatment
HC = manual cut-surface treatment

GLYPHOS = glyphosate
HEXAZ = hexazinone
SULFOMET = sulfometuron methyl
TEBUT = tebuthiuron
/a = amine formulation
/e = ester formulation

Note This table updates and replaces the table of Typical Application Rates shown in the VM-ROD on page A-10

FW-031-6 Method and timing of application are chosen to achieve project objectives while minimizing effects on non-target vegetation and other environmental elements Selective treatment is preferred over broadcast treatment Public safety during such uses as viewing, hiking, berry picking, and fuelwood gathering is a priority concern Application methods from most to least selective are (VM-58)

a Cut surface treatments
b Basal stem treatments
c Directed foliar treatments
d Soil spot (spot around) treatments
e Soil spot (spot grid) treatments
f Manual granular treatments
g Manual/mechanical broadcast treatments
h Helicopter treatments

FW-031-7 Areas are not prescribed burned for at least 30 days after herbicide treatment (VM-59)

FW-031-8 Weather is monitored and the project is suspended if temperature, humidity, or wind become unfavorable as follows (VM-60)

	Temperatures Higher Than	Humidity Less Than	Wind (at Target) Greater Than
Ground			
Hand (cut surface)	N A	N A	N A
Hand (other)	98F	20%	15 mph
Mechanical (liquid)	95F	30%	10 mph
Mechanical (granular)	N A	N A	10 mph
Aerial			
Liquid	90F	50%	5 mph
Granular	N A	N A	8 mph

FW-031-9 Nozzles that produce large droplets or streams of herbicide are used Nozzles that produce fine droplets are used only for hand treatment where distance from nozzle to target does not exceed 8 feet (VM-61)

FW-031-10 A certified pesticide applicator supervises each Forest Service application crew and trains crew members in personal safety, proper handling and application of herbicides, and proper disposal of empty containers (VM-62)

FW-031-11 Each Contracting Officer's Representative (COR), who must ensure compliance on contracted herbicide projects, is a certified pesticide applicator Contract inspectors are trained in herbicide use, handling, and application (VM-63)

FW-031-12 Forest Service workers who handle herbicides must wear a long-sleeved shirt and long pants made of tightly woven cloth that must be cleaned daily They must wear a hard hat with plastic liner, waterproofed boots and gloves, and other safety clothing and equipment

required by labeling They must bring a change of clothes to the field in case their clothes become contaminated (VM-64)

FW-031-13 Each Forest Service crew must take soap, wash water separate from drinking water, eye-wash bottles, and first aid equipment to the field (VM-65)

FW-031-14 Contractors ensure that their workers use proper protective clothing and safety equipment required by labeling for the herbicide and application method (VM-66)

FW-031-15 Workers must not walk through areas treated by broadcast foliar methods on the day of application (VM-67)

FW-031-16 Supervisors must ensure that monitoring is adequate to prevent adverse health effects Workers displaying unusual sensitivity to the herbicide in use are medically evaluated and, if tested as sensitive to the herbicide in use, are reassigned to other activities (VM-68)

FW-031-17 Notice signs [Forest Service Handbook (FSH) 7109.11] are clearly posted, with special care taken in areas of anticipated visitor use People living within one-fourth mile of an area to be treated aerially are notified during project planning and shortly before treatment (VM-69)

FW-031-18 No herbicide is broadcast within 100 feet of private land or 300 feet of a private residence, unless the landowner agrees to closer treatment Buffers are clearly marked before treatment so applicators can easily see and avoid them (VM-70)

FW-031-19 No soil-active herbicide is applied within 30 feet of the drip line of non-target vegetation (e g , den trees, hardwood inclusions, adjacent stands) within or next to the treated area. Side pruning is allowed, but movement of herbicide to the root systems of non-target plants must be avoided Buffers are clearly marked before treatment so applicators can easily see and avoid them. (VM-71)

FW-031-20 2,4-D, 2,4-DP, and triclopyr are not aerially applied within 300 feet, nor ground-applied within 60 feet, of occupied gray or Indiana bat habitat The same buffers are used with 2,4-D and 2,4-DP around habitat of the endangered Florida scrub jay, and with 2,4-D around habitat of these sensitive animals star-nosed mole, Florida mouse, old-field mouse, masked shrew, southeastern shrew, southern pygmy shrew, long-tail shrew, southern water shrew, southern rock vole, and red-backed vole The same buffers are used with any formulation containing kerosene or diesel oil around habitat of any threatened, endangered, proposed, or sensitive bird during its nesting season Buffers are clearly marked before treatment so applicators can easily see and avoid them (VM-72)

FW-031-21 No herbicide is aerially applied within 300 feet, nor ground-applied within 60 feet, of any threatened, endangered, proposed, or sensitive plant Buffers are clearly marked before treatment so applicators can easily see and avoid them (VM-73)

FW-031-22 Application equipment, empty herbicide containers, clothes worn during treatment, and skin are not cleaned in open water or wells Mixing and cleaning water must come from a public water supply and be transported in separate labeled containers (VM-74)

FW-031-23 Aquifers and public water sources are identified and protected States are consulted to ensure compliance with their ground water protection strategies (VM-75)

FW-031-24 No herbicide is broadcast on rock outcrops or sinkholes No soil-active herbicide with a half-life longer than 3 months is broadcast on slopes over 45 percent, erodible soils, or

aquifer recharge zones Such areas are clearly marked before treatment so applicators can easily see and avoid them (VM-76)

FW-031-25 No herbicide is aerially applied within 100 horizontal feet, nor ground-applied within 30 horizontal feet, of lakes, wetlands, or perennial or intermittent springs and streams No herbicide is applied within 100 horizontal feet of any public or domestic water source Selective treatments (which require added site-specific analysis and use of aquatic-labeled herbicides) may occur within these buffers only to prevent significant environmental damage such as noxious weed infestations Buffers are clearly marked before treatment so applicators can easily see and avoid them (VM-77)

Selected treatments may include a variety of applications such as treatment of woody vegetation or noxious weeds that affect the integrity of dams

FW-031-26 Each aerial herbicide application project must have an operations plan approved by the forest's air safety officer who must ensure that (a) adequate precautions are taken to protect the crew, including equipment certification and hazard identification, (b) areas to be aerially treated are clearly marked, and (c) methods used to avoid buffers and other sensitive areas are safe and effective (VM-78)

FW-031-27 During transport, herbicides, additives, and application equipment are secured to prevent tipping or excess jarring and are carried in a part of the vehicle totally isolated from people, food, clothing, and livestock feed (VM-79)

FW-031-28 Only the amount of herbicide needed for the day's use is brought to the site At day's end, all leftover herbicide is returned to storage. (VM-80)

FW-031-29 Herbicide mixing, loading, or cleaning areas in the field are not located within 200 feet of private land, open water or wells, or other sensitive areas (VM-81)

FW-031-30 During use, equipment to store, transport, mix, or apply herbicides is inspected daily for leaks (VM-82)

FW-031-31 Containers are reused only for their designated purpose Empty herbicide containers are disposed of according to 40 Code of Federal Regulations (CFR) 165 9 *Group I & II Containers* (VM-83)

FW-031-32 Accident preplanning is done in each site-specific analysis Emergency spill plans [Forest Service Manual (FSM) 2109 12, chapter 30] are prepared. In the unlikely event of a spill, the spill is quickly contained and cleaned up, and appropriate agencies and persons are promptly notified (VM-84)

Cultural Resources

FW-041 **Inventories of cultural resources and consultation with the State Historic Preservation Office (SHPO) will be completed for all projects which involve a decision to implement ground disturbing activities.**

FW-042 **Evaluate cultural resources located within a project's area of potential effect, and nominate those which qualify to the National Register.**

FW-043 If archeological or historic resources are encountered during soil disturbing activities, work stops until an archeologist evaluates the site's significance and completes any necessary consultation with SHPO.

Archeological sites will be identified and protected according to approved guidelines

FW-044 Implement the Heritage Program according to the stipulations contained within the Programatic Agreement, among the USFS Southern Region, State Historic Preservation Officers and the Advisory Council on Historic Preservation (R8-PA).

FW-045 Inventories on areas not previously surveyed as part of site-specific analysis will be conducted according to the priorities established in the Heritage Management Plan for the NFGT.

FW-046 Provide interpretive opportunities (developed according to recommendations in the Interpretive Plan) for unusual or outstanding cultural resources where compatible with cultural resource protection.

Facilities

Travel and Access Management

FW-051 Develop the Forest Road System, as needed, to respond to resource and travel management objectives while providing for the appropriate movement of people and products to and through National Forest System lands.

Road and trail construction, reconstruction, and maintenance related activities will occur to support timber management, minerals exploration and development, recreation access, special uses, Forest administration and other management activities.

FW-052 Establish and maintain vegetative cover on slopes and areas outside the driving surface or trail head that were disturbed during road and trail construction and reconstruction activities.

FW-053 Design and construct roads and trails to minimize siltation and maintained to provide surface water drainage away from streams and into vegetated buffer strips or other filtering system.

FW-054 Follow Scenic Resource Standards according to FSH and FSM guidelines for road location planning.

FW-055 Provide road and trail design and construction that allows unrestricted fish passage.

FW-056 Provide appropriate maintenance, operational management and reconstruction of existing dams, roads and trails.

The use of EPA approved herbicides following appropriate site-specific environmental analysis is permitted

FW-057 **Maintain Forest Development Roads to appropriate maintenance level standards for the planned use and traffic.**

The appropriate maintenance level for roads are:

Arterial Roads - Level 4 or 5
Collector Roads - Level 3,4, or 5
Local Roads - Level 1,2,3,4, or 5

Level 1 - Custodial care with road use restrictions.
Level 2 - Limited traffic with brush control for high clearance vehicle.
Level 3 - Limited traffic with rough surface, passenger vehicle use possible with user comfort and convenience a low priority.
Level 4 - Moderate traffic with surface maintenance, passenger vehicle use provided with a moderate degree of user comfort and convenience
Level 5 - High traffic possible with surface maintenance, passenger vehicle use provided with a high degree of user comfort and convenience.

FW-058 **Obliterate existing roads not needed for current or future use and have vegetative cover reestablished on all disturbed areas.**

FW-059 **Apply road use restrictions to protect other resource values.**

a *Transportation routes inventoried in the Forest Transportation Information System (Infrastructure) should remain open for public travel unless restrictions are implemented in reponse to resources or program including but not limited to wildlife, recreation, minerals, fire, soil and water, and road maintenance reduction*

b *A site specific analysis will be prepared for each proposed travelway closure or restriction This analysis shall consider the effects on developed and dispersed recreation including the needs of people with disabilities*

c *Restrictions shall conform to the requirements of 36 CFR 261*

Fire

Prescribed Fire

FW-061 **Utilize prescribed fire as a tool to manage fire-dependent communities and ecosystems, timber production, fuel reduction, forage, range and wildlife habitat improvement in combination with other treatments.**

a *Prescribed burning is conducted in a manner that is in compliance with air quality standards*

b *Prescribed fire frequency and timing will be based on management area direction as guided by Ecological Classification System*

FW-062 **To minimize erosion on firelines, develop water bars as specified in forest-wide soil & water standards and seed bare earth**

Cool season annual grasses such as rye will be sown on freshly disturbed soil for cover crops to protect firelines constructed for winter burns

FW-063 **For vegetation management actions using fire as a tool, the following standards from the Record of Decision of the Coastal Plain-Piedmont Vegetation Management FEIS will be followed.**

FW-063-1 Site-specific planning for all prescribed burns is done by trained resource specialists and approved by the appropriate Forest Service line officer prior to project implementation This planning includes description of treatment area, burn objectives, weather factors and fuel moisture conditions, and resource coordination requirements Coordination requirements include provisions for public and worker safety, burn day notification of appropriate agencies and persons, smoke management to comply with air quality regulations and protect visibility in Class I areas, protection of sensitive features, as well as fireline placement, specific firing patterns, ignition methods, and mop-up and patrol procedures A post-burn evaluation compares treatment results with plan objectives (VM-27)

FW-063-2 Prescribed fires in loblolly and shortleaf even-aged pine stands are generally not done until pines are about 10 to 15 feet tall (or 3 to 4 inches in diameter) at ground level In longleaf pine stands, burns can be used prior to height growth for brownspot disease control when root collars of grass stage seedlings are at least 0 3 to 0 5 inch in diameter After height growth begins, burns can be used once seedlings are 3 to 5 feet tall (VM-28)

Prescribed fire may be used according to approved burning plans for control of brownspot, pre-commercial thinning and other actions appropriate to achieve the desired future condition

FW-063-3 Slash burns are done so they do not consume all litter and duff and alter structure and color of mineral soil on more than 20 percent of the area Steps taken to limit soil heating include use of backing fires on steep slopes, scattering slash piles, and burning heavy fuel pockets separately (VM-29)

FW-063-4 On severely eroded forest soils, any area with an average litter-duff depth of less than 1/2 inch is not burned (VM-30)

FW-063-5 Where needed to prevent erosion, water diversions are installed on firelines during their construction, and the firelines are revegetated promptly after the burn (VM-32)

FW-063-6 Firelines which expose mineral soil are not located in filter strips along lakes, perennial or intermittent springs and streams, wetlands, or water-source seeps, unless tying into lakes, streams or wetlands as firebreaks at designated points with minimal soil disturbance Low-intensity fires with less than 2-foot flame lengths may be allowed to back into the strip along water bodies, as long as they do not kill trees and shrubs that shade the stream The strip's width in feet is at least 30 plus 1 5 times the percent slope (VM-33)

FW-063-7 When wetlands need to be protected from fire, firelines are plowed around them only when the water table is so low that the prescribed fire might otherwise damage wetland vegetation or organic matter. Previous firelines are reused as much as possible (VM-34)

FW-063-8 If a fireline is required next to a wetland, it is not plowed in the transition zone between upland and wetland vegetation except to tie into a natural firebreak (VM-35)

FW-063-9 The best available technology to control smoke emissions is used, including accelerated mop-up, rapid ignition techniques, and burning when moisture conditions limit total smoke production Burning is not done during stagnant weather nor when predictions indicate

that smoke drift into highways, airports, populated areas, or other sensitive areas may be hazardous (VM-37)

FW-063-10 Oak, oak-gum-cypress, and oak-pine stands and inclusions are protected by excluding fire or by using low-intensity backing fires (VM-38)

FW-063-11 Generally, understory burns are not scheduled during nesting season to avoid disrupting reproductive activities Forest managers may, however, use burns to meet specific objectives, such as protecting threatened and endangered species (e g, red-cockaded woodpecker), reestablishing natural ecosystems, controlling brownspot disease and promoting longleaf height growth, and site preparation Burns are planned and executed to avoid damage to habitat of any threatened, endangered, proposed, or sensitive species (such as destruction of bald eagle nest trees) (VM-39)

FW-063-12 Burns are planned to achieve their most desirable distribution for wildlife habitat and to try to break up large, continuous fuel types When consistent with burning objectives, burns are done to create a mosaic pattern of fuel types that complements fuel treatment and wildlife objectives (VM-40)

FW-063-13 Critical values of the Keetch-Byram Drought Code are developed for all major vegetation-soil-landform types on which prescribed fires are conducted Burning is allowed only on days when the Drought Code is less than this critical value (VM-41)

FW-063-14 Prescribed fires are conducted under the direct supervision of a burning boss with fire behavior expertise consistent with the project's complexity All workers must meet health, age, physical and training requirements in FSM 5140, and use protective clothing and equipment (VM-42)

Fire Suppression

FW-064 **Provide a level of protection from wildfire that results in the least total combined cost of presuppression, suppression, and net value change (most efficient level) except where management direction requires a more intense level of protection**

FW-065 **Implement the most efficient level (M.E.L.) fire program budget identified by the Level II Fire Management Analysis and as determined through the annual fire management action plan**

FW-066 **Use an appropriate suppression response which minimizes the combined cost of suppression action and resource damage. The suppression response may be confinement, containment, or control.**

FW-067 **The suppression response is control where life, public safety or private property is threatened.**

Integrated Pest Management

FW-071 **Use the Integrated Pest Management (IPM) Decision Key prior to any management actions to make informed management decisions.**

The IPM Key should help reduce losses to Southern Pine Beetle (SPB), annosus root rot, brown spot disease, fusiform rust, and other pest problems

FW-072 **Use silvicultural strategies to reduce SPB hazard. Prompt and efficient detection and suppression actions is used to minimize losses to SPB.**

FW-073 **Leave trees vacated by SPB in any SPB suppression treatment within special areas unless they pose a potential safety hazard to the crews or public.**

When implementing cut and remove outside of the special management areas, it is recommended that some vacated trees with bark be left to help preserve natural enemy populations

FW-074 **Minimize damage to hardwoods affecting visual quality when SPB treatment actions are implemented unless more important objectives need to be met.**

a *Hardwoods may be cut during SPB treatment actions to*

b *Utilize directional felling to protect adjacent resources*

c *Ensure the safety of crews and forest visitors*

d *Regenerate, improve stand composition, or restore areas as provided through the ECS and pending project level site-specific environmental analysis*

FW-075 **Applications of behavioral chemicals approved by the EPA for operational or experimental use is permitted for SPB suppression, pending appropriate site-specific analysis. When practical or available, behavioral chemicals should receive top priority in special management areas or activities.**

FW-076 **Make SPB and other pest problem treatments compatible with the objectives and desired future condition of management areas.**

The following methods used for controlling SPB normally apply to all management areas unless specifically prohibited:

1. **Cut and remove;**
2. **Cut and leave;**
3. **Cut and hand spray; and**
4. **Pile and burn.**

FW-077 **For SPB control the following standards and guidelines from the Record of Decision of the Southern Pine Beetle FEIS apply.**

SPB General Forest Area

1 In pine stands adjacent to wilderness, where spot spread from wilderness is possible, priority will be given to reducing or eliminating potential losses to SPB For example, stand densities would be lowered and rotation ages shortened to maintain or increase tree vigor (SPB-2)

2 Mitigation of adverse impacts from the cut-and-remove method will be similar to mitigation measures employed during a commercial timber harvest on a National Forest

The guidelines and general mitigating measures for this activity are found in the Forest Service Manual - 2430 Commercial Timber Sales Specific guidelines and mitigating measures are found in forest plan standards and guidelines and timber sale contract clauses Direction pertinent to similar activities on State, private, and otherFederal lands may also apply (SPB-4)

3 When pile and burn is used to control SPB, the work will comply with the Forest Service Manual directions on air quality management for prescribed fire (Chapters 2120, Air Resource Management, 5140, Prescribed Fire, and 5150, Fuel Management) All Federal and State air pollution laws must be followed (SPB-5)

4 Weather conditions will be closely monitored before prescribed burning activities occur to ensure that atmospheric conditions allow for quick smoke dispersal to maintain air quality Air quality values for Class I wildernesses and national forest lands will be protected by conducting prescribed burning under a smoke management plan (SPB-6)

5 Use existing roads or access ways whenever possible for SPB control activities (SPB-9)

General Forest Area and Wilderness (General)

1 Site-specific analysis must be completed for any proposed SPB control action This analysis will determine if a biological evaluation is necessary to determine if any threatened and endangered species or species being proposed for this status may be affected by the treatment If the proposed treatment may affect one of these species or its habitat, consultation with the Fish & Wildlife Service is required under the Endangered Species Act If sensitive species may be affected, coordination with the appropriate Federal or State agencies will occur If adverse impacts could occur, the site-specific biological evaluation will identify possible mitigation measures (SPB-1)

2 Use SPB control methods that will minimize soil disturbance (SPB-2)

3 Use of erosion control measures as soon as possible after the ground-disturbing, SPB-suppression activities are completed to prevent or minimize erosion, sedimentation and long-term site deterioration (SPB-3)

4 The cut-and-hand-spray technique must only be used according to general direction set forth in Forest Service Manual Chapter 2150, Pesticide-Use Management Label instructions for insecticides registered for beetle control must be followed (SPB-5)

5 Standing trees willnot be sprayed with insecticides (SPB-6)

6 Insecticides will not be used in a manner that would adversely affect threatened or endangered species (SPB-7)

7 The potential risk to humans and the environment will be minimized by applying insecticides only according to label instructions, Forest Service policies and other Federal regulations Application will be supervised by a certified pesticide applicator Areas treated with insecticide will be signed and closed to firewood collection (SPB-8)

8 Workers who apply insecticides will be trained to ensure minimum impacts and maximum effectiveness Only those methods that assure proper application of insecticides on the infested tree bole would be used (SPB-9)

9 Riparian ecosystems that encompass floodplains and wetlands will receive appropriate protection. As a minimum, riparian areas will extend 100 feet from the edge of all perennial streams and other perennial water bodies, including lakes Site investigations to identify riparian areas and floodplains will consider the soil and plant characteristics of the site, and will be guided by appropriate Forest Service direction and State requirements Roads that cross riparian areas will be stabilized with rip-rapt vegetative establishment, or other appropriate methods (SPB-10)

10 Logging equipment will be kept out of perennial and intermittent stream channels except on approved, designated crossings Crossings will be at right angles to the stream or riparian area (SPB-11)

RCW Cluster Site Protection

1 Trees vacated by the SPB will not be cut or chemically treated unless necessary to insure public safety (SPB-1)

2 *Inactive and relict cavity trees, if infested, or within a designated treatment buffer* zone, may be cut to secure RCW clusters (Requires evaluation by a Forest Service wildlife biologist) (SPB-2)

3 Uninfested trees within a 200-foot buffer around RCW cavity trees would not be cut or chemically treated unless such control efforts would be likely to prevent SPB infestation of cavity trees (SPB-3)

4 Disturbance in the colony sites will be kept to a minimum especially during the breeding season No salvage operations will be conducted in active colony sites from March 1 through the time red-cockaded woodpecker (RCW) young have fledged (approximately July-August) Control activities would be limited to the felling of trees or chemical treatment, or both, if necessary to secure the colonysite during the breeding season (SPB-4)

5 Control activities within 1/2 mile of RCW clusters will conform to the guidelines set forth in the Forest Service Wildlife Habitat Management Handbook (FSH 2609 23R) Where cut and leave and cut-and-remove techniques are not feasible, and cut and hand spray is used, no standing trees will be sprayed Pile and burn will not be used near active RCW clusters (SPB-5)

Lands

FW-081 **Resolve claims and encroachments on United States (U.S) land.**

FW-082 **Temporary group events consistent with National Forest recreation management objectives are permissable on National Forest lands.**

Property Boundary Management

FW-083 **Identify, post, maintain, and protect property boundaries as per FSM to prevent encroachments and other unauthorized uses.**

Survey, post and maintain boundary lines as feasible with priority for boundaries adjacent to management activities Maintain on a five-year cycle for initial maintenance and 10-year cycle for subsequent maintenance

Landownership Adjustments

FW-084 **Acquire rights-of-way and scenic easements, etc., as appropriate, to meet access or other public program objectives.**

FW-085 **Through exchange, acquisition, interchange or donation, adjust the ownership pattern toward consolidation.**

FW-086 **Acquire those lands needed to support specific resource management objectives.**

a *Use landownership adjustment maps (located at District and Forest Supervisor's offices) and composite or project maps for a generalized indication of objective for a given area In the case of conflict between the map and the following priorities for acquisition, the Forest Supervisor may approve variances*

b *Acquisition will be by the following priority standards*

Priority 1 Acquisition *(includes, but not limited to, composites and project areas)*

a *Land with water frontage (lakes, rivers and perennial streams) with associated riparian areas and wetlands*
b *Lands having habitat for Federally listed endangered or threatened fish, wildlife, or plant species, or other environmentally sensitive lands*
c *Lands having unique historical or cultural resources, when these resources are threatened by change of use or when management may be enhanced by public ownership*
d *Lands primarily of value for outdoor recreation purposes and lands needed for aesthetic protection*
e *Lands needed to support specific existing or future departmental or Congressionally-endorsed programs*
f *Lands adjacent to tracts acquired for the above purposes needed for buffers*

Priority 2 Acquisition

a *Key tracts that are not urgently needed but will promote more effective resource management and meet specific needs of vegetation management, valuable watershed management, research, public recreation or other defined management objective Generally will support consolidation objectives*
b *Lands needed to protect resource values by eliminating or reducing fire risks, soil erosion and trespass occupancies*
c *Lands needed to reduce expenses of the Forest Service and the public in administration and utilization Includes energy expenditures, as well as other common efficiencies Supports consolidation objectives*

Priority 3 Acquisition

All other lands desirable for inclusion in the National Forest System

FW-087 **Acquire lands or interests in lands that ensure access to other public lands and resources. Condemnation may be used if negotiations to acquire fail.**

FW-088 **Prepare and maintain composite and project plans as needed to support purchases in key areas.**

Existing composites are Lake Conroe, Sam Rayburn Reservoir, Big Slough, northwest shore (Toledo Bend), southwest shore (Toledo Bend), and Lone Star Hiking Trail

FW-089 **Land conveyances through exchange or other specific authority will be guided by the following criteria:**

a *Use landownership adjustment map for a generalized indication of objectives for a given area In the case of a conflict between the map and the following criteria, the Forest Supervisor may approve variances*

b *Guidelines for conveyance are*

1 Lands inside or adjacent to communities or intensively developed private land, and chiefly valuable for non-National Forest purposes
2 Small parcels or blocks intermingled with private lands
3 Parcels that will serve a greater public need in State, county, city, other Federal agency ownership, or for cemetery or church expansions
4 Parcels isolated from other National Forest System lands
5 Lands under special use permit and occupied by substantial structural improvements
6 Occupancy trespass cases involving highly valuable structural improvements
7 Parcels within major blocks of private land where the use is substantially for non-forest purpose
8 Parcels having boundaries, or portions of boundaries, with inefficient configurations (Projecting necks or long, narrow strips of land, etc)

FW-090 **Place lands acquired under management consistent with the Management Area (MA) in which they are located unless a different MA is more appropriate upon recommendation of the NFGT ID Team and approval of the Forest Supervisor.**

Minerals

Leasing

Note: The standard lease form contains clauses which require the lessee to protect endangered species, archeological sites, existing structures and facilities, and which allow the Forest Service to require that a proposed drilling site be moved up to 200 meters

FW-101 **Conduct an environmental review of each area proposed for lease to identify any special needs or protection required.**

FW-102 **Incorporate special requirements or limitations for leasing decisions that are appropriate for the management area(s) affected**

FW-103 **Use the Forest Interdisciplinary Team to develop and approve additional lease stipulations or requirements for use where analysis of a specific lease proposal reveals an unanticipated need for protective limitations.**

Applications to Drill, Operating Plans and Seismic Permits

FW-104 **All Applications for Permit to Drill (APD) a well (Federally owned minerals), operating plans or permits (privately owned minerals), and seismic exploration permit applications will be subject to a site-specific analysis appropriate to the rights involved and activity proposed. This analysis considers the anticipated effects on other resource values, mitigating measures, and applicable law, regulation and policy.**

FW-105 **The Forest Service shall recommend reasonable mitigation measures to protect resources in operating plans for privately owned minerals.**

FW-106 **A seismic permit may be issued for land not leased, land leased to a third party, or for federal surface over private minerals, when an appropriate site-specific analysis indicates no significant adverse effect.**

The analysis will include consideration and inclusion of the requirements of all standards and guidelines appropriate to the location of the project

FW-107 **For seismic permits which include private mineral rights, require the applicant to show reasonable proof that the mineral owner has no objection to the proposed project.**

FW-108 **Include the Forest's standard operating requirements plus any site-specific requirements found appropriate during project analysis for each approved APD and seismic exploration permit.**

Encourage the same operating requirements in private rights Operating Plans

FW-109 **Include appropriate reclamation plans for any approved mineral activities.**

a *The Plan for reclamation should contain clear direction that includes planned future management and a desired future condition statement for the area to be restored*

b *Top soil from the site should be stockpiled and used in any future site restoration*

FW-110 Consider proposals for mineral exploration and development in coordination with other resource values

FW-111 The exercise of outstanding rights shall be in accordance with terms in the deed of separation and appropriate State and Federal laws, regulations and policies.

FW-112 The exercise of reserved rights shall be in accordance with deed language, including the attached Secretary's rules and regulations, and appropriate State and Federal laws, regulations, and policies

FW-113 Where reserved or outstanding mineral rights are involved, the mineral owner is encouraged to locate all surface disturbing activities outside streamside management zones as described in MA-4.

Exploration and/or Production

FW-114 In order to reduce adverse impacts during operations on leased federal minerals, the Forest Officer may require changes in the proposed operations to protect the affected values at the proposed site.

a *Changes must be consistent with the lease rights granted and may include modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures*

b *See Mineral management guidelines found in Plan Appendix B*

FW-115 In order to reduce adverse resource impacts during operations on reserved or outstanding rights, the Forest Officer should attempt to negotiate changes where proposals conflict with important surface features or values.

FW-116 If a well is successful and placed into production, the site will be subject to special use requirements outside the lease area and placed into MA-10b until closed and restored to other uses.

FW-117 Require reserve pit fluids to be taken to an approved disposal site or chemically treated on site to meet State Water Quality Standards prior to spreading on appropriate designated National Forest System lands.

FW-118 Return disturbed areas to near pre-construction conditions, unless reclamation plans are designated to benefit other resources.

FW-119 Restrict surface and subsurface use of explosives in seismic operations when needed to protect Federally threatened, endangered, or sensitive species, potable water supplies; and unique features.

FW-120 Require lined pits or portable liquid tanks where federal mineral operations are located in soils susceptible to seepage and groundwater contamination.

a *Require a closed drilling mud system on all federal oil and gas well sites within the 100 year floodplain*

b. *Recommend similar standards on all reserved and outstanding oil and gas operations within these areas*

FW-121 Require mineral management to be compatible with riparian resource management goals and protect aquifers and downstream resources as well as the immediate riparian resource as per the State of Texas regulations.

FW-122 Provide inventory and evaluation data as needed to support proposed exchanges, evaluate development proposals, and inventory common variety minerals materials.

FW-123 Cooperate with Bureau of Land Management (BLM) and/or private mineral owners in the issuance of uranium and lignite exploration permits containing appropriate surface protection requirements.

FW-124 In addition to Forest Service Administration, utilize expertise and enforcement authority of state of Texas and other federal agencies as needed to correct substandard situations such as potential or actual pollution.

FW-125 Permits for alluvial gravel, sand, or fill material will be authorized only for public agencies.

a *No sites will be authorized for private or commercial uses except where valid existing rights occur*

b *Permits for any iron-ore gravel extraction will be prohibited except where valid existing rights occur*

Planning

FW-131 Management activities on the NFGT will be directed through Forest Plan standards and guidelines. Site-specific project level decisions implementing this direction must have appropriate environmental analysis (see Chapter I and Record of Decision for Vegetation Management in the Coastal Plain/Piedmont).

Range

FW-141 Range suitability (grazing) is described in Plan Appendix C. Each management area is designated "suitable or unsuitable" for range management (see range standards for each management area).

Recreation Management

FW-151 Provide roaded-natural recreation opportunities within one-half (1/2) mile of roads that have better than a primitive surface, and which are open to public travel.

FW-152 Provide semi-primitive motorized recreation opportunities within one-half (1/2) mile of trails and local roads that have unimproved or primitive surfaces and which are open to motorized use.

FW-153 Provide semi-primitive non-motorized recreation opportunities in areas that are more than one-half (1/2) mile distance from any roads and trails that are closed to motorized use.

FW-154 Provide signs, maps and/or brochures to help forest visitors locate recreational opportunities.

FW-155 Provide interpretive services opportunity as recommended in the Interpretive Plan

FW-156 As provided by Federal and State regulations, the discharge of firearms will be allowed where life, public safety, or private property is not threatened and no significant resource or property damage is occurring on Forest Service system lands.

FW-157 Develop shooting facilities where demand exists and facilities can be constructed that meet Forest Service safety and resource protection standards.

Trails Management

FW-158 Trail planning, design, construction and maintenance will conform to the USFS Trails Handbook and/or the Trails South Guide.

a *Follow guidelines for construction, management and maintenance of trails as described in USFS Handbooks and Manuals*

b *Old roads and logging trails are utilized where feasible in planning and developing the trail systems*

c *No trace camping is encouraged through informational materials and signing*

d *Designated trails will have a management zone corridor up to 300 feet as/or appropriate for type of trail use, these corridors are to enhance the recreational experience and will be determined through site specific analysis*

e *Multi-use trails may be developed where minimal conflicts occur*

FW-159 **Install waterbars on all trail sections as appropriate to minimize erosion.**

If suitable soil material is not available, then reinforce waterbars with corduroy or similar stabilizing material Minimum waterbar spacings are found under Forest-wide Soil and Water Standards

FW-160 **Designate trails with no gradients exceeding 25 percent.**

FW-161 **Reconstruct multiple or relocate sections of trail that are over 50 feet in length when incised or gullied to a depth of 10 inches or greater, and which occur on slopes exceeding 5 percent.**

ORV Trails and Management

FW-162 **Off-road vehicle (ORV) use and trails will be inventoried, evaluated, managed and monitored to minimize damage and ensure sustainability and integrity of all resources.**

a *Utilize guidelines provided in Plan Appendix E for ORV inventory, management and monitoring*

b *OPEN - The Sabine, northern Angelina and Davy Crockett National Forests will be open to ORV use*

c *RESTRICTED - The Sam Houston National Forest, MA-6 (Longleaf Ridge) and MA-4 (crossings only) will manage ORV use on an identified trail system*

d *CLOSED - All other Management Areas*

FW-163 **Locate ORV use areas and trails to minimize disturbance to wildlife or sensitive plant communities.**

a *Protection of threatened, endangered or sensitive species during critical periods such as nesting, will be ensured*

b *Snags along trails are not normally felled unless they present a definite and immediate safety hazard*

FW-164 **Locate ORV use areas and trails to minimize conflicts between ORV use and other existing or proposed recreational uses of the same or neighboring public lands.**

FW-165 **Provide parking lots for ORV users in areas open to use or areas having designated ORV trails**

FW-166 **Construct cattleguards on ORV trails where they cross fences.**

FW-167 **Permit designated ORV trail crossings at right angles to pipelines, hiking trails, roads and utility rights-of-ways**

FW-168 Relocate or repair existing ORV trails located within floodplains, steep slopes, stream crossings and wet sites to prevent ruts of six inches or deeper on 30 percent of the trail corridor.

ORV Specifications and Safety

FW-169 Emphasize ORV safety and courtesy toward other forest users. Utilize maps, brochures, Recreation Opportunity Guides (ROG), "Tread Lightly" and personal contacts with individuals, organized groups, and distributors.

FW-170 Notify users, through signing of ORV trail conditions, alerting drivers to difficulty levels, unusual hazards, road crossings, and other special situations.

FW-171 Sign ORV trails and road crossings to adequately promote proper use.

FW-172 All ORV's and ORV operators must meet state requirements and regulations.

FW-173 Maximum permissible noise level for ORV use on National Forest lands will be less than 99 decibels.

FW-174 Design, select and manage ORV trails to maintain safe conditions.

a *Trails will be constructed for specific ORV width and weight limitations, restrictions will be placed on ORV trails to ensure proper use and safety*

b *Bridges and culverts should be installed for safety and resource protection purposes, but are not usually installed for visitor convenience*

Scenic Resources

FW-185 Include scenic resource assessment and recommendations during project analysis for proposed actions.

Consult the Scenic Resource Management matrix for guidance during project analysis for management actions that affect the visual resource Specific project situations may require additional site specific information during analysis to address scenery and visual quality The following VQO matrix should be used as a guide during project level analysis

Coordination Guidelines to Meet Visual Quality Objective

Cultural Practice	Retention VQO	Partial Retention VQO	Modification VQO	Max Mod VQO
Clearcut	O	ABCDEGIKQXY3	BCDEHILNXY3	D
Seed-Tree Cut	ABCDFIKMSXY23	ABCDEHIKQSXY23	BCDEHILNSXY3	D
Shelterwood Cut	ABDIKMSXY	ABDIKMSXY	BDEILNSXY	D
-Irregular				
-Modified				
-Two-aged shelterwood				
Selection Cut	DIKMSXY	DIKQSXY	ILNSXY	--
Salvage/Sanitation	ABCDIKMSXY3	ABCDIKQX3	BCDEILNX3	--
PreCommercial Thin	IKXB	IKXB	BILX	--
Commercial Thin	BDIKMRSXY3	BDIKQRSXY3	BDILNRSX3	--
Shear Site Prep	KX34	KX34	LX3	--
Chop Site Prep	KX34	KX34	LX3	--
Chain Saw Site Prep	IKX3	IKX3	ILX3	--
Herbicide Treatment	O	O	--	--
Windrowing	O	O	--	--
Prescribed Burning				
-Mixed Forest Areas	DTUW	DTUW	DV	D
-Longleaf/RCW Areas	DTUW	DW	DV	D
Special Uses	A	A	A	A
Minerals	P	--	--	--
-Earthtone painted facilities on grassland areas				
Access Roads	YZ	YZ	--	--

Legend for Coordination Guidelines

A Request Landscape Architect Assistance during prescription preparation

B Establish irregular stand shape, avoiding straight lines or geometric forms, follow natural land features (except as necessary along property lines)

C Feather the edge of a cut by retaining mid and understory trees in a 25-100 foot zone

D Favor flowering and other visually attractive vegetation to enhance variety when leaving vegetation

E Reduce openings along roadways to as narrow as possible (1/4 mile maximum)

F Limit maximum acreage of opening to 10 acres visible from any location on a travelway or lake

G Limit maximum area of opening to 15 acres visible from any location on a travelway or lake

H Limit maximum area of opening to 25 acres visible from any location on a travelway or lake

I Direct felling cuts away from travelway or lake within 200 foot lop and scatter zone (consider adjacent trees that may fall in 200 foot zone).

K Lop to lie within 2 foot of ground or chip or remove slash visible within 200 foot from edge of travelway

L Lop to lie within 2 foot of ground within 100 foot zone beyond travelway edge

M Exclude log landings unless they can be completely screened from view and completely restored, (except where terrain and/or other resources dictate)

N Log landings no closer than 300 foot from edge of (major public) travelway, except where terrain or other resources dictate

O Not acceptable

P For surface leases do not allow surface occupancy for well sites, storage and manufacturing facilities located over federally owned minerals, recommend same on areas of reserved and outstanding rights

Q Locate log decks out of sight of travelway
R Vary densities of thinnings if possible (retain more trees closer to the viewshed)
S Apply marking of leave trees so it is not visible from travelway
T Early spring burning (February, March) to minimize brown up time
U Attempt to keep overstory crown scorch at or below 10 percent, with bark char generally under 4 feet in height at developed recreation sites, and 6 feet along travelways
V Attempt to keep overstory crown scorch at or below 20 percent, with bark char generally under 8 ft in height
W Wind should be blowing away from public roads
X Schedule work during period of minimum recreation use
Y Access roads should be located a minimum of 1/4 mile apart, should intersect existing roads at or near 90° and 150 to 200 feet from intersection should curve to prevent continuous view down road
Z Remove visible road construction debris and slash
2 Vary number of seed trees per acre (up to twice normal) Vary spacing of seed trees
3 Utilize hardwood clumps and individual trees to increase variety in Pine/Hardwood communities and other sites compatible with the Ecological Classification System information
4 Site prep burn

Note Exceptions to coordination requirements may become necessary or desirable in certain specific locations When this situation arises a written statement of exception should be included in the prescription and the reason(s) for the exception The Forest Landscape Architect should be involved in the EA process

Note Travelways as used in this matrix should be considered public roads and trails for which the Visual Quality Objectives (VQO) zone exists

Silvicultural Practices

FW-192 **Match the forest type to be managed for a given stand to site suitability as guided by using information provided in the Ecological Landtype Association (LTA) descriptions**

Use the site's soils, landform information, and species' silvics when selecting the forest type to manage if the ecological unit classification is incomplete Generally ecological units will favor longleaf on the Clayey Uplands, Sandy Uplands, and Mayflower Upland LTA's, shortleaf or upland hardwoods on Lignitic Uplands, Redlands, Sparta Sandhills, or Crockett Clay Hill LTA's, loblolly and/or upland hardwood on the San Jacinto Flatwoods, Big Thicket, and Raven LTA's and bottomland hardwoods on floodplain and alluvial sites

FW-193 **Use silvicultural systems and their associated regeneration methods that best meet the MA's desired future condition, objectives, and management requirements**

a *The selected silvicultural system and regeneration method shall be consistent with current scientific knowledge and determined by project level site specific environmental analysis Generally uneven-aged regeneration methods will be considered in areas with high visual sensitivity and in areas where tolerant species are being regenerated*

b *Generally even-aged and two-aged regenertion methods will be considered in areas where an intolerant species is being regenerated and in areas being restored to longleaf and shortleaf pines*

FW-194 **Use clearcutting only when it is determined to be the optimum regeneration to meet the Plan's objectives and requirements, as determined by site-specific environmental analysis. [National Forest Management Act (NFMA)]**

FW-195 **Clearcutting is limited to areas that involve one or more of the following circumstances. (These circumstances may be used to determine optimality following site-specific environmental analysis.)**

a *To establish, enhance, or maintain habitat for threatened, endangered, or sensitive species*

b *To enhance wildlife habitat or water yield values, or to provide for recreation, scenic vistas, utility lines, road corridors, facility sites, reservoirs, or similar development*

c *To rehabilitate lands adversely impacted by events such as fires, windstorms, or insect or disease infestations*

d *To preclude or minimize the occurrence of potentially adverse impacts or insect or disease infestations, windthrow, logging damage, or other factors affecting forest health*

e *To provide for the establishment and growth of desired trees or other vegetative species that are shade intolerant*

f *To rehabilitate poorly stocked stands due to past management practices or natural events*

g *To meet research needs*

FW-196 **Seed-tree cutting, shelterwood cutting, two-aged and other cuts designed to regenerate even-aged stands of timber will be used only if it is determined to be appropriate to meet the plan objectives and requirements as determined by site specific environmental analysis.**

FW-197 **Areas adjacent to or in proximity of even-aged harvest units should not be scheduled for regeneration entry until openings from earlier harvests have been regenerated, have taken on a regenerated appearance and are no longer considered openings.**

An even-aged regeneration area will no longer be considered an opening when the certified re-established stand has reached a height that is approximately 20 percent of the height of the tallest adjacent stand Heights will be based on the average of the dominant and codominant trees in the re-established and tallest adjacent stands The percentage relationship may vary from site to site and will be determined following project level site specific environmental analysis The determination of the height relationship will be made at the time of silvicultural examination

FW-198 **The maximum size of opening to be created by a planned even-aged regeneration method in one operation, except as provided by the guideline for this standard, is 80 acres for the southern yellow pine types, 40 acres for all other species.**

The size limits may be exceeded on an individual timber sale basis after 60 days public notice and review, and approval by the Regional Forester These acreage limits do not apply to areas harvested as a result of insect and disease suppression measures and salvage of damaged trees resulting from natural catastrophe

FW-199 **Separate planned even aged regeneration cuts from each other by a minimum distance of 330 feet.**

FW-200 **The BDQ method (basal area, maximum diameter, and constant ratio in succession of diameter classes) will be used to create and maintain a balanced uneven-aged structure when a site-specific analysis determines single-tree selection will best meet DFC**

The first two entries for group selection may be supplemented with some even-aged management techniques, but ultimately, be managed with the BDQ method

FW-201 **Design thinnings in forest stands to maintain optimum tree densities that lead to achieving the MA's product objectives, reduce SPB hazard, favor diversity, and manage for the desired species of trees.**

FW-202 **When artificial regeneration is determined appropriate, use genetically improved seed or seedlings, when available.**

FW-203 **Check regeneration areas at one and three years to determine any additional cultural needs. The third year check will be used to certify that successful stand re-establishment has taken place.**

a *Consider scheduling stands for release when a desirable number of seedlings are not "free-to-grow" or when competition for moisture and nutrients results in less than average growth for the site's capability*

b *Precommercially thin loblolly and shortleaf stands at or before age 5 Precommercially thin longleaf stands on or before age 10*

FW-204 **For vegetation management the following standards from the Record of Decision of the Coastal Plains-Piedmont Vegetation Management FEIS will be used.**

FW-204-1 Methods that maintain stocking levels (stems per acre) and improve growth rates are used (following table) (VM-5)

Table II-2 - *Number of desirable stems per acre

Forest Type	Lower Level	Target Level	Upper Level
Loblolly pine	300	500-700	900
Shortleaf pine	300	500-700	900
Longleaf pine	400	600-900	1,200
Mixed pine-hardwood	300	400-600	900
Hardwoods (all species)	150	250-350	500

* Stocking levels shown are guides, and must be used in conjunction with professional judgment to determine restocking levels for a specific site

FW-204-2 Pine stands receive release and weeding necessary to meet growth rates and stocking levels established in Forest Land and Resource Management Plans Stands are considered for release when the desired seedlings are not free to grow, when competing growth threatens to overtop and compete directly for sunlight, moisture, and nutrients, or when competition results in less-than-average growth for comparable sites (VM-6)

FW-204-3 Precommercial thinning of pine (usually done before age 10 to 15 years) is considered when stem density exceeds the upper level of restocking standards. (VM-7)

FW-204-4 Hardwood stands are generally not released Clumps of competing stems are removed, however, where they may interfere with desired trees (VM-8)

FW-204-5 Hardwood stands, where codominant trees of seedling (not sprout) origin are 25 feet or taller, are considered for precommercial thinning (VM-9)

FW-204-6 Safety equipment for Forest Service workers (such as hard hats, eye and ear protection, chaps, and fire retardant clothes) is worn as determined by a Job Hazard Analysis specified in the Health and Safety Code Handbook (FSH 6709 11) This analysis estimates risks to specific body parts and prescribes needed protection (VM-13)

FW-204-7 Each forest works with utility special-use permittees to establish VQO (such as wildlife, watershed, recreation, visual quality) for location of new utility lines and maintenance of existing ones These objectives determine maintenance techniques and strategies (VM-19)

FW-204-8 Where feasible, low-growing shrubs and grasses are established and maintained along utility lines where wildlife and aesthetic objectives are dominant (VM-20)

FW-204-9 Permanent vegetation is established and maintained on intermittent service roads when they are closed and on cut and fill slopes of all roads (VM-21)

FW-204-10 Where practical, native flowering species are established, maintained, and enhanced on intermittent service roads when they are closed and on cut and fill slopes of all roads (VM-22)

FW-204-11 Vegetation along trails is treated to maintenance levels identified in the publication "Trails South" Priority is given to correcting unsafe conditions, preventing resource damage, and providing for intended recreation experience level (VM-23)

FW-204-12 When managing for range forage species, wildlife and livestock use should not exceed 50 percent of current annual growth of key grass species, 20 percent of total annual production of key forb species, and 20 percent of current annual growth of key shrub species (VM-24)

FW-204-13 Each national forest and grassland must include vegetation management in its management review process Forest Supervisors must conduct periodic vegetation management activity reviews At a minimum, reviews must evaluate adequacy of vegetation management mitigations and monitoring (VM-25)

FW-204-14 Using existing reporting systems, each national forest and grassland must report implementation of its vegetation management program annually Every five years, at most, Regional Office staff must assess these reports to be sure that the vegetation management program in the Coastal Plains/Piedmont approximates the acreage distribution of methods and tools estimated for alternative MODIFIED G (VM-26)

FW-204-15 Prompt revegetation is done if treatments leave insufficient ground cover to control erosion by the end of the first growing season (VM-43)

FW-204-16 Only mowing, chopping, shearing, ripping, and scarifying are used on sustained slopes over 15 percent No mechanical equipment is used on sustained slopes over 35 percent (VM-44)

FW-204-17 Mechanical site preparation is not done on sustained slopes over 20 percent with erodible or failure-prone soils (VM-45)

FW-204-18 To limit soil compaction, no mechanical equipment is used on plastic soils when the water table is within 12 inches of the surface, or when soil moisture exceeds the plastic limit Soil moisture exceeds the plastic limit if the soil can be rolled to pencil size without breaking or crumbling (VM-46)

FW-204-19 Mechanical equipment is operated so that furrows and soil indentations are aligned on the contour (with grades under 5 percent) (VM-47)

FW-204-20 Windrows and piles are spaced no more than 200 feet apart to limit soil exposure, soil compaction, and nutrient loss from piling and raking Windrows are aligned on the contour (VM-49)

FW-204-21 When piling, at least 80 percent of the area must retain some ground cover of litter and duff, and soil must not be displaced by piling rakes (VM-50)

FW-204-22 All trails, roads, ditches, and other improvements in the project area are kept free of logs, slash, and debris Any road, trail, ditch, or other improvement damaged by operations is promptly repaired (VM-52)

FW-204-23 Forest Service equipment operators must demonstrate proficiency with the equipment and be licensed to operate it A helper must direct the operator where safety is compromised by terrain or limited sight distance (VM-53)

FW-204-24 Chain saw operators must be periodically certified and demonstrate proficiency with chain saws (VM-85)

FW-204-25 Forest Service workers must comply with dress and safety standards specified in the Health and Safety Code Handbook (FSH 6709-11) (VM-86)

Soil and Water

FW-211 **Maintain soil erosion within tolerance levels for that soil type and minimize increases in stream turbidity, (See Plan Appendix F) and meet non-point source pollution goals and aquatic habitat objectives.**

FW-212 **Do not operate equipment if damage occurs during wet ground conditions.**

Operation of equipment should generally be stopped when 30 percent of the traffic area has ruts that are 6 inches or deeper Exceptions for pond construction, soil erosion and rehabilitation, facility maintenance and construction or fire suppression activities may apply

FW-213 **Require a closed drilling mud system on all federal oil and gas well sites within the 100 year floodplain.**

Recommend a closed drilling mud system on all reserved and outstanding oil and gas well sites within 100 year floodplain

FW-214 **Design roads according to Best Management Practices (BMP's). Implementation of construction and maintenance conforms to BMP's to meet State Water Quality Standards.**

FW-215 **Construct waterbars at an angle of 30 to 40 degrees downslope with the centerline of unimproved roads, trails and firelines; the minimum waterbar height will be 1.5 feet (compacted) and the minimum channel depth will be one foot.**

FW-216 **Employ the following maximum waterbar spacings on unimproved roads, fire lines and trails:**

Slope Percent	Maximum Spacing
0 5-2	300 feet
2-4	190 feet
4-6	150 feet
6-8	130 feet
8-10	120 feet
10-12	110 feet
12-15	80 feet
15-20	60 feet
20+	40 feet

Wetlands

FW-217 **Identify and protect wet sites, jurisdictional wetlands, bogs and seepage zones through direction provided in Management Area 4 (MA-4).**

a *Inventory and identification criteria can be found in the Texas Natural Heritage Report and in Plan Appendix A, Ecological Classification System (ECS) descriptions*

b *Jurisdictional wetlands will be identified and monitored on a regular basis to ensure protection and functional integrity*

c *Certain sites identified for mineral activities may have additional stipulations as appropriate on a case-by case basis*

Ephemeral Streamside Zones

FW-218 **Identify ephemeral streamcourses during site-specific analysis and determine the need to provide additional protection. Characteristics of the individual streamcourse, soils, slope of the adjoining terrain and location are considered during analysis.**

NOTE: See MA-4 for perennial and intermittent stream protection.

a *Ephemeral streamcourses exist throughout the Forest and require different degrees of management, depending upon the stream's characteristics and the proposed management actions In some cases, specific limitations on various types of work are necessary Because of the varied nature of these water courses, the protective measures needed are evaluated on a case-by-case basis This evaluation will be accomplished during the environmental analysis for any proposed projects which would affect an ephemeral stream(s)*

b *Protect ephemeral stream course characteristics if deemed appropriate during site-specific environmental analysis and through guidance described in MA-4*

c *Protective measures include stream crossing designations, slash removal, equipment entry and use restrictions, and other items as described in the Timber Sale Administrators Handbook (Chapter 3-315)*

d *Ephemeral streams requiring protective measures should have the following management distances established on the head of the stream, as well as both sides of the stream*

Ephemeral Streamside Zones

	Slope Percent						
Soil Erosion Hazard	5	10	15	20	25	30	35+
	Width (ft) both sides from streamcourse						
Slight	33	40	45	--	--	--	--
Moderate	--	45	55	66	80	--	--
Severe	--	--	66	80	95	110	125

Wildlife

FW-221 **Manage bald eagle nest and roost sites as described in the United States Fish and Wildlife Service (USFWS) Habitat Management Guidelines for the Southeast.**

a *Management for each site should be designed on a site-specific basis, directing stand size of 10 acres or larger for specific habitat needs*

b *Limitations on certain management activities may be needed within a one mile radius of active nest sites during the breeding season*

FW-222 **Revegetate or maintain permanent openings for wildlife using desired non-native species or appropriate native plant species.**

a *Encourage re-establishment of native species as determined through site specific analysis and using ECS information*

b *Sites may be revegetated or maintained using non-invasive species to enhance special habitat needs for target wildlife species*

FW-223 **Sustain neotropical migratory bird species habitat through the Management Indicator process.**

a *Identify species during project level site-specific analysis and prioritize habitat development for those species in the project area Subsequent monitoring will be conducted to determine effects of the actions on these species*

b *Conduct annual surveys that assist in identification of trends that will document long-term sustainability of these species*

FW-224 **Active RCW clusters that become established outside of Management Area 2 (MA-2 or HMA) boundaries, will require establishment of a 3/4 mile protective zone and will be managed according to USFS RCW Handbook Guidelines.**

Management Area 1
Upland Forests Ecosystems

Theme

Upland Forests Ecosystems - Landscapes managed for regeneration of forest and woodland communities, including restoration of the longleaf pine-little bluestem, and shortleaf pine-oak-hickory dominated communities, while offering a wide range of compatible multiple uses

Description

This 218,000 acre area replaces approximately one-third (1/3) of the general forest (or Management Area 5 of the 1987 Forest Plan) It is located primarily on the northern and southeastern portions of the Sabine National Forest, the central portion of the Angelina National Forest, and portions of the Davy Crockett National Forest.

This management area is found within the Pineywoods Ecological Region, as described by the Texas Natural Heritage Program (TNHP), and is an area typified by pine dominated forests Within this area, United States Forest Service (USFS) specialists have defined several ecological sub-regions in an Ecological Classification System (ECS) This ECS describes unique physical and biological characteristics of the Pineywoods. The extreme southern end of the Davy Crockett NF, and all of the Angelina and Sabine National Forests occur in the *West Gulf Coastal Plains and Flatwoods Section*. These areas are further subdivided into *Western Coastal Plains Subsection* (consisting of the Mayflower Upland Landtype Association (LTA), the *Southwest Gulf-Flatwoods Subsection* (consisting of San Jacinto Flatwoods LTA), and the *Southwestern Gulf-Coastal Plains Subsection* (consisting of Raven Hills and Big Thicket LTAs)

The remaining areas of Management Area 1 (MA-1) occur in the Western Section of the Mid-Coastal Plains This broad region is further subdivided into the *Northern Subsection* (consisting of the Lignite Uplands LTA), *Mid-Coastal Plains Transition Subsection* (containing Clayey Uplands and areas of Trinity Sandy Uplands LTAs), and *Mid-Coastal-Sandhill Subsection* (containing the Sparta Sandhill LTA). [See Plan Appendix A]

Desired Future Condition

For the **Western Coastal Plains and Mid-Coastal Plains Transition Subsection** (Mayflower Uplands, Deep Sandy Uplands, and Clayey Uplands LTAs) of the southern and central Angelina, Sabine, and Davy Crockett National Forests

Over this landscape you will view open longleaf pine forests, situated on rolling hills with droughty soils These longleaf pine forests will become more obvious and widespread across the landscape, with fewer components of other pine forest communities Ridgetops and upper slopes of hills will be dominated by Longleaf Pine Savanna Communities Historically, in some areas the longleaf type had been replanted to slash pine and these areas will be converted back to the native longleaf as soon as possible The understory vegetation is dominated by perennial prairie grasses (primarily little bluestem, switchgrass, and Indian grass) Interspersed within this Longleaf Pine Ecosystem is a diverse array of mixed forests on the lower slopes of ridges, extending into the streams Hardwood bottomlands, drainages, seeps, and bogs will perpetuate subtle to major hydrologic differences in the uplands. Many stream courses will portray characteristics of the mixed forest ecosystem, although frequent fires on the uplands will limit the development of these mixed forest communities to the very wettest and widest riparian areas Narrow stream courses and wetlands will develop an open aspect similar to the upland communities These inclusions create transitions that begin with pure longleaf pine, grading to mixed species such as loblolly, shortleaf, and oaks, then gradually transcend into bottomland hardwood areas along larger streams

For the **Northern and Mid-Coastal Plains, Western Transition Coastal, and Sandhill Subsections** (Sparta Sandhills, Clayey Uplands, Redlands, and the Lignitic Uplands LTAs) on the northern Sabine and Davy Crockett National Forests

Over this landscape you will view open shortleaf pine forests with a mix of oak and hickory trees situated on hills having deep sandy or red clay soils Ridgetops and upper slopes of droughty hills will be dominated by the Shortleaf Pine-Little Bluestem Communities More moderate rolling terrain and sideslopes with less droughty, loamy soils will be dominated by the Shortleaf-Oak-Hickory Communities The understory vegetation on the dryer hilltops is dominated by fire tolerant shrub and perennial grasses (primarily little bluestem) Woody understory species such as yaupon, sumac, and greenbrier are more prevalent on lower slopes and loamy soils. Interspersed within this Shortleaf Pine Ecosystem are mixed loblolly and hardwood forests (on the lower slopes of ridges extending into the streams). Some hardwood bottomlands will provide hydrologic and plant community diversity

For the **Southwestern Gulf-Flatwoods, Southwest Gulf Coastal Plain Subsection** (Raven Hills, Big Thicket, San Jacinto Flatwoods LTA's) on the Sam Houston National Forest:

Over this landscape you will view open pine forests mixed with some hardwood species These pine uplands are situated on relatively flat to gently rolling terrain The clay loams and sandy loams of this area have excellent moisture holding capacity conducive to a wide range of

tree and understory species Historically, these areas were recognized for their excellent growth potential and were planted to a variety of tree species (some of which are still evident) The understory vegetation is dominated by woody shrubs and subdominant hardwood species Interspersed within this ecosystem are stream courses that have a greater species composition of oak and hickory Within this area the San Jacinto Flatwoods LTA occurs, an area known for what is described as inland hardwood bays This level, mesic oak dominated habitat will be managed for the natural Water Oak-Willow Oak Community typical of this LTA (See Plan Appendix A)

The described landscapes within this management area will provide a range of natural settings, but all will involve an interrelationship with the forested ecosystems Management activities will be evident throughout this area due to a focus on aggressive restoration of longleaf and shortleaf communities, as well as regeneration of all the forest communities Many recreational activities that are provided will be obvious throughout the area, and include many motorized and non-motorized activities Fishing opportunities will be available in the many ponds, lakes, and streams. Horseback, mountain bike, and off-road vehicle (ORV) trail riding opportunities will be evident from signs on both roads and trails Low key interpretive facilities can be seen with informational signs, maps, and brochures readily available to help the recreationist locate public lands and key recreation attractions

A well developed road system is evident in many areas, providing access for recreation, timber production, and other multiple uses The forest communities are diversified through regeneration and management of timber, providing many ages of forest stands Some mixed pine and hardwood stands will be managed to create multiple canopies for selected wildlife species Prescribed fires and their effects will be evident on many of the upland areas

Management Emphasis

This area is managed for regeneration and restoration of the Upland Longleaf and Shortleaf Forest Communities Rotations of 100 years for longleaf, 80 years for shortleaf, 70 years for loblolly, 100 years for mixed stands, and 120 years for all hardwood stands will be used in regulating many of the even-aged forest stands Uneven-aged stands of various sizes will provide continuous forest cover with a mix of sizes and timber products, including some high quality saw timber Restoration opportunities would provide for deviations from these schedules by allowing stands to be converted prior to rotation age or extending beyond These deviations would also allow greater opportunity for timber production Uneven-aged management and two-aged management will be used to provide areas of continuous canopy for scenic values and selected species of wildlife and plants

LTA	Approximate Acres	Dominant Species
Lignitic Uplands	10,400	Shortleaf Pine, Little Bluestem
Redlands	44,000	Little Bluestem, Shortleaf Pine
Clayey Uplands	106,800	Longleaf Pine, Shortleaf-Oak, Hickory
Sandy Uplands	22,700	Longleaf Pine, Little Bluestem
Mayflower Uplands	6,400	Longleaf Pine, Little Bluestem
Sparta Sandhills	10,000	Shortleaf Pine, Little Bluestem
Big Thicket	3,000	Loblolly Pine, Oak
Raven Hills	12,000	Loblolly Pine, Oak
San Jacinto Flatwoods	6,500	Oak
Other	2,700	

Portions of this management area contain lands physically suited for motorized recreation use, including ORV's, and many other forms of dispersed recreation use Motorized trail riding opportunities will be provided both off roads and on roads and trails Management direction will ensure considerations for wildlife, water quality, soil productivity, and biological diversity while providing commercial production of forage and timber, and exploration for and extraction of minerals

Recreational fishing opportunities will be provided in all suitable ponds and streams. Interpretive facilities will be seen providing maps, brochures and/or signs to help the recreationist locate public lands and key recreation attractions Semi-primitive motorized or roaded-natural recreation opportunities will be available

This management area is managed to provide environmentally sensitive commodity production while providing quality wildlife habitat (particularly for early successional game species), and quality dispersed recreation opportunities Diversity will be emphasized between forested stands, providing a full range of successional stages. The diversity of plant and animal communities will reflect those described within the ecological LTAs

Specific activities are centered around both consumptive and nonconsumptive use of land and water areas including timber harvest and production, grazing, minerals exploration and production, hiking, fishing, hunting, horseback riding, ORV use, canoeing, nature study, camping, boating, and mountain biking The goals of this management area are to:

* Provide opportunity for timber production, mineral exploration and development, and limited grazing while maintaining a predominantly natural appearing landscape, clean water, productive soil, little soil erosion, viable populations of wildlife, and habitat for threatened, endangered, or sensitive species of plants and animals,

* Provide a full spectrum of dispersed recreation opportunities through the management of user activities and natural resource settings as follows:

  - Provide users the opportunity to experience a high degree of interaction with the natural environment using both motorized and nonmotorized forms of recreation This will be done where the challenge and risk opportunities associated with more primitive types of recreation are not important,

  - Provide some opportunities to experience a sense of solitude, tranquility, self-reliance, and closeness to nature These experiences are provided through activities involving the application of outdoor skills in an environment that offers some challenge and risk, and,

  - Provide users the opportunity to enjoy consumptive and nonconsumptive use of wildlife

MA-1 Standards and Guidelines

Air Quality and Aquatic Resources

See Forest-wide Standards and Guidelines

Biological Diversity

MA-1-01 **Provide no allocations for old growth in this management area.**

Older forest conditions will develop on many of the stands approaching maturity The adjacent management areas and streamside management zones will provide linkages to old-growth allocations throughout the forest systems. Other old forest conditions may be found in the inclusions identified within the Texas Natural Heritage Report

Chemicals and Cultural Resources

See Forest-wide Standards and Guidelines

Facilities

MA-1-11 **New trails and roads are developed as necessary to provide access for recreation and other compatible multiple uses.**

New trails, trailheads, or parking facilities may be built where needed to improve recreation opportunities Provide facilities and access to key attractions such as recreational fisheries Provide access for handicapped users in the design and construction of the facilities.

MA-1-12 **All system roads shall be planned, located, designed, constructed, and reconstructed to provide the road density necessary to meet commodity production needs.**

Other criteria considered are

* *Resource management objectives,*
* *Environmental needs and requirements,*
* *Safety,*
* *Traffic requirements,*
* *Vehicle characteristics;*
* *Road users, including users with disabilities;*
* *Use seasons, and*
* *Economics.*

MA-1-13 **Develop a total road density, including temporary roads, for timber sales using a maximum skid distance of approximately 1300 feet.**

MA-1-14 **Construct and reconstruct Forest Development Roads (FDR) to standards appropriate for Traffic Service Levels B through D.**

MA-1-15 **Provide appropriate maintenance and operational management for the FDR System to accommodate commodity production, other access needs, safety, and resource protection.**

This includes the use of Environmental Protection Agency (EPA) approved pesticides where approved through site-specific environmental analysis.

MA-1-16 **Require commercial users of system roads to contribute to road maintenance commensurate with their level of use.**

Contributions will be in the form of reimbursement or actual work performed

MA-1-17 **Local roads constructed or reconstructed in conjunction with timber sale or special use activities may be closed or remain open for secondary purposes.**

These special use roads may be managed as linear wildlife openings, open for limited use if needed for recreation or administrative uses, or available for non-motorized travel

MA-1-18 **Obliterate and revegetate temporary roads as part of the project work.**

Methods used, timing, and mitigation measures shall be in accordance with the site-specific project plan Such roads shall be designed to reestablish vegetative cover on the disturbed area as soon as practicable (not to exceed ten years after the termination of the contract, permit, or lease)

Fire

MA-1-31 **Utilize prescribed fire to manage the various components of the ecosystems.**

a. *Fire frequency will generally range from three to seven years. More frequent burning may be required in certain plant communities, as prescribed by site-specific environmental analysis*

b *Emphasize growing season burning in habitat that was historically maintained by growing season fires*

MA-1-32 **Wildfire suppression response may be confinement, containment, or control.**

Integrated Pest Management

See Forest-wide Standards and Guidelines

Lands

See Forest-wide Standards and Guidelines

Minerals

MA-1-35 **Public owned minerals will be available for leasing.**

To the extent practicable, new exploration and production activities shall be compatible with wildlife management and dispersed recreation goals, including protection of the character of areas providing semi-primitive recreation opportunities Short-term changes in recreation opportunity may occur

Planning

See Forest-wide Standards and Guidelines

Range

MA-1-41 **Livestock grazing is permitted.**

a. *Consider grazing compatibility with adjacent management areas and areas that may require protection from cattle in any allotment authorization.*

b *De-emphasize livestock grazing on forested areas.*

MA-1-42 **Permitted livestock grazing is emphasized during growing season use over dormant season grazing.**

Monitor competition between cattle and wildlife for key browse and herbaceous plant species

Recreation Management

MA-1-51 **Feature semi-primitive motorized and roaded-natural recreation opportunities in this management area.**

The designations should refer to established ROS maps

MA-1-52 **Manage for a wide spectrum of dispersed recreation use opportunities.**

a Provide hiking, horseback, mountain bike, and motorized trail opportunities

b Provide trailhead parking areas for trail users

c *Provide ORV opportunities both on and off permanently marked trails.*

MA-1-53 **Design trails to offer a challenging experience and to blend in with the natural environment.**

They are constructed and maintained to the minimum standard necessary to prevent resource damage, and to protect visual quality and visitor safety

MA-1-54 **Campsites and other areas of concentrated use are managed for a low level of change in natural conditions.**

MA-1-55 **Overused sites are rehabilitated, considering temporary or permanent site closure when other management techniques are not successful.**

Scenic Resources

MA-1-61 **Meet partial retention visual quality objective (VQO) for management along highways, paved State or County roads, and primary Forest Service system roads and trails; and maximum modification and modification in other areas.**

a. *These designations should refer to established VQO maps*

b *Favor midstory trees that provide high visual characteristics such as spring flowering and fall coloring along travelways*

MA-1-62 **Emphasize natural appearing landscapes by designing vegetation treatments to maintain the character of that landscape by following natural vegetation changes and landscape features.**

Well site locations, well site access roads, pipelines, and other site disturbing uses proposed within the foreground of highways or paved State or county roads may require special mitigation Any special measures required will be identified through analysis of the specific proposal

MA-1-63 **Modify timber management practices on visually sensitive areas to maintain or enhance the visual resource, as described in the USFS VQO Handbook and in FW-185.**

Silvicultural Practices

MA-1-71 **The area is classified as suitable for timber production.**

MA-1-72 **Retain, where available, two hardwood den trees, snags, or southern pine beetle (SPB) vacated trees [12 inches diameter breast height (DBH) or greater] per acre during all stand entries and silvicultural treatments.**

After catastrophic events, exceptions may occur based on opportunities for wildlife and other resources (pending site-specific project level environmental analysis).

MA-1-73 **The following rotations are used for scheduled regeneration cuttings.**

ROTATION AGE GUIDELINES

Species	Even-Aged Mgmt
Loblolly	70
Longleaf	100
Shortleaf	80
Upland Hardwood	120
Bottomland Hardwood	120
Mixed Pine/Hardwood	100

Stands may be scheduled before and after the above guides when site-specific analysis determines that it will better achieve the Desired Future Condition

Soil and Water

MA-1-81 **Spot treat roads, skid trails, and log landings with mulch as needed to provide a protective cover according to specifications in appropriate R8-CT provisions as provided in timber sale contracts.**

MA-1-82 **Rip, scarify, and/or break to a minimum depth of four inches tightly compacted soils resulting from timber harvest or other management activities.**

MA-1-83 **After a temporary road, log landing, or skid trail has served its purpose, remove bridges, culverts, ditches, ruts and berms; outslope the road bed and revegetate to 70 percent ground cover within one year.**

MA-1-84 **Require timber purchaser to provide maintenance of erosion control structures until 70 percent of the area is revegetated or up to one year during the period of the contract.**

MA-1-85 **Plan vegetation management practices so as to retain enough duff and vegetation to maintain a healthy forest ecosystem and ensure adequate nutrient cycling.**

MA-1-86 **Vegetation management practices, within site-specific project analyses, shall ensure treatments for protection, enhancement, and/or restoration of soil and water resources.**

MA-1-87 **Meet State approved Best Management Practices (BMPs) during all silvicultural activities so as to meet State water quality standards.**

MA-1-88 **Protect soil and water values by implementing NFGT Permanent ORV Guides for soil and water protection. (See ORV Trail Guidelines, Plan Appendix E)**

Wildlife

See Forest-wide Standards and Guidelines

Management Area 2
Red-cockaded Woodpecker Emphasis

Theme

Upland Pine Woodlands and Savanna ecosystems- Landscapes managed for large, older trees within the longleaf pine-little bluestem, shortleaf pine-oak, and loblolly pine-oak dominated communities, while offering a wide range of compatible multiple uses, but primarily for the recovery of the red-cockaded woodpecker (RCW)

Description

This area of approximately 250,000 acres replaces the other portion of the Forests (as described in Management Area 1 [MA-1]), or approximately one half (1/2) of the general forest identified as Management Area 5 of the 1987 Forest Plan This area also encompasses all of the three-fourths (3/4) mile management zones surrounding active red-cockaded woodpecker (RCW) clusters, and most of those zones around inactive RCW clusters The management philosophy for this area and Management Area 6 incorporates the strategy for "Management of the Red-cockaded Woodpecker on National Forests in the Southern Region Environmental Impact Statement" (Regional RCW Strategy) This strategy for the National Forests and Grasslands in Texas (NFGT) includes more habitat than was adopted through amendment for the NFGT in the ROD for the Regional RCW Strategy, it includes most of the Sam Houston National Forest, the central and southern portions of the Sabine, northern Angelina, and northern and southeast portion of the Davy Crockett National Forests The long-term population objective for the NFGT is 1,385 active clusters (541 on the Sam Houston, 330 on the Davy Crockett, and 514 active clusters on the Angelina [includes MA-6 or Longleaf Ridge] and Sabine National Forests)

This management area and Management Area 6 contains all of the areas affected by the court order and injunction entered June 17, 1988, and the subsequent October 20, 1988 decision rendered by United States District Court Judge Robert M. Parker for the Eastern District of Texas Since this management area modifies the "Comprehensive Plan" developed pursuant to the District Court's orders, it must be submitted to the Court for approval before implementation can occur within the 3/4-mile or 1200-meter cluser areas of the Comprehensive Plan

This management area is found within the Pineywoods Ecological Region as described by the Texas Natural Heritage Program (TNHP), and is an area typified by pine dominated forests Within this area, United States Forest Service (USFS) specialists have defined several ecological subregions in an Ecological Classification System (ECS) This ECS

describes unique physical and biological characteristics of the Pineywoods The extreme southern end of the Davy Crockett National Forest, and all of the Angelina and Sabine National Forests occur in the *West Gulf Coastal Plain and Flatwoods Section* These areas are further subdivided into *Western Coastal Plain Subsection* [consisting of the Mayflower Upland Land Type Association (LTA)], the *Southwest Gulf-Flatwoods Subsection* (consisting of San Jacinto Flatwoods LTA), and the *Southwestern Gulf-Coastal Plain Subsection* (consisting of Raven Hills and Big Thicket LTA's)

The remaining areas of Management Area 2 (MA-2) occur in the *Western Section of the Mid-Coastal Plain.* This broad region is further subdivided into the *Northern Subsection* (consisting of the Lignite Uplands LTA); the *Mid-Coastal Plain Transition Subsection* (containing Clayey Uplands and areas of Trinity Sandy Uplands LTA's), and *Mid-Coastal-Sandhill Subsection* (containing the Sparta Sandhills LTA) [See Plan Appendix A]

These LTA's include some plant communities that reach their western limits in Texas on the NFGT, including longleaf pine forests and savannas, pitcher plant bogs, and evergreen acid seep forests (which are more typical of Southeastern Coastal Plain forests)

Some areas within MA-2 have been identified as having significant wildlife, riparian, and other biological attributes These sites will be managed for the protection and enhancement of these characteristics

Desired Future Condition

For the **Western Coastal Plain and Mid-Coastal Plain Transition Subsection** (Mayflower Uplands, Deep Sandy Uplands, and Clayey Uplands LTA's) of the southern and central Angelina, Sabine, and Davy Crockett National Forests

Over this landscape you will view open longleaf pine forests, situated *on rolling hills with droughty soils Ridgetops and upper slopes of hills* will be dominated by the longleaf pine communities Some areas in this LTA were planted to slash pine, and these areas will be restored to the native longleaf The understory vegetation is dominated by perennial prairie grasses, (primarily little bluestem, switchgrass, and Indian grass) Interspersed within this Longleaf Pine Ecosystem are some mixed forests, on or adjacent to the streams. Hardwood bottomlands, drainages, seeps, and bogs will provide diversity between the uplands and larger stream courses Most stream courses will portray characteristics of the Mixed Forest Ecosystem, but in some situations bottomland plant communities may exist The dominant character of this area is its open mature longleaf pine Some loblolly and shortleaf pine will occur across the landscape, but this will gradually be replaced

by longleaf pine through time due to frequent prescribed fires and selective management activities that perpetuate the older pine woodlands character

For the **Northern and Mid-Coastal Plain, Western Transition Coastal, and Sandhill Subsections** (Sparta Sandhills, Clayey Uplands, Redlands, and the Lignitic Uplands LTA's) on the northern Sabine and Davy Crockett National Forests

Over this landscape you will view open shortleaf pine forests, situated on steep hills having deep sandy or clay soils Ridgetops and upper slopes of droughty hills will be dominated by the Shortleaf Pine-Little Bluestem Communities More moderate or rolling terrain and sideslopes with less droughty, loamy soils will be dominated by the shortleaf pine These shortleaf pine areas will have some fire adapted oak and hickory trees interspersed within the uplands The understory vegetation on the droughtier hilltops will be dominated by perennial prairie grasses (primarily little bluestem) Some woody understory species such as yaupon, sumac, and greenbrier will occur on lower slopes and loamy soils. Interspersed within this Shortleaf Pine Ecosystem is mixed loblolly and hardwood forests on the stream and bottomland areas A few pure hardwood bottomlands will provide hydrologic and plant community diversity Small inclusions of oak-hickory stands will develop on uplands within this area

For the **Southwestern Gulf-Flatwoods, Southwest Gulf Coastal Plain Subsection** (Raven Hills, Big Thicket, San Jacinto Flatwoods LTA's) on the Sam Houston National Forest

Over this landscape you will view open pine forests mixed with some hardwood species These pine uplands are situated on relatively flat to gently rolling terrain The clay loams and sandy loams of this area have excellent moisture holding capacity conducive to a wide range of tree and understory species. Historically, these areas were recognized for their excellent growth potential and were planted to a variety of tree species (some of which are still evident) The understory vegetation is dominated by woody shrubs and subdominant hardwood species Frequent fires to maintain an open, mature pine character will be evident This fire regime will create a more open, grasslike understory characteristic of longleaf or shortleaf communities Interspersed within this ecosystem are stream courses that have a greater species composition of oak and hickory Hardwood bottomlands with characteristic bottomland plant communities exist along the major streams and rivers. These bottomland hardwood inclusions create diversity in the mixed pine-hardwood and upland pine areas. Within this area the San Jacinto Flatwoods LTA occurs, an area known for what is described as inland hardwood bays This level, mesic oak dominated habitat will be managed for the natural Water Oak-Willow Oak Community typical of

this LTA (See Plan Appendix A) Much of this LTA will provide a substantial mature hardwood component essential to certain neotropical migratory bird species

In all LTA's this area will provide a mature forest setting while providing a variety of recreational opportunities, but recreational use will be oriented to the managed forest ecosystems Management activities will be evident throughout this area due to a focus on management and restoration of older forest conditions and communities These communities will provide essential habitat for selected threatened or endangered species that require older pine dominated ecosystems. Management will be directed to provide the best opportunity for protection and enhancement of the RCW population in east Texas

Recreation associated with this area will be on roads from vehicles as well as nonmotorized forms of activity Fishing opportunities will be available in the many ponds, lakes and streams Motorized trail riding opportunities will be evident from signs on both roads and trails. Interpretive facilities can be seen with informational signs, maps, and brochures readily available to help the recreationist locate public lands and key recreation attractions

A developed road system is evident in some areas, providing access for recreation, timber harvest, and other multiple uses The forest communities are maintained through regeneration and management of timber that provide a continuous canopy and a diversity of structure within the forest stands Some pine and mixed pine-hardwood stands will be regenerated to create openings for selected wildlife species Prescribed fires and their effects will be evident on all of the upland areas

RCW Population Management Emphasis

Management Intensity Levels (MIL) for each NFGT RCW subpopulation/population will be assigned to one of four MILs, based on risk of extirpation which is determined by the size and trend of each population Populations in the different MILs will receive varying levels of management with the smaller populations receiving the most intensive protection/management (MIL 4)

The recovery population on the Sam Houston National Forest has a land base large enough to support 541 groups and currently meets MIL 4 criteria. The other populations have several subpopulations that vary from recovery level to less than recovery level (Davy Crockett [330], Angelina [including Longleaf Ridge] and Sabine National Forests [514]), these are all within MIL 4 criteria

In order for a population to move to the next lowest MIL, the trend must be supported by at least 5 years of monitoring data showing the population is increasing. Special monitoring actions are detailed in MA-2 standards 80-5 1 through 80-5 3, in Chapter V, Appendix G, USFWS

Biological Opinion (see EIS Appendix I), and in the Record of Decision for the EIS The monitoring direction as referenced is to be followed, reported, and analyzed in determining RCW population status

The population status determined annually and through multiple-year trends will determine changes is MIL MIL ranking should be evaluated annually based on the five year running average Any population reduction equal to or greater than 10 percent of the highest population experienced in the previous five years would require being assigned to a more intensive MIL

RCW Habitat Management Emphasis

This management area is managed for maintenance of habitat components favorable to the RCW, including restoration and regeneration of the upland pine forest communities A wide range of silvicultural management techniques will be available to provide areas of continuous canopy and within stand diversity for selected species of wildlife and plants

These forest management techniques will also provide for adequate regeneration of the upland pine communities Restoration opportunities will provide for deviations from rotation schedules and allow greater opportunity for diversity between stands The conditions will create multi-aged and two-aged forests, as well as some single-aged stands These stands will have rotations of 120 years for longleaf, 80 years for loblolly and shortleaf, and 120 years for mixed pine-hardwood and all hardwood stands These minimum rotations will be the basis for regulating even-aged stands in this management area In uneven-aged stands, diameter limits will help regulate species composition based on site-specific conditions Diameter limits will vary with larger diameters occurring in bottomland sites Prescribed fire and herbicide usage are allowed to maintain the open conditions that favor the grass and grass type ground level vegetation, and provide open forest conditions considered optimum for species like the RCW

Management emphasis and forest stand composition will be guided through the ECS at the LTA level (See Plan Appendix A) Broad species composition, by LTA and in order of dominance, is as follows

LTA	Approximate Acres	Dominant Species
Redlands	18,400	Little Bluestem, Shortleaf Pine
Clayey Uplands	96,700	Longleaf Pine, Shortleaf-Oak, Hickory
Sandy Uplands	200	Longleaf Pine, Little Bluestem
Mayflower Uplands	9,000	Longleaf Pine, Little Bluestem
Raven Hills	92,000	Loblolly Pine, Oak
Big Thicket	11,000	Loblolly Pine, Oak
San Jacinto Flatwoods	4,500	Oak
Sparta Sandhills	13,300	Shortleaf Pine, Little Bluestem

Secondary Management Emphasis

Portions of this management area contain lands physically suited for motorized recreation use, including off-road vehicles (ORV), and many other forms of dispersed recreation use

Motorized trail riding opportunities will be restricted to designated trails within the Sam Houston National Forest

Recreational fishing opportunities will be provided in all suitable ponds and streams Interpretive facilities such as informational trailheads and parking areas will be provided; all will include maps, brochures and/or signs to help the recreationist locate public lands, identify unique plant and animal communities, and key recreation attractions. Semi-primitive motorized or roaded-natural recreation opportunities will be available Management direction will ensure considerations for wildlife, water quality, soil productivity, and biological diversity while providing commercial production of forage and timber, and exploration for and extraction of minerals

This area is managed to provide quality wildlife habitat, particularly for threatened and endangered species, and quality recreation opportunities while affording environmentally sensitive commodity production

Specific activities are centered around consumptive and nonconsumptive use of land and water areas including timber harvest and production, limited grazing, minerals exploration and production, hiking, fishing, hunting, horseback riding, ORV use, canoeing, nature study, camping, boating, and mountain biking

Management Area Goals

The goals of this management area are to

* Provide a range of mature pine forest habitats that allow populations of threatened, endangered, or sensitive species dependent on these communities to flourish,

* Provide the best possible habitat for recovery of RCW populations and sub-populations, while allowing maximum potential for effective dispersal and social interaction of individuals between clusters The population objective is 1385 active clusters (541 on the Sam Houston, 330 on the Davy Crockett, and 514 active clusters on the Angelina [includes MA-6 or Longleaf Ridge] and Sabine National Forests)

* Provide opportunity for timber production, mineral exploration and production, and grazing while maintaining a natural appearing landscape, clean water, productive soil, little soil erosion, viable populations of wildlife, and habitat for other threatened, endangered, or sensitive species of plants and animals,

* Provide a wide spectrum of dispersed recreation opportunities through the management of user activities and natural resource settings as follows·

  - Provide users the opportunity to experience a sense of solitude, tranquility, self-reliance, and closeness to nature. These experiences are provided through activities involving the application of outdoor skills in an environment that offers some challenge and risk,

  - Provide some opportunity to experience a high degree of interaction with the natural environment using both motorized and nonmotorized forms of recreation (where the challenge and risk opportunities associated with more primitive types of recreation are not important), and

  - Provide users the opportunity to enjoy consumptive and nonconsumptive use of wildlife

MA-2 Standards and Guidelines

Air Quality and Aquatic Resource

See Forest-wide Standards and Guidelines

Biological Diversity

MA-2-01 **Provide no allocations for old growth.**

Older forest conditions will develop in numerous areas throughout this area. These sites exist in the many 10 to 100 acre RCW clusters that are found in this management area. Other older forest conditions may be found in the inclusions identified within the Texas Natural Heritage Report

Chemicals and Cultural Resources

See Forest-wide Standards and Guidelines

Facilities

MA-2-11 **New trails and roads are developed as necessary to provide access for recreation and other compatible multiple uses.**

New trails, trailheads, or parking facilities may be built where needed to improve recreation opportunities Provide facilities and access to key attractions such as recreational fisheries Access for people with disabilities shall be provided in the design and construction of facilities

MA-2-12 **All system roads shall be planned, located, designed, constructed, and reconstructed to provide the road density necessary to meet resource management and commodity production.**

Other criteria considered are

* *Management objectives,*
* *Environmental needs and requirements,*
* *Safety,*
* *Traffic requirements,*
* *Vehicle characteristics;*
* *Road users, including users with disabilities,*
* *Use seasons, and*
* *Economics*

MA-2-13 **Develop a total road density, including temporary roads, for timber sales using a maximum skid distance of approximately 1300 feet.**

MA-2-14 **Construct and reconstruct Forest Development Roads (FDR) to standards appropriate for Traffic Service Levels B through D.**

MA-2-15 **Provide appropriate maintenance and operational management for the FDR System to accommodate commodity production, other access needs, safety, and resource protection.**

This includes the use of Environmental Protection Agency (EPA) approved pesticides, where approved through site-specific environmental analysis

MA-2-16 **Require commercial users of system roads to contribute to road maintenance commensurate with the levels of use.**

Contributions will be in the form of reimbursement or actual work performed

MA-2-17 **Local roads constructed or reconstructed in conjunction with timber sale or special use activities may be closed or remain open for secondary purposes.**

These special use roads may be managed as linear wildlife openings, open for limited use if needed for recreation or administrative uses, or encouraged for nonmotorized travel

MA-2-18 **Obliterate and revegetate temporary roads as part of the project work.**

Methods used, timing, and mitigation measures shall be in accordance with the site-specific project plan Such roads shall be designed to re-establish vegetative cover on the disturbed area as soon as practicable (not to exceed ten years after the termination of the contract, permit, or lease).

Fire

MA-2-21 **Utilize prescribed fire to control midstory, promote open upland forest communities, and to reduce fire hazard.**

a *Specific frequency, season, and prescription for burning in any area may vary depending upon vegetation, site and weather conditions, and RCW management priorities.*
b *Burn cycles should control encroaching vegetation while minimizing risk to cavity trees*
c *Cavity trees will be protected during burning operations*
d. *Plow lines will not be constructed within 200 feet of cavity trees unless needed to protect the cavity trees during an emergency.*
e *Emphasis is on growing season burning in habitat that was historically maintained by growing season fires*

MA-2-22 **Wildfire suppression response may be confinement, containment, or control with the primary objective of protecting RCW cavity trees.**

Integrated Pest Management, Lands, Minerals, and Planning

See Forest-wide Standards and Guidelines and MA-2-80-3 3 7 for IPM and MA-2-80-4 6 for minerals (clearing for non-timber)

Range

MA-2-31 **Livestock grazing is permitted.**

a *Consider grazing compatibility with adjacent management areas and areas that may require protection from cattle in any allotment authorization*
b *De-emphasize livestock grazing on forested areas*

MA-2-32 **Permitted livestock grazing is emphasized during growing season use over dormant season grazing.**

Monitor competition between cattle and wildlife for key browse and herbaceous plant species

Recreation Management

MA-2-41 **Feature semi-primitive motorized and roaded-natural recreation opportunities in this management area.**

These designations should refer to established ROS maps

MA-2-42 **Manage for a wide spectrum of dispersed recreation use opportunities.**

a *Provide for hiking, horseback, mountain bike, and motorized trail use.*
b. *Provide trailhead parking areas for trail users*
c *Provide ORV use in areas that do not disturb RCW clusters ORV use will be available on established trails only in the Sam Houston and southern Angelina National Forests, and in open areas on the Sabine, northern Angelina & Davy Crockett National Forests*

MA-2-43 **Design trails to offer a challenging experience and to blend in with the natural environment.**

They are constructed and maintained to the minimum standard necessary to prevent resource damage, protect visual quality, and visitor safety

MA-2-44 **Campsites and other areas of concentrated use are managed for a low level of change in natural conditions.**

MA-2-45 **Overused sites are rehabilitated, considering temporary or permanent site closure when other management techniques are not successful.**

Scenic Resources

MA-2-51 Meet partial retention visual quality objective (VQO) for management practices along highways, paved state or county roads, and primary Forest Service system roads and trails; and some modification in other areas.

These designations should refer to established VQO maps

MA-2-52 Emphasize natural appearing landscapes by designing vegetation treatments to maintain the character of that landscape by following natural vegetation changes and landscape features.

Well site locations, well site access roads, pipelines, and other site disturbing uses proposed within the foreground of highways or paved state or county roads may require special mitigation Any special measures required will be identified through analysis of the specific proposal.

MA-2-53 Modify timber management practices on visually sensitive areas to maintain or enhance the visual resource, as described in the USFS VQO Handbook and in Forest-wide 185 (FW-185).

Silvicultural Practices

MA-2-64 This area is classified as suitable for timber production.

FOR OTHER STANDARDS, SEE WILDLIFE HABITAT AND SILVICULTURAL PRACTICES BELOW

Soil and Water

MA-2-71 Spot treat roads, skid trails, and log landings with mulch as needed to provide a protective cover according to specifications in appropriate R8-CT provisions provided for timber sale contracts.

MA-2-72 Rip, scarify, and break to a minimum depth of four inches tightly compacted soils resulting from timber harvest or other management activities.

MA-2-73 After a road, log landing, or skid trail has served its purpose, remove bridges, culverts, ditches, ruts, and berms; and outslope the road bed and revegetate to 70 percent ground cover within one year.

MA-2-74 Require timber purchaser to provide maintenance of erosion control structures until 70 percent of the area is revegetated or up to one year during the period of the contract.

MA-2-75 Plan vegetation management practices so as to retain enough duff and vegetation to maintain a healthy forest ecosystem and ensure adequate nutrient cycling.

MA-2-76 Vegetation management practices, within site-specific analyses shall ensure treatments for protection, enhancement, and/or restoration of soil and water resources as well as procedures for monitoring and evaluation of the management practices.

MA-2-77 Meet State approved Best Management Practices (BMPs) during all silvicultural activities so as to meet State water quality standards.

MA-2-78 Protect soil and water values by implementing NFGT Permanent ORV Standards and Guidelines for soil and water protection.

Wildlife and Silvicultural

Nest Habitat Management

For management of RCW and its habitat within this Management Area, the following standards from the Record of Decision for the management of the Red-cockaded Woodpecker and its habitat on National Forests in the Southern Region.

MA-2-80-3 Use the following definitions and selection criteria for clusters, replacement and recruitment stands for RCW management and protection activities which may occur within clusters, replacement and recruitment stands. Most management protection activities are constant regardless of which Management Intensity Level (MIL) a population is assigned. However, any differences by MIL are identified.

MA-2-80-3.1 Definitions and Selection Criteria

A cluster is an aggregate of active and/or inactive cavity trees within 1500 feet of each other. The boundary of active and inactive clusters must be at least 200 feet from all cavity trees in the cluster, and encompass a stand not less than 10 acres in size.

Replacement stands are stands that will replace existing clusters as their cavity trees die. They are crucial for sustaining RCW populations, and shall be established for all active clusters.

The selection criteria include:

At least 10 acres in size

Nesting suitability, considering stand age, forest type, availability of relicts Inactive clusters may be designated as replacement stands

Distance to a cluster replacement stand should be adjacent to the cluster if possible, and no more than 1/2 mile from it

Replacement stands should ideally be 20 to 30 years younger than the cavity trees in the cluster

Clusters within wilderness replacement stands for essential RCW groups living in wildernesses not included in a Habitat Management Area (HMA) shall be established as close to the cluster as possible and not more than three miles from it, but located outside the wilderness boundary

Clusters on private land replacement stands would not be established adjacent to clusters on private lands until the group has moved onto National Forest land

Recruitment stands are stands that provide potential nesting habitat for RCW population expansion. They shall be established in each HMA where the population objective exceeds the current RCW population. Recruitment stands are optional in MIL 1. The number of recruitment stands shall, at a minimum, equal the HMA population objective minus the current number of groups in that HMA.

The selection criteria include:

At least 10 acres in size

Nesting suitability considering stand age, forest type, and availability of relicts

The oldest available stands or younger stands with sufficient relicts shall be selected Inactive clusters may also be designated as recruitment stands Midstory control shall be completed Recruitment stands may be improved by installing artificial cavities.

Distance to a cluster· recruitment stands should lie within 1/4 mile to 3/4 mile from a cluster or other recruitment stands to ensure good spatial distribution and increase probability of colonization

Must have adequate foraging habitat connected to the cluster or recruitment stand

Clusters inside wilderness. recruitment stands for RCW groups living in wilderness, not included in a HMA, shall be located outside the wilderness boundary This action would encourage the RCW population to extend itself away from the wilderness into the HMA where the clusters can be managed for its benefit. Wildernesses are excluded from HMAs unless the specific wilderness management plan can accommodate RCW management.

Clusters on private land recruitment stand(s) shall be established for RCW groups living on adjacent private lands within 3/4 mile of Forest Service System lands. These stands shall be located on National Forest lands as close to the cluster as possible. This action would encourage the RCW to move to

Forest Service lands where cluster management can take place and the cluster can be counted as part of the HMA population objective

The two preceding situations, clusters in wilderness and on private land, are unique in that recruitment stands are normally not established for existing groups However, in these cases the objectives to entice the RCW to move to an area where they can be better protected and managed

There is no set rotation for clusters, replacement or recruitment stands, and they will remain in place until they can no longer provide suitable nesting habitat, ie., until all cavity trees are gone and habitat has deteriorated to a point beyond which a cluster can be supported Boundaries of these stands could change as new cavities are excavated or artificial cavities are installed

MA-2-80-3.2 Management of Clusters, Replacement, and Recruitment Stands

Clusters, replacement and recruitment stands will be actively managed to ensure long-term suitability as potential nesting habitat

Clusters, replacement and recruitment stands shall be maintained in an open park-like condition with a basal area ranging from 60 to 80 square feet A minimum tree spacing of 20 to 25 feet, to reduce southern pine beetle risk, is more important than actual basal area. especially in non-longleaf forest types

MA-2-80-3.2.1 Marking Cavity Trees and Cluster Boundaries (Monumentation)

All active and inactive cavity trees must be permanently marked for easy recognition and tagged with a specific cluster-cavity tree identification number Check as part of the monitoring process, and update cavity tree markings, if needed

The boundaries of clusters, and recruitment stands that contain cavities, must be marked when any project that would alter the habitat, such as timber harvest, road construction, etc , is planned within 1/4 mile of the cluster or recruitment stand The marking of such boundaries may be temporary (signs or flagging tape) or permanent (painted bands)

MA-2-80-3.2.2 Cluster Status and Database Management

A database will be maintained and updated annually. It will include the status category of all RCW clusters within the HMAs The database will link monitoring and survey data to help identify areas where recruitment or replacement stands are needed

Six cluster status categories (active, inactive, abandoned, historic, destroyed, and invalid) shall be recognized and tracked The status categories are defined in the RCW FEIS glossary

Cavity trees shall be preserved in all categories except invalid Special cluster management is not required for abandoned, historic, or destroyed clusters unless they are identified as replacement or recruitment stands

Active clusters may be declared inactive if no RCW or signs of RCW are present Table A-3 shows when an inactive cluster may be declared abandoned

Table A-3

Abandoned Cluster Timetable

Inactive clusters in MIL 2 and MIL 3 with declining populations and all MIL 4 populations cannot be declared abandoned.

MIL	*Population Trend*	*Minimum Time (Year)**
1	Stable or Increasing	5
2	Stable or Increasing	10
2	Decreasing	n/a
3	Stable or Increasing	10
3	Decreasing	n/a
4	Any	n/a

n/a Cannot be declared abandoned

Site specific conditions may allow declaring a cluster abandoned earlier than shown. Such situations will be evaluated on an individual basis and require informal consultation with and concurrence by the U S Fish and Wildlife Service

MA-2-80-3.2.3 Midstory Vegetation Control

Midstory removal and control shall be completed in all clusters, replacement and recruitment stands outside of wilderness. Where RCW clusters in wilderness are to be managed, midstory removal and control should be completed

Prescribed burning on a two to five year rotation is the preferred method to control midstory vegetation In stands with dense, but small (less than two inches diameter) hardwood midstory more frequent burning may be necessary to achieve control

In clusters, replacement or recruitment stands where hardwood midstory is too large to be killed by prescribed burning (greater than two inches diameter), the following methods may be used to remove midstory

Mechanical methods such as a feller-buncher, hydro-ax, drum chopper, mulcher, shearing blade, etc

Manual methods such as chainsaws, brush hooks, etc

Herbicides applied by injection, hypo-hatchet, handsprayer, etc

Or a combination of these methods

Midstory removal control will occur over the entire stand (10 acre minimum) designated as a cluster, replacement or recruitment stand

All hardwood midstory trees within a 50 foot radius of active and inactive cavity trees will be removed An average of three selected midstory hardwoods per acre can remain throughout the remainder of the stand Examples of desirable species to leave are dogwood, redbud, or other showy flowering species However, no midstory treatment shall occur in natural hardwood areas, e g , stream bottoms, which are within cluster boundaries unless absolutely necessary to maintain the viability of the RCW group

Pine midstory shall be controlled before the trees (usually saplings and pole size trees) block access to cavity trees, potential cavity trees and line-of-sight between them. Pine regeneration should be retained where it does not interfere with cavity trees as previously described

No more than 10 within-canopy hardwoods per acre can be retained in these stands

Maintenance burns for clusters, replacement and recruitment stands which have already had midstory removed will receive priority

Emphasize growing season burns in those habitats that were naturally maintained by growing season fire. After midstory is controlled and the native herbaceous vegetation re-established, burning during other seasons may also be used if it will prevent and control midstory encroachment.

MA-2-80-3.2.4 Artificial Cavities

Artificial cavities shall be used in any RCW population, regardless of MIL, if suitable cavity trees are limited, i.e , less than four functional cavities per cluster

Three type of cavities, drilled, inserts, or start holes, will be used, depending on the characteristics of available trees and the needs of a particular RCW group

The procedures and methods specified by Taylor and Hooper (1991) and Allen (1991) will be used to construct or install cavities.

Only individuals experienced in the respective techniques may install artificial cavities

Midstory vegetation must be controlled in conjunction with installation of artificial cavities

The following priorities will be followed to schedule installation of artificial cavities.

(1) *Active clusters with a single cavity.*
(2) *When needed to support augmentation of single bird groups.*
(3) *Active clusters with fewer than four usable cavities*
(4) *Recruitment stands, which may be inactive clusters, with fewer than four usable cavities, and within one mile of an active cluster*
(5) *Recruitment stands, which may be inactive clusters, with fewer than four usable cavities, and within three miles of an active cluster*
(6) *Inactive clusters or recruitment stands more than three miles from an active cluster.*

Table A-4 shows variation in artificial cavity requirements by MIL

Table A-4

Artificial Cavity Requirements in addition to completed drilled cavities or cavity

Drilled start-holes are recommended in MIL 3 and Ml inserts

MIL	*Artificial Cavities*	*Specified Type*
1	Optional	As appropriate
2	Required	As appropriate
3	Required	Complete cavities plus >2 start holes
4	Required	Complete cavities plus >2 start holes

MA-2-80-3.2.5 Minimizing Cavity Competition

Cavity restrictors will be used where needed to minimize cavity competition, and in conjunction with artificial cavities, to ensure that each RCW group has at least four functional cavities

Restrictors should be placed on enlarged cavities and unenlarged cavities where experience shows cavity enlargement is likely Use the following priorities to schedule installation of restrictors

(1) *Active clusters with a single usable cavity*
(2) *Single bird groups with fewer than four usable cavities*
(3) *Active clusters with two to four usable cavities.*
(4) *Inactive clusters with fewer than four usable cavities.*
(5) *Active clusters with five to eight usable cavities*

Restrictors shall not be installed on cavities that have been enlarged internally to the point of being unusable by RCW

Monitor restrictors to ensure proper installation and acceptance by RCW

Maintain adequate levels of midstory control to create unsuitable habitat conditions for cavity competitors

Install squirrel and snake excluder devices (non-lethal) as needed

Install nest boxes for competitors if analysis indicate they may reduce competition for RCW cavities

Within 1/2 mile of active RCW clusters and inactive clusters or recruitment stands that have been made suitable for translocation retain single dead trees (not part of a SPB spot), including vacated SPB trees Within 1/4 mile of inactive RCW clusters which are not suitable for translocation, retain single dead trees, including vacated SPB trees

In SPB spots one acre or larger in size, retain six vacated SPB sawtimber size trees per acre if available, two of which should be the largest trees

In SPB spots less than one acre, retain two of the larger vacated SPB trees, if available These guidelines do not preclude salvage of dead trees from large areas resulting from insect outbreaks, hurricanes, tornadoes or other catastrophic occurrences

MA-2-80-3.2.6 Translocation

Translocation of RCWs will be used to expand existing populations and to reestablish RCW to areas where extirpated

Prior to any translocation a suitable cavity(s) must be available in the cluster and midstory control shall be completed

The following priorities will be used when planning augmentation of any single bird group, however, single bird groups in populations with 50 or less active clusters will have priority over single bird groups in populations with more than 50 active clusters:

(1) *A single bird group located a mile or more from another group containing a breeding pair*
(2) *A single bird group with one or two breeding pairs within a mile.*
(3) *A single bird group with three to four breeding pairs within a mile*
(3) *A single bird group with five or more breeding pairs within a mile*

Priorities for re-establishing RCW groups (translocation of a male and female bird to one location) vary by management objective If expanding an existing population, the priorities above for augmentation would be used Re-establishment should not be used to expand existing populations until all single bird groups have been successfully augmented

Re-establishment of RCW into currently unoccupied HMAs should not be attempted until all existing Forest Service populations have expanded to 50 or more active clusters

If the objective is re-establishment of RCW into a currently unoccupied HMA, priority should be given to those areas which have the best quality habitat Assuming HMAs with equally good habitat exist, priority should be given to the HMA which held RCW most recently For example an area that lost its last RCW in 1989 is a higher priority than an area which lost its last bird in 1983.

Translocation of RCW within populations/subpopulations is encouraged Any population with reproduction, regardless of size, and single bird groups should be a candidate for such intrapopulation translocations

If translocations between populations are necessary, it is desirable to move birds between areas of similar latitude, elevation, and forest type

Planned translocation of RCW is required to maintain genetic viability of populations with a reproducing population of less than 250 Such genetic exchanges can be through subadult augmentation

MA-2-80-3.3 Protection of Clusters, Replacement, and Recruitment Stands

The following standards and guidelines ensure that RCW clusters, replacement and recruitment stands are not adversely affected by management activities for other forest resources

MA-2-80-3.3.1 Cutting of Trees

Timber harvest, other cutting, or killing of trees is prohibited within clusters, replacement or recruitment stands except where these actions would protect or improve RCW habitat (e g., thinning, SPB control, midstory removal Snags or other dead trees may not be removed unless they pose a threat to public safety (e g , adjacent to an open road)

Cutting of cavity trees (living or dead) in active or inactive clusters (including inactive clusters identified as replacement or recruitment stands) is prohibited unless they pose a threat to public safety, or to protect the cluster, replacement or recruitment stand from insect attack The U S Fish and Wildlife Service must be contacted and issue a concurrence before *any* cavity tree may be cut

MA-2-80-3.3.2 Motorized, Heavy Equipment, and Concentrated Human Use Areas

RCW habitat improvement projects within or adjacent to clusters, replacement or recruitment stands which involve motorized or heavy equipment must include sufficient project administration and/or contract language to protect these stands, especially cavity trees and potential cavity trees.

The development of new concentrated equipment use or concentrated human use areas such as log decks, off-road vehicle trails, trail heads and camp sites is prohibited within clusters, replacement and recruitment stands

Short-term uses, e g , pine straw baling, may be allowed in recruitment stands if a site specific analysis indicates they will have no long-term adverse effect on the stands suitability as potential nesting habitat

Existing uses shall be modified or relocated if they are found to adversely affect the RCW Also, see 3 3 4 Nesting Season Disturbance

MA-2-80-3.3.3 Cavity Tree Protection During Prescribed Burning Operations

Burning prescriptions and cycles must minimize risk to cavity trees

Cavity trees must be protected by raking away or back burning adjacent fuels, use of fire retardants, etc

Plow lines will be kept 200 or more feet from cavity trees unless an emergency or site specific circumstance such as location of a property boundary, etc , dictate the need to locate them closer If conditions dictate plow lines be placed within 200 feet of cavity trees, use of a dozer blade to lightly scrape away fuels is preferable to using a deep cutting plow

MA-2-80-3.3.4 Nesting Season Disturbance

All potentially disturbing activities within clusters shall be scheduled before or after the nesting season

Such activities include RCW habitat improvement activities, except as necessary for the continued survival of the group, e g , installation of artificial cavities to replace cavities lost to natural causes. Another exception e.g , is prescribed burning, which is allowed during the nesting season

The general nesting season dates of March 1 - July 31 will be respected unless the specific RCW population nesting season is determined through monitoring to be different

MA-2-80-3.3.5 Construction of Rights-of-Way

Construction of linear right-of-way, such as roads, powerlines, or pipelines is prohibited within clusters, replacement or recruitment stands

MA-2-80-3.3.6 Existing Rights-of-Way Reconstruction and Maintenance

Reconstruction or maintenance of existing roads, powerlines, or pipelines through clusters, replacement or recruitment stands is allowed if the activities are scheduled outside the nesting season Such activities shall be closely monitored to ensure protection of cavity trees and potential cavity trees

Light maintenance of high standard open roads, such as road grading or mowing of rights-of-way, and emergency maintenance of powerlines and pipelines, may be allowed during the nesting season

MA-2-80-3.3.7 Southern Pine Beetle Suppression

Minimize the potential impact of southern pine beetle (SPB) through thinning and prompt control actions

The following standards apply, established by the SPB Record of Decision for protecting both cavity trees and RCW during control actions in active clusters:

Cutting of trees already vacated by SPB is prohibited unless they pose a threat to public safety

Cutting of SPB infested inactive cavity or relict trees is allowed within a designated treatment buffer zone only to protect the rest of the cluster.

Cutting of any infested tree within 200 feet of a cavity tree is allowed only to protect the cavity tree

Cut and remove SPB control operations are prohibited during nesting season

Only minimal disturbance, such as cutting or chemical treatment, is allowed to protect cavity trees during the nesting season

The pile and burn SPB control technique is prohibited within clusters

Management In HMAs

MA-2-80-4 **This section describes activities that may occur within HMAs but outside clusters, replacement and recruitment stands to provide a sustained flow of RCW habitat. It includes silviculture guidelines that are addressed by forest type. It also identifies the variation in Standards and Guidelines by MIL.**

MA-2-80-4.1 Foraging Habitat Management - General

Adequate levels of foraging habitat shall be provided for all active clusters and recruitment stands

Available foraging habitat includes the cluster, recruitment and replacement stands

Foraging habitat is not required for inactive clusters unless identified as recruitment stands

Additional foraging habitat is not required for replacement stands, as they are always associated with active clusters that should have adequate foraging habitat

Adequate foraging habitat will be provided according to U S FWS guidelines for preparation of biological assessments and evaluations for the RCW (Blue Book Standards), whenever pine tree removal is planned within 1/2 mile of clusters or recruitment stands.

The following foraging habitat requirements must be met for all active clusters and recruitment stands

At least 8,490 square feet of BA in pine stems larger than 5 inches DBH

At least 6,350 pine stems 10 inches DBH or larger and 30 years old or older

Must be within 1/2 mile of the geometric center of the cluster or recruitment stand (if existing foraging within the 1/2 mile radius circle is inadequate, stands beyond 1/2 mile must be included to meet foraging requirements)

Must be continuous and contiguous with the cluster or recruitment stand.

Include only pine or pine-hardwood stands (excluding white and sand pine) An exception to this requirement is the Daniel Boone NF, where hardwood-pine stands may be counted as foraging, until pine or pine-hardwood stands can be restored within 1/2 mile of the cluster

Stands identified as foraging habitat should be maintained at 70-110 square feet of pine BA, depending on site and stand condition However, stands with 30 or more square feet of pine BA may be considered as suitable foraging habitat, ie , mixed stands, pine shelterwood cuts, etc

Where foraging is limited, make thinning of young stands (<10" DBH) within 1/2 mile of active clusters a priority Thin such stands using standard silvicultural prescriptions

Provide 100% of foraging for RCW groups whose 1/2 mile foraging zone extends onto another ownership unless a coop agreement exist with the non-Forest Service landowner to ensure they will provide their proportional share of foraging habitat

Provide the Forest Service proportional share of foraging for RCW groups on adjacent non-Forest Service land when a group's 1/2 mile foraging zone extends onto National Forest, even if no cooperative agreement exists

MA-2-80-4.2 Reduced Foraging Habitat

Foraging habitat may be provided at a level below that given in Section 4 1 if the following situations occur, and providing there is a finding that RCW populations would benefit in the long-term

1) *Thinning to reduce risk of SPB outbreaks per the SPB EIS and ROD, even if foraging is limited Such thinnings must be supported by a SPB hazard analysis showing a moderate or high risk of infestation*

2) *Thinning of dense immature sawtimber stands (>110 -120 BA) to improve their suitability as foraging habitat even if foraging is limited. Such stands may be reduced to a BA of 90*

3) *To expedite the restoration of pine species preferred by RCW, foraging habitat for recruitment stands 1 5 miles or more from an active cluster can be reduced 50% below U S FWS requirements (Blue Book Standards). This would require approximately 3,175 stems > 10" DBH and at least 30 years old, and 4,245 square feet of pine BA in stems 5" DBH and larger. The foraging habitat must be contiguous and continuous with the recruitment stand*

   If such a recruitment stand is activated or a new active cluster is found closer than 1 5 miles, a full complement of foraging must be provided, if available, for the new active cluster and any recruitment stands within 1.5 miles of it. If a full complement of foraging is not available all foraging within 1/2 mile will be retained

Obtain Regional Forester approval prior to implementation of any thinning or restoration project which reduces foraging below Blue Book Standards

MA-2-80-4.3 Providing Future Nesting Habitat

Manage pine and pine-hardwood stands in the general forest area within HMAs to provide potential nesting habitat outside clusters, replacement and recruitment stands Implementing the following actions will enhance the production of potential cavity trees in the shortest time·

Retain the pine (by forest type) on the oldest 1/3 of existing acres within a HMA until they reach rotation age, through the first rotation

It may be desirable to regenerate a portion of the oldest 1/3 before it reaches rotation age to facilitate achieving regulation in areas managed with even-aged systems In such cases regeneration within the oldest 1/3 may occur if the oldest 1/3 is within 10-20 years of rotation Any regeneration must occur in the youngest end of the oldest 1/3. This is not a blanket exception to retaining the oldest 1/3 and would only be allowed in specific situations.

Do not remove relicts in thinning operations in HMAs classified as MIL 2 through 4 A possible exception is non-longleaf relicts so closely spaced that

potential for SPB infestation is increased. In such situations the relicts may be thinned to a minimum spacing of 20-25 feet

Stands approaching an age of providing potential nesting habitat, generally 70-100 years depending on pine species, should be managed as follows:

Maintain a pine BA of 60-80 square feet and maintain a minimum spacing of 20-25 feet between dominant and codominant trees. Spacing is especially critical in the non-longleaf types.

Maintain an open park-like structure through regular prescribed burning

NOTE The above direction is not to imply that stands should be ignored until they reach potential nest tree age. Regular thinning and burning throughout the life of a stand is sound management from both an ecological and silvicultural viewpoint See Sections 4 4 and 4 7

In addition to the above guidelines, several mitigation measures identified in the Regeneration Sections have enhancement of nesting habitat as a primary objective

MA-2-80-4.4 Prescribed Burning

Outside clusters, replacement and recruitment stands the objective is midstory reduction (not total elimination) using primarily prescribed burning.

Establish a burning cycle of two to five years HMA-wide. In stands where fire has been excluded for many years, annual burning may be necessary to significantly reduce midstory.

Emphasize use of growing season burns in ecologically appropriate areas Recognize, however, that habitat goals may require burning whenever conditions permit.

All burning prescriptions will be based on site specific conditions, including vegetation, site and weather conditions, and RCW management problems

Use natural firebreaks (streams, roads, swamps, etc) whenever possible to reduce impacts of constructing firelines

MA-2-80-4.5 SPB Hazard Reduction

Thinning is the primary tool to use to maintain tree vigor and reduce SPB hazard.

Follow the standard Southern Region thinning guides, except that, in addition, RCW tree selection criteria are used (see Section 4 7)

From 70 to 110 square feet of pine BA should be maintained, depending on site and stand conditions and the availability of RCW foraging habitat

In stands where SPB hazard is rated as moderate or higher, thin to achieve a minimum spacing of 20-25 feet between trees while retaining at least 70 square feet of overstory pine BA

Give priority for thinning to stands within 1/4 mile of active clusters

Follow direction in the SPB FEIS and ROD and "Managing Southern Forests to Reduce Southern Pine Beetle Impacts".

MA-2-80-4.6 Clearing for Nontimber Management Purposes

This direction applies to any clearing created for nontimber reasons, such as oil/gas exploration/development, developed recreation sites, wildlife openings, ponds/lakes, etc., in pine and pine-hardwood (and hardwood-pine on the Daniel Boone NF)

Permanent clearings for nontimber purposes may not occur if the loss of habitat would reduce the capability of the HMA to support its identified RCW population objective

In MILs 3 and 4 clearings are not allowed within 1/4 mile of RCW groups

Clearings are not allowed if foraging habitat is limited, or if the clearing completely severs a cluster or recruitment stand from its foraging habitat

In situations where mineral rights are privately-owned, limit or prohibit clearings for the exploration/development of these resources to the extent legally possible Consult with OGC.

MA-2-80-4.7 Thinning

Thinning of forest stands is a key activity in the timely production of good RCW habitat Direction for thinning pine and pine-hardwood stands varies depending on the age of the stand to be thinned and its suitability as RCW foraging habitat

Thinning of stands considered unsuitable as foraging habitat (average DBH of < 10") is encouraged and may take place at any time. Standard silvicultural guidelines apply

Provide for the following in stands that are > 10" DBH

Maintain pine BA of 70-110 square feet, depending on site and stand condition

Do not remove more than 30 square feet of BA in the dominant or codominants in any single thinning operation

In MILs 2-4

Use the following priority to select pine trees to retain

(1) *relict trees*
(2) *other potential cavity trees*
(3) *trees >10" DBH that are not potential cavity trees*
(4) *trees <10" DBH*

In MIL 1: Same as in MILs 2-4 except trees to retain should be well formed, healthy, and vigorously growing

As stands approach the age to provide potential nesting habitat, generally 70-100 years depending on pine species, they should be managed as follows:

Maintain a pine BA of 60-80 square feet and maintain a minimum spacing of 20-25 feet between dominant and codominant trees. Spacing is especially critical in the non-longleaf types.

Maintain an open park-like structure through regular prescribed burning. See Section 4.4.

If foraging habitat is limited, thinnings in stands > 10" DBH and > 30 years old may not occur, except in some situations it may be desirable to thin even if foraging is limited. See Section 4.2, Reduced Foraging Habitat, for specifics on these situations.

MA-2-80-4.8 Regenerating and Sustaining RCW Habitat

The successful regeneration, growth, and development of adequate numbers of pine trees is essential to providing RCW habitat in the long-term. A full range of regeneration methods, even-aged, two-aged, and uneven-aged may be used.

MA-2-80-4.8.1 Balanced Even-Aged and Two-Aged Silviculture for RCW Habitat

Even-aged and two-aged age class distribution will be regulated by area control using the formula A/R x T, where A = area under management, R = rotation length, and T = the time of each entry cycle. Regulation will be based on total acres of pine and pine-hardwood in an HMA identified as suitable for timber management managed with even-aged or two-aged systems.

Rotation age for pine-hardwood forest types will be set by the pine species being managed.

Table A-5 shows the minimum rotation ages prescribed for the various pine species and the acreage that may be substantially regenerated per decade. For exceptions, see Sections 2.3 and 4.8.5.

Table A-5

Percentage of Area that may be regenerated by Forest Type and Rotation Length The area that may be regenerated in any decade decreases as the rotation age increases

Forest type	Rotation*	Percentage of area to Regenerate in 10-Year Period
Longleaf pine	120 years	8 3%
Shortleaf pine	120 years	8 3%
Loblolly pine	100 years	10 0%
Slash pine	100 years	10 0%
Loblolly and shortleaf pine (southern pine beetle option)**	80 years	12 5%

* The Forest Service recognizes there are sites where trees, for various reasons, will not live to the prescribed ages

** An optional rotation exists for loblolly and shortleaf pine where a high probability of southern pine beetle outbreaks or site limitations make tree survival beyond 80 years risky See Section 4 8 7

Calculate appropriate even-aged and two-aged regeneration acres within an HMA based on

The MIL of the particular RCW population

The acres of suitable RCW habitat (pine and pine-hardwood forest types with potential to produce foraging habitat) within the HMA that are identified as suitable for timber management (Land Class Codes 500 and 600) Do not include acres being managed with uneven-aged methods or identified as unsuitable for timber management, ie , RCW clusters

The rotation applicable to each forest type represented

The existing acreage of each forest type which is in the 0-10 and 0-30 age classes Existing acres resulting from catastrophic events such as insect outbreaks, fire, weather, etc. must be included in the appropriate age class acres. Openings made to control SPB must also be included

Additional mitigation measures identified in the following sections on silvicultural guidelines

MA-2-80-4.8.2 Balanced Uneven-Aged Silviculture for RCW Habitat

The two uneven-aged regeneration methods are group selection and single-tree selection

Uneven-aged stands will be regulated by diameter distribution

The BDQ method (basal area, maximum diameter, and constant ratio of trees in successions of diameter classes) shall be used to create and maintain a balanced uneven-aged structure

Where the objective is to grow the maximum number of large pine trees with uneven-aged silviculture

The average stand BA may range from about 60 square feet per acre after harvest to 75 square feet per acre before harvest

The maximum diameter limit depends on site productivity and age Some tree characteristics preferred by RCW are age-dependent, therefore maximum diameter cutting limits must be set large enough to ensure trees old enough to provide these desirable characteristics A site-specific study must be completed to determine the relationship between size and age before setting the appropriate diameter limit

The one inch "Q" for this objective should be 1 1 for loblolly pine and 1 2 for longleaf pine

If RCW nesting habitat is an objective, tree marking guidelines for uneven-aged stands must be modified to leave relict and other potential cavity trees as a component of the larger diameter classes. See Section 4.3

To maintain an adequate balanced uneven-aged stand structure, establishment of pine regeneration is desirable at least once every 10 years

With either of the uneven-aged methods care must be taken to not reduce genetic quality and diversity by cutting only the best dominant individuals (high grading)

MA-2-80-4.8.3 Minimizing Habitat Fragmentation

The following actions are intended to minimize RCW habitat fragmentation

No pine stands within 1/4 mile of an active cluster in an HMA classified as MIL 3 or 4 may be regenerated using even-aged (EAM) or two aged cutting methods This prohibition includes regeneration cutting to restore desirable pine species Only thinnings to enhance RCW habitat or UEAM is allowed,

if other applicable guidelines including required foraging habitat are met An exception would be the planting or seeding of stands destroyed by catastrophic events such as hurricanes, tornados, etc

Limit regeneration patch size (even-aged or two-aged methods) to 40 acres in MILs 1 and 2 and 25 acres in MILs 3 and 4

Do not create openings greater than 330 feet in width, that completely sever clusters/recruitment stands from their foraging habitat, or that sever corridors linking sub-populations, isolated clusters, etc.

In addition, several mitigation measures identified in the Regeneration Section which have other primary objectives also help limit the potential for fragmentation

MA-2-80-4.8.4 Pine Restoration - General

Pine restoration shall be utilized to replace off-site pine species, competing hardwoods and non-suitable conifers with species more desirable for RCW habitat In these situations, off-site is defined as any species growing on a site historically occupied by a different species, regardless of how well or poorly the off-site species is growing. Normally restoration will be based an soil and site conditions and may be used to restore any desirable species However, longleaf and shortleaf pine are the species that will likely be restored most often

Clearcutting and planning will normally be the optimal method for pine restoration However site specific conditions, such as limited foraging for active clusters, may dictate use of a different regeneration method or deferring restoration

Set Forest Plan pine restoration objectives to minimize any potential adverse effects of creating age class imbalances in the pine type age class distribution When developing a restoration program, a Forest plan must first identify the total number of acres within an HMA needing to be restored Based on this information, an individual Forest Plan has the flexibility to estimate how many acres to restore per entry to meet its objectives Base the rate of restoration on rotation and age class distribution for either forest type or management type

If forest type is used, rate of restoration will be based on existing acres of the species being restored

If management type is used, the rate will be based on the total of existing acres of species being restored plus the acres of off-site species to be replaced

The following example illustrates the previous four guidelines An HMA contains 10,000 acres of existing longleaf pine stands Off-site slash pine is growing on another 10,000 acres If the rate of regeneration is based on forest type for the desired species (longleaf then 830 acres could be restored to longleaf each 10 year (10,000 ac x 0 083) where 0 083 equals the percentage that may be harvested per 10 years under a 120 year rotation If restoration is based on management

type, 1660 acres could be restored per 10 years (20,000 ac x 0 083) The 20,000 acres is the total of existing longleaf and off-site slash

The following apply to all restoration efforts, including Accelerated Pine Restoration (Section 4 8 5)

In a population classed as MIL 3 or 4, restoration using even-aged or two-aged regeneration methods may not occur within 1/4 mile of an active cluster

Plan restoration to avoid excessive age class bulges, especially if the new stands are to be managed with an even-aged system

No existing stands of the desired pine type (species being restored) may be regenerated until they reach rotation age, although thinnings may occur If regeneration of the desired pine type before rotation age is deemed necessary to expedite achieving a balanced age class distribution, it must not occur in the oldest 1/3 of the existing desired pine type

Do not create openings greater than 330 feet in width which completely sever clusters/recruitment stands from their foraging habitat or that sever corridors linking sub-populations, isolated clusters, etc

During restoration all existing trees of the desired species shall be retained, with two exceptions Clumps of desired species that are dominant or codominant with a basal area of greater than 70 square feet can be thinned to improve RCW habitat conditions Clumps of desired species less than 10 inches DBH and less than 30 years old can be thinned to promote growth and vigor

Conversion of longleaf to another pine species within an HMA requires consultation with the U S Fish and Wildlife Service

MA-2-80-4.8.5 Accelerated Pine Restoration

The rate of restoration may be accelerated as long as there is no short-term adverse effects on RCW and there will be a long-term benefit to them There are three specific situations where an accelerated rate of restoration may be desirable, and is allowed

1) HMAs with sparse or scattered RCW populations In order to expedite restoration in portions of an HMA that are 1 5 miles or more from an active cluster the 0-10 and 0-30 guidelines may be exceeded and a reduced level of foraging habitat may be provided for recruitment stands, provided that

   During the first 20 years of RCW Strategy implementation the area in the 0-10 age classes cannot exceed 15 percent, and the area in the 0-30 age classes cannot exceed 40 percent

Foraging habitat for recruitment stands can be reduced to 3,175 pine stems >10" DBH and at least 30 years old and 4,245 square feet of pine BA in stems >5" DBH (see Section 4 1).

2) When soils or other site factors cause off-site species to experience severe mortality after 40-50 years of acceptable growth

This situation is one of the most difficult to resolve because available foraging habitat is frequently being lost at a rate far in excess of the rate of replacement Restoration efforts should be concentrated in the oldest stands of off-site species.

3) When soils or other site factors prohibit trees from reaching foraging size (10 inches DBH) regardless of age (stagnation)

The off-site stands being regenerated do not qualify as foraging habitat, therefore the rate of restoration is limited only by the previous mitigation measures which apply to all restoration efforts See Section 4 8 4

MA-2-80-4.8.6 Regenerating Longleaf Pine

Longleaf has been successfully regenerated using the clearcut, shelterwood, irregular shelterwood, group selection and single-tree selection regeneration methods

Clearcutting

The primary use of clearcutting in the longleaf type will be the restoration of longleaf on longleaf sites currently occupied by another pine species

The use of clearcutting for restoration is allowed in all MILs

In MIL 1 clearcutting may be used to regenerate very sparse (<24 pines 10" DBH or larger per acre) or damaged stands

Shelterwood (With Reserve Trees)

MIL 1

- *Reduce stand to 25-30 square feet of pine BA at first cut*
- *Seed trees should be vigorous, well formed and show signs of past seed production.*
- *Once a new stand of seedlings is established the seed trees can be removed*
- *Retention of 10 square feet of BA but not less than 6 longleaf trees per acre (Longleaf reserve trees) is optional, but encouraged If retained, they should be clumped.*

MILs 2 and 3·

Same as MIL 1, except retention of longleaf reserve trees is mandatory Priorities for selecting the reserve trees are

1) *relict trees*
2) *other potential cavity trees*
3) *other trees > 10" DBH that meet requirements as seed producers*

Reserve trees would remain until the HMA is classified as MIL 1

MIL 4

Same as MILs 2 and 3 except leave 40 square feet pine BA at first cut.

Group Selection

The group selection method may be used in all MILs, unless foraging habitat is limited.

Anyone attempting to implement group selection in longleaf should be thoroughly familiar with and follow the methodology developed by Farrar and Boyer (1991) Farrar R M Jr and W D Boyer 1991 Managing longleaf pine under the selection system - promises and problems Pages 357-368 in Proceedings of the Sixth Biennial Southern Silvicultural Research Conference USDA Forest Service, Southeastern Fore Experiment Station, General Technical Report SE-70. Asheville, NC.

The group selection method of regeneration involves removal of trees in scattered patches at relatively short intervals (approximately every 10 years) This cutting pattern is repeated indefinitely to encourage the continuous establishment of regeneration and the development, and maintenance of a balance uneven-aged stand structure. The objective of the group selection method is to have each size class ranging from seedlings to large trees occupying approximately the same number of acres in each stand but arranged in groups of 1/2 to 2 acres in size.

Thinning or improvement cuts should be made during each cutting cycle when group openings are made Individual tree characteristics are to be considered in thinnings and location of openings Advance longleaf regeneration is needed before openings are made or enlarged See Section 4 7

Single-tree Selection

Single tree selection may be implemented in all MILs, unless foraging habitat is limited. There apparently is no published information on implementing balanced single-tree selection in longleaf The most frequently quoted example of single-tree selection in longleaf is the quail plantations in the Red Hills region of south Georgia/north Florida See Attachment I for a discussion of forest management on these plantations

MA-2-80-4.8.7 Regenerating Shortleaf, Loblolly, and Slash Pine

These three pine species have been successfully regenerated using the clearcut, seed-tree, an shelterwood methods. In addition, shortleaf and loblolly have been successfully regenerated with group and single-tree selection methods There have been no scientific tests of irregular shelterwood in either forest type However, Forest Service researchers have stated they see no reason why the method should not work if residual leave BA and subsequent growth is not too great The use of group and single-tree selection is untested in Slash Pine, which is very shade intolerant

Clearcutting

The primary use of clearcutting will be the restoration of pine species that are more desirable as RCW habitat on sites currently occupied by a different pine species Although there may be situations where restoration of either of these three species is desirable, shortleaf will probably be restored most frequently of the three.

The use of clearcutting for restoration is allowed in all MILS.

In MIL 1 clearcutting may also be used to regenerate very sparse (<24 pines 10" DBH or larger per acre) or damaged stands.

Shelterwood (With Reserve Trees)

MIL 1.

- *Reduce stand to 25-30 square feet of pine BA at first cut.*

- *Seed trees should be vigorous, well formed and show signs of past seed production.*

- *Once a new stand of seedlings is established the seed trees can be removed*

- *Retention of 6 trees per acre (reserve trees) is optional, but encouraged*

- *Distribution of reserve trees, if retained, is at the discretion of the manager*

MIL 2.

Same as MIL 1, except retention of reserve trees is mandatory.

- *Priorities for selecting the reserve trees are*

1) relict trees
2) other potential cavity trees
3) other trees > 10" DBH that meet requirements as seed producers

Reserve trees would remain until the HMA is classified as MIL 1

Irregular Shelterwood

MIL 3

- *Reduce stand to 25-30 square feet of pine BA at first cut*

- *All these trees are to remain until the HMA moves into MIL 2*

- *Priorities for selecting trees to be retained as shelterwood are*

    1) relict trees
    2) other potential cavity trees
    3) other trees > 10' DBH that meet requirements as seed produce

- *When the HMA moves into MIL 2 the shelterwood trees may be removed, except for 6 trees per acre*

MIL 4.

- *Reduce stand to 40 square feet of pine BA at first cut*

- *Priorities for selecting trees to be retained as shelterwood are*

    1) relict trees
    2) other potential cavity trees
    3) other trees > 10" DBH that meet requirements as seed producers

- *All these trees are to remain until the HMA moves into MIL 3*

- *When the HMA moves into MIL 3 the shelterwood trees may be reduced to 25-30 square feet of BA*

Group Selection and Single-tree Selection

Uneven-aged stands will be regulated by diameter distribution

If using group selection, groups should range from 1/4-2 acres in size

The BDQ method (basal area, maximum diameter, and constant ratio of trees in successions of diameter classes, FEIS, Glossary) shall be used to create and maintain a balanced uneven-aged structure

Where the objective is to grow the maximum number of large pine trees with uneven-aged silviculture

The average stand BA should range from about 60 square feet per acre after harvest to 75 square feet per acre before harvest.

The maximum diameter limit depends on site productivity and age. Some tree characteristics preferred by RCW are age-dependent, therefore maximum diameter cutting limits must be set large enough to ensure trees old enough to provide these desirable characteristics A site-specific study must be completed to determine the relationship between size and age before setting the appropriate diameter limit

The one inch "Q" for this objective should be 1 1 for loblolly pine

Where production of RCW nesting habitat is an objective, tree marking guidelines for uneven-aged stands must be modified to leave relict and other potential cavity trees as a component of the larger diameter classes NOTE Given the difficulty of burning uneven-aged stands of these pine species, the frequent use of herbicide may be necessary to control hardwood midstory Also, the dense but necessary pine midstory may make maintenance of the open stand structure characteristic of good nesting habitat difficult to achieve

To maintain an adequate uneven-aged stand structure, establishment of pine regeneration is desirable at least once every 10 years

With either of the uneven-aged methods care must be taken not to reduce genetic quality and diversity by cutting only the best dominant individuals (high grading)

Regenerating Shortleaf and Loblolly Pine In High Risk SPB Areas.

This management option may be implemented under the following conditions

- *Historical records indicate the dominant overstory species at the landscape level was loblolly or shortleaf pine.*

- *Historical records indicate a high probability of catastrophic SPB outbreaks*

- *Soils information indicates a low probability of loblolly living, as a stand, to the 100 year rotation age*

- *Historical records indicate the presence of littleleaf disease on shortleaf sites*

MIL 1

- *Reduce stand to 25-30 square feet of pine BA, but not less than 10 trees per acre, at first cut*

- *Seed trees should be vigorous, well formed and show signs of past seed production*

- *All seed trees are to remain indefinitely.*

- *The reserve trees will be dispersed over the regeneration area*

MILs 2 and 3:

Same as MIL 1, except·

- *Priorities for selecting trees to be retained as shelterwood are.*

    1) relict trees
    2) other potential cavity trees
    3) other trees > 10" DBH that meet requirements as seed producers

MIL 4.

Same as MiLs 2 and 3 except.

- *Reduce stand to 40 square feet of pine BA, but not less than 10 trees per acre, at first cut.*

- *When the HMA moves into MIL 3 the shelterwood trees may be reduced to 25-30 square feet o BA, but not less than 10 trees per acre.*

ALL MILs

Any shelterwood trees remaining at the end of the rotation will be identified as shelterwood/reserve trees for the next rotation

MA-2-80-4.8.8 Prohibit Regeneration of Virginia Pine or other non-native species

RCW Monitoring

This section contains the monitoring plan which shall be used to determine the effectiveness of the RCW Management Standards and Guidelines

MA-2-80-5.1 Cluster Status and Management Needs Data Base

Use the R8 computerized RCW database to track group status, cavity use, habitat improvement, treatment accomplishments and needs, cluster conditions, and population survey status Update the database annually and use to help set habitat treatment priorities, report accomplishments, identify population trends

MA-2-80-5.2 Population Monitoring

Population monitoring is necessary to protect RCW and to prioritize management actions and determine reproductive success Monitor RCW populations at intervals determined by population size and trend (See Table A-6)

1) *Population Size and Trend*

Determine population size and track population trends on an annual basis using sequential period surveys of compartments (Hooper and Muse, 1989).

2) *Group Check*

Check active and suspected active clusters and count the RCWs in each group, and identify all single bird groups.

This consists of annual roost checks of active clusters to determine presence of birds. Identification of single bird groups is critical Schedule translocations for single-bird groups Translocations require additional monitoring to evaluate success. For short periods this monitoring could be very intensive

3) *Determine nesting success by monitoring the appropriate number of groups as prescribed in Table A-6 and tally young.*

4) *Group Survey*

Survey all potential RCW nesting habitat in at least 10 percent of the compartments and tally new clusters and groups.

Systematic searches of all suitable nesting habitat in 10 percent of compartments annually will ensure the location of all new clusters and groups. Where possible, pursue cooperative efforts with other responsible agencies to complete surveys of suitable but unsurveyed RCW habitat on lands adjacent to National Forests Lands within 3/4 mile of the National Forest boundary would be highest priority

5) *Problem Identification*

Identify problems affecting any groups potentially caused by flying squirrels, rat snakes, avian competitors, etc.

Identified competition by other cavity nesters or predators and loss of cavities will be used to prioritize and schedule work to resolve these problems (remove squirrels, install snake and squirrel excluders, install nest boxes for competitors, etc.).

MA-2-80-5.3 Habitat Monitoring

Habitat monitoring is necessary to assure that the RCW has adequate nesting and foraging areas to support recovery populations in the future.

1) *Cluster Status Check*

Survey each cluster (active and inactive) and recruitment stands with artificial cavities at intervals determined by population size and trend (See Table A-6) The information will be updated each year and used to assess management needs and schedule actions that meet those needs. Clusters near activities that

are potentially disturbing to RCW, such as a timber sale, should be checked during and after the activity is completed Surveys shall obtain the following information

a) Cavity tree status (active/inactive)
b) Number of usable cavities (determination requires climbing tree)
c) Are artificial cavities needed?
d) Are restrictors needed?
e) Is prescribed burning needed to control midstory?
f) Is mechanical or chemical midstroy control needed?
g) Is the cluster at risk from southern pine beetle attack and require thinning?
h) Are adjacent stands at risk from southern pine beetle and require thinning?

Schedule work to resolve problems identified during the cluster status check Installation of cavity restrictors or artificial cavities require additional monitoring to ensure proper installation, and acceptance by the RCW

2) *Compliance check*

Determine if standards and guidelines are being followed

Determine the size of regeneration areas, verify the number of trees and basal area left in regeneration areas, etc , to see if the appropriate standards and guidelines are being met

3) *Effectiveness Evaluation*

Determine the effectiveness of RCW habitat improvement

Verify that prescribed treatments were effective Did the prescribed burn adequately control the midstory? Did the installation of nest boxes for cavity competitors reduce competition for RCW cavities? Are the prescribed regeneration methods on a wide range of sites growing and developing a new age class as expected? etc

Table A-6 lists the monitoring activities and time frames by population size and trend The numbered items coincide with the numbered monitoring activities previously listed

Table A-6

Monitoring Activities by Population (Total Active Groups)
The intensity of monitoring activities increases in the small, higher risk populations.

ACTIVITY NUMBER/ DESCRIPTION	POPULATION (TOTAL ACTIVE GROUPS) 50	50-99	100-199	200-400	>400
P-1 POPULATION SIZE & TREND	ANNUALLY	ANNUALLY	ANNUALLY	ANNUALLY	ANNUALLY
P-2 GROUP CHECK	At least 25 annually and all groups in 2 years	All groups in 2 years	All groups in 2 years	All groups in 2 years if decreasing, All groups in 4 years if increasing	20%
P-3 NESTING SUCCESS	At least 25 annually and all groups in 2 years	All groups in 2 years if decreasing, 20% sample but not less than 25 groups annually if increasing	20% sample but not LESS than 25 groups annually	Optional if increasing, 20% sample if decreasing	20% for translocation
P-4 GROUP SURVEY	At least 10% compartments w/suitable RCW habitat annually	At least 1 0% compartments w/suitable RCW habitat annually	At least 1 0% compartments w/suitable RCW habitat annually	At least 10% compartments w/suitable RCW habitat annually	At least 10% compartments w/suitable RCW habitat annually
P-5 PROBLEM ID	Annually	Annually	Annually if decreasing	Annually if decreasing	N/A
H-1 CLUSTER STATUS CHECK	Annually	Annually if decreasing, All clusters in 2 years if increasing	All clusters in 2 years	All clusters in 2 years if decreasing, All clusters in 4 years if increasing or stable	20%
H-2 COMPLIANCE CHECK	After site-specific projects	After site-specific projects	After site-specific projects	After site-specific projects	After site-specific projects
H-3 EFFECTIVENESS EVALUATION	After site-specific projects	After site-specific projects	After site-specific projects	After site-specific projects	After site-specific projects

Management Area 3
Grassland Ecosystems

Theme

Grassland Ecosystems - Landscapes managed for prairie and crosstimbers communities while offering a wide range of compatible multiple uses

Description

This management area replaces all of Areas 8, 9, 10, and 11 in the 1987 Forest Plan and includes approximately 34,500 acres. It was specifically developed to address issues identified during scoping concerning the need to provide recreation opportunities

This management area is found within the Oak Woods, Prairie, and Blackland Ecological Regions as described by the Texas Natural Heritage Program (TNHP), an area typified by native tallgrass prairie and oak woodlands Within this area, U S. Forest Service (USFS) specialists have defined several ecological sub-regions which describe the region's unique physical and biological characteristics This Ecological Classification System (ECS) describes grassland and woodland ecosystems lying within the Grand Prairie, Eastern and Western Crosstimbers, and Blackland Prairie ECS sub-sections (See Plan Appendix A) The area consists of ponds, streams, prairie, woodland-savanna, and bottomland hardwood habitats within the north Texas area

Small ponds and lakes are included in this management area Black Creek Lake, Cottonwood Lake, Lake Fannin, Coffee Mill Lake, and Lake Crockett are included in Management Area 5 Streams (perennial and intermittent), rivers and riparian areas are included in Management Area 4 (MA-4)

Desired Future Condition

Most of the area will be viewed as a grassland landscape interspersed with woodland savannahs on uplands with forested woodlands occupying bottomlands and drainages Grasslands will occupy at least 60 percent of the area Existing bottomland hardwoods and woodlands lining streams and lakes will provide wildlife habitat and soil and water protection Brush or short, woody vegetation will be dispersed cross the prairie, providing wildlife habitat and vegetative diversity Both native and long-established desirable non-native plant communities will exist, however, these areas will slowly revert to the native perennial grasses

You will notice a well-developed road system in many areas Some semi-primitive recreation opportunities will be found away from well-developed roads The road and trail system will provide access for recreation activities, wildlife management, oil and gas exploration and development, and livestock management Many roads have been gravel surfaced to reduce erosion and to facilitate all-weather access Motorized access will be provided to most attractions such as recreational fisheries Some sites within this Management Area will become developed recreation sites for specialized use by an increasing urban public near the grasslands A few roads will have been closed by gates or barriers to prevent erosion or protect wildlife habitat If you walk down most closed roads, you will see vehicle trails and disturbed areas (but these areas will soon be revegetated)

In areas maintained as prairie, you will see cattle or other livestock grazing You will occasionally see improvements for livestock such as stock ponds, fences, cattle guards, corrals, or loading chutes. Oil and gas activities will be a common sight in many areas, however, these will be managed in a manner compatible with dispersed recreation and other multiple uses You will see pumping wells, holding tanks and occasionally will see a well being drilled or maintained These activities might include use of bulldozers, pickups, large oil field trucks, and equipment

Wildlife habitat and recreational fishing opportunities will be provided in all suitable ponds and streams Management practices will be implemented to maintain and improve ecological range conditions Highly eroded areas will be rehabilitated and managed to improve long-term soil productivity Many wildlife habitat improvements will be implemented Wildlife species representative of the woodland savanna and open prairie will be most commonly observed Some motorized trail riding opportunities will be provided on NFGT system roads. Opportunities for other types of dispersed recreation (such as hiking, horseback riding, hunting and fishing) will also be available Interpretive facilities such as information signs or more developed interpretive sites may be provided Maps, brochures, and/or signs will be provided to help the visitor locate public lands and key recreation attractions Semi-primitive motorized or roaded-natural recreation opportunities will be available Management activities will be evident, but will harmonize and blend with the natural setting

Management Emphasis

These areas will provide a wide spectrum of natural settings. Resource modification and utilization will be evident but subtle, harmonizing with the prairie and crosstimbers landscape Dispersed and developed recreation and wildlife opportunities will be emphasized Activities associated with this area will be both motorized and non-motorized in nature

This area is managed emphasizing recreation and wildlife habitat, range management, and dispersed recreation The area is managed to provide wildlife habitat for consumptively utilized native wildlife, and other types of dispersed recreation opportunities while allowing environmentally sensitive commodity production Specific activities are centered around consumptive and nonconsumptive use of land and water areas (including hiking, fishing, hunting, horseback riding, canoeing, nature study, camping, boating, and mountain biking) Grazing and minerals exploration will occur, but may not take precedence over recreation The goals of this management area are to

* Provide users the opportunity to experience a high degree of interaction with the natural environment using both motorized and nonmotorized activities (where the challenge and risk opportunities associated with more primitive types of recreation are not important),

* Provide users the opportunity to enjoy consumptive and nonconsumptive use of wildlife,

* 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, viable populations of wildlife, 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

MA-3 Standards and Guidelines

Air Quality and Aquatic Resources

See Forest-wide Standards and Guidelines

Biological Diversity

MA-3-03 **Manage each fourth order watershed as a separate diversity unit.**

a *Establish or maintain prairie on at least 60 percent of the blackland prairie and limestone mesa landtypes, and at least 45 percent of the crosstimbers landtype in each diversity unit as soon as practical*

b *Exclude bottomlands and streamside zone ecosystems when determining these prairie or woodland objectives*

c *Establish or maintain woodland or forest on at least 5 percent of the blackland prairie and limestone mesa landtypes, and at least 10 percent of the crosstimbers landtype in each diversity unit as soon as practical*

MA-3-04 **Maintain and restore woody vegetation within streamside zone ecosystems.**

MA-3-05 **Provide approximately 10 percent of low woody brush cover where possible per 10 acres of prairie or pasture for wildlife needs.**

During mowing or other vegetation management activities, identify and protect these wildlife habitat areas

MA-3-06 **Maintain existing native plant communities.**

Soil erosion rehabilitation measures or facilities may be revegetated with desirable non-natives where necessary to quickly establish a protective vegetative cover, however, subsequent management of these areas shall be designed to restore these to native plant communities

MA-3-07 **Manage non-native grass vegetation or pastures to encourage re-establishment of native species.**

MA-3-08 **The streamside zone and selected ecosystems are classified as potential old growth.**

Chemicals and Cultural Resources

See Forest-wide Standards and Guidelines.

Facilities

MA-3-21 **Develop trails and roads as necessary to provide access for recreation and other compatible multiple uses.**

New trails, trailheads or parking facilities may be built where needed to improve recreation opportunities (See Plan Appendix E). Provide facilities and access to key attractions such as recreational fisheries.

MA-3-22 **Eliminate unnecessary or unused livestock management facilities where compatible with cultural resource protection needs.**

Construction of new livestock management facilities (e.g. corrals and loading chutes) may be discouraged in allotments with wildlife/recreation emphasis.

MA-3-23 **Acquire public access to all isolated tracts unless resource consideration determine that access would be detrimental.**

Fire

MA-3-31 **Encourage the establishment of volunteer fire departments within Grassland area communities.**

MA-3-32 **Utilize volunteer fire departments as initial attack forces for wildfires on the Grasslands.**

MA-3-33 **Utilize prescribed fire for forage and wildlife habitat improvement in combination with other treatments.**

The treatment cycle is three to five years

MA-3-34 **Use prescribed fire cautiously and restrict or exclude where possible its use on areas showing evidence of active erosion.**

MA-3-35 **Water bar firelines as appropriate, and seed bare earth to minimize erosion.**

a Cool season annual grasses should be used as cover crops to protect firelines constructed for winter burns.

b. Minimum water bar spacings are shown in the Forest-wide Standards and Guidelines (FW-187)

c Encourage the use of green lines, wet lines, or foam lines rather than plowed firelines to the extent practicable

Integrated Pest Management

See Forest-wide Standards and Guidelines

Lands

See Forest-wide Standards and Guidelines

Minerals

MA-3-41 **Prohibit removal of common variety minerals except where valid existing rights occur.**

MA-3-42 **Public owned minerals will be available for leasing.**

To the extent practicable, new exploration and production activities shall be compatible with wildlife management and dispersed recreation goals, including protection of the character of areas providing semi-primitive recreation opportunities. Short-term changes in recreation opportunity may occur.

MA-3-43 **Oil and gas leases will contain a stream protection stipulation requiring oil and gas well sites to be setback at least 100 feet on perennial streams, and 66 feet on intermittent streams (or further as determined through site-specific analysis).**

Pipelines and seismic survey projects may cross streamside zones if such crossings are determined acceptable during site-specific environmental analysis.

Planning

See Forest-wide Standards and Guidelines

Range

MA-3-51 **Livestock grazing shall be permitted.**

a. *Conflicts between livestock grazing and recreation or wildlife shall be resolved in favor of the activity that promotes the management emphasis and desired future condition within that particular allotment (see Plan maps)*

b. *Utilize livestock grazing as a vegetation management tool*

c. *Grazing systems utilized include rest rotation, deferred rotation, rotation, continuous and alternate year system.*

MA-3-52 **Protect soil and water improvements from grazing until project objectives have been met.**

In most cases, a 2-3 year protection period is required

MA-3-53 **Manage grazing allotments that are in conjunction with private land grazing to incorporate the appropriate grazing management system.**

MA-3-54 **Place salt and mineral blocks at locations to improve grazing distribution.**

Salt and mineral blocks shall not be located within streamside zone ecosystems or within 100 feet of trails, or on eroded soils

Range Improvements

MA-3-55 **In the absence of perennial water, provide at least one perennial stock/wildlife pond per 160 acres.**

MA-3-56 **Conduct mowing, grazing, disking, brushhogging, vegetation manipulation, prescribed burning, spraying, fertilizing, seeding, planting, and vibratilling to achieve the management area goals and the desired future condition.**

a Prescribed burning shall be favored over mowing, brushhogging, or other mechanical treatments

b Structural improvements such as fences, ponds and crossings may be developed to achieve area goals and grazing distribution

MA-3-57 **Favor biological and mechanical practices over the use of herbicides to achieve management area goals.**

Native Prairies

MA-3-58 **Maintain native prairie vegetation in satisfactory condition using ECS information (See Plan Appendix A), management emphasis, and desired future condition.**

a. *Manage allotments in less than satisfactory condition so as to meet the long-term goal of satisfactory condition*

b. *Generally recreation/wildlife emphasis areas favor forbs, early/mid seral grass type vegetation components, grazing emphasis areas favor grass type (mid/late seral) vegetation components*

c *Use the county soil survey published by the NRCS to supplement ECS information and define capabilities for each site (excluding critically eroded lands)*

MA-3-59 **Retain up to 50 percent of the average annual production of desirable forage species to maintain and improve soil cover and productivity, wildlife habitat, and plant vigor for the appropriate grazing system on each site.**

Use the county soil surveys published by the NRCS to identify and manage sites within eroded soils

MA-3-60 **Use dormant season grazing (when appropriate) instead of growing season grazing as a method of improving native range conditions or to maintain native rangeland in a satisfactory condition.**

MA-3-61 **On native prairies in a satisfactory condition, allow at least 60 days rest during the growing season at least once every 3 years to maintain native rangeland.**

MA-3-62 **On native prairies in a less than satisfactory condition, allow at least 75 days rest during the growing season every 2 years until condition improves to a satisfactory condition.**

Additional rest during the growing season may be required to improve conditions on some sites or key areas. Removal of livestock for the remainder of the grazing season will be required on continuous grazing systems when further utilization exceeds (percentage use) allowable use for that season

Non-Native Pasture

MA-3-63 **Promote natural succession on non-native pastures.**

a *Manage pastures to promote prairies toward ecologically satisfactory condition.*

b *As pastures revert to native grass species, manage non-native pastures as described previously for native prairies*

MA-3-64 **Assess range condition based upon ecological potential and the desired future condition of that allotment.**

MA-3-65 **Use vibratilling, fertilization, or herbicides only for soil and watershed improvements or to improve native range condition.**

Recreation Management

MA-3-71 **The Recreation Opportunity Spectrum (ROS) for this management area shall be roaded-natural or semi-primitive motorized.**

These designations should refer to established ROS maps

MA-3-72 **Retain existing semi-primitive recreation opportunities.**

a Short-term changes in recreation opportunity may occur where necessary to accommodate oil and gas operations

b Long-term changes in recreation opportunity may occur where access is provided to a previously isolated and inaccessible tract

MA-3-73 **Prohibit ORVs.**

Restrict use to street legal vehicles with licensed operator on designated Forest System Roads

MA-3-74 **Rifles and handguns of any type are restricted to developed shooting ranges on the Caddo & LBJ Grasslands. Additional specifications and regulations may be issued through Supervisor's order or through changes made to proclamations for the wildlife management areas (WMA's).**

a *The use of firearms for hunting shall be limited to shotguns and blackpowder (referred to as muzzleloader or antique) firearms*

b *Recreational target shooting of any kind is prohibited outside of designated shooting range facilities developed for such use*

c *Firearms capable of firing centerfire or rimfire ammunition are prohibited except at designated shooting range facilities developed for such use*

d *The use of any firearm identified as "selective fire", "fully automatic", "Title II", etc is prohibited*

MA-3-75 **Provide interpretive services as recommended in the Interpretive Plan.**

Provide signs, maps and/or brochures to help forest visitors locate key recreation opportunities

Scenic Resources

MA-3-81 **All management practices shall meet the visual quality objectives (VQO) of partial retention along highways, paved State or county roads, and primary Forest Service (FS) system roads and trails; and modification in other areas.**

MA-3-82 **Emphasize natural appearing landscapes in facilities planning and by designing vegetation treatments to replicate the characteristic landscape and following natural vegetational changes and landscape features.**

Well site locations, well site access roads, and pipelines proposed within the foreground of highways or paved State or county roads may require special mitigation as identified through site-specific environmental analysis

Silvicultural Practices

MA-3-91 **This area is classified as unsuitable for timber production.**

a *Unregulated harvest for fuelwood generated from other projects benefiting other resources or for salvaging mortality may be permitted*

b Pine stands are not regulated on lands classified as unsuited for timber production

c Off-site pine plantations can be harvested to enhance restoration efforts.

MA-3-92 **Retain, where available, hardwood den trees and at least two snags [12 inches diameter breast height (DBH) or greater] per acre during silvicultural treatments or fuelwood harvest.**

After catastrophic events, exceptions may occur based on opportunities for wildlife and other resources.

Soil and Water

MA-3-101 **Prohibit soil disturbing mechanical activities within streamside zones (See MA-4 for specific guidelines).**

The following types of projects may be allowed within streamside management zones if a site-specific environmental analysis determines they are acceptable. (a) Restoration and rehabilitation of eroded or disturbed sites; (b) construction, repair or rehabilitation of stock/wildlife ponds, (c) pipeline crossings, (d) seismic surveys, (e) special use crossings, or (f) road or trail construction, reconstruction, or maintenance

Protect soil and watershed restoration sites from concentrated livestock and recreation use for 3 to 5 years or until these are fully stabilized.

MA-3-103 **Non-native vegetation established to prevent or control soil erosion may be managed as described for non-native pastures in this management area prescription.**

Wildlife

MA-3-111 **Wildlife habitat management is emphasized within the Biological Diversity Standards and Guidelines section of this management area.**

MA-3-112 **Retain all turkey roost tree groups of 0.10 acres or more in size.**

This group includes the trees actually used for roosting and other adjacent trees used for cover

MA-3-113 **Leave one-tenth (1/10) acre per ten (10) acres of low brush or unmowed grassland to provide cover for wildlife.**

Management Area 4
Streamside Management Zones

Theme

Streamside management and lakeside buffer zones that incorporate riparian areas, jurisdictional wetlands, lakes, oxbows, and other areas in and adjacent to intermittent and perennial streams and lakeshores These areas will be managed to maintain the role and function of aquatic, riparian and wetland ecosystems while providing opportunities for compatible multiple uses

Much of MA-4 is considered bottomland hardwood or transitions that contain characteristics of this habitat Once exceeding 16 million acres, Texas bottomland hardwood areas have been extensively altered with less than six million acres (35 percent) remaining today Hardwood dominated communities are an extremely valuable ecosystem which are found along major NFGT drainages, perennial streams and rivers These ecosystems will be emphasized in restoration efforts

Description

This management area is approximately 49,800 acres and includes the bed, bank, and water resources of the rivers, perennial and intermittent streams and wetlands, and their adjacent land areas This management area also includes shorelines of perennial water bodies and areas adjacent to these shorelines

This management area is found within all ecological regions as described by Texas Natural Heritage Program (TNHP) Within this area, United States Forest Service (USFS) specialists have defined several ecological sub-regions using the Ecological Classification System (ECS) The ECS describes unique physical and biological characteristics of river bottoms, riparian areas and other alluvial or floodplain sites

This area occurs in all ecological units on the National Forests and Grasslands in Texas (NFGT), but is sometimes described as riparian and bottomlands land type associations (LTA's)

In most cases this management area occurs as streamside corridors cutting through or into other management areas Lake and pond shorelines occur as small management units inside other larger management areas Streamside zone (SMZ) widths vary depending on the size of the watershed or stream order These areas are predominantly riparian areas dominated by hydrophytic vegetation within intermittent and perennial water bodies In areas where steep slopes exist adjacent to streams, the protection zone will generally not extend beyond the ridgetop of that watershed Additional upland areas are included where soils and topography are such that additional protective buffers are needed

This management area also includes bogs and other wetlands identified in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands and in the Classification of Wetlands and Deepwater Habitats of the United States These wetland sites are identified, marked, and protected during routine project analysis using management guidance provided in part by the Texas Natural Heritage Report and through collaboration with other agencies.

Large lakes and reservoirs are included in Management Area 5-Major Aquatic Ecosystems Small lakes and ponds are included in the management area containing them

Streamside management zones occur in existing wilderness, roadless areas recommended for wilderness study, rivers recommended for further study as a Wild and Scenic River, research natural areas, developed recreation areas, administrative sites, archeological and historic sites, and special use sites In these situations, the more restrictive management direction of these management areas generally apply.

Desired Future Condition

Throughout this management area you will see some of the most diverse and productive areas on the Forest This management area provides contiguous and diverse habitat for riparian area and wetland dependent species Stream channels will remain stable providing suitable water quality Limited manipulation of vegetation will filter sediment, thus maintaining aquatic habitat for those dependant species Vegetation left within the management area will provide a continuous source of organic matter which contributes to the soil building process

These areas will be managed to provide diverse stands of hardwoods and some pines, with a wide variety of understory vegetation These developing habitats include riparian dependent species, many of which need mature or old growth forest conditions The water bodies such as lakes, perennial wetlands and associated areas contribute to the diversity and dispersion of native animals and plants within each drainage, these drainages connect to the larger watersheds found throughout the NFGT These linkages provide dispersal for populations of fish, wildlife and plants The hardwood and mixed pine-hardwood stands found in much of this area contain large diameter trees, potentially providing an old growth character throughout the Forest

This management area yields high quality water meeting all federal, state and local standards Long-term soil productivity is maintained This management area also provides opportunities for public enjoyment through dispersed recreation management In some situations, developed facilities to support dispersed recreation of the aquatic resources are also provided These recreation uses are managed to avoid or mitigate adverse effects on riparian resources and values

The social values of riparian and streamside zone areas include aesthetics and visual quality. These attributes are most often associated with big trees and possibly a park-like setting Characteristic greenbelts throughout both urban and rural settings are symbolic of a special "sense of place" these areas will develop and hold in the future

It is important that these corridors be found in all areas of the forest and that they be connected to other areas such as old growth, human habitat or socially valued situations such as recreation and interpretive areas Special areas such as historic and scenic sites and other special management areas should be linked through SMZ's

Vegetation varies greatly within this management area, but generally mirrors the conditions associated with both the size and type of waterbody or streamcourse Perennial streams will continue to develop bottomland hardwood structure, while intermittent streams will exemplify a more transitional appearance The Desired Future Condition of vegetation groups will be described within these stream course definitions

Rivers, Sloughs and Swamplands

Adjacent to larger perennial streams, rivers, occasional sloughs and swamplands will be found in the 4 Forest landtype associations (LTA's) **Cypress Swamp**, defined as the **Baldcypress-Water Tupelo Series**, is a deciduous swamp forest that occupies some hydric soils in east Texas Bald cypress and/or tupelo gum tend to dominate, but composition will depend on water depth, duration of flooding, and disturbance Water tupelo will be present in the deepest water or in cut-over swamp though some species such as overcup oak, water hickory and ash may be present in less frequently flooded areas or higher elevations Oak-dominated bottomland hardwood communities and shrub swamps may integrate with this type

This community is often dense canopied, dominated by Bald Cypress and Water Tupelo with some red maple, ash, water locust and swamp black gum Understory is often sparse, although microhabitates exist which include buttressed trunks, root growths (including "knees"), and floating logs. Spanish moss is often conspicuously draped in overstory trees Standing water is present for much of the year Vines and epiphytes are common Individuals in this community can reach 1,000 years in age

Perennial Streams with Floodplain Forests

Floodplain forests will most typically occur in well-defined terraces along rivers and larger streams of the Forest and Caddo National Grassland LTA's In their natural state they have a multi-aged structure with regeneration of most component tree species confined principally to canopy gaps Flood events, especially of long duration, may induce widespread mortality of trees and shrubs The composition of these forests is quite variable depending upon topographical, geographical, and historical factors Some of this variation will be reflected by the community or series Old trees (>300 years) are present, with trees of multi age, size, and form The hydrologic regime will remain intact

Floodplain Forests include the more hydric **Overcup Oak Series**, the transitional **Water Oak-Willow Oak Series** and well-drained **Swamp Chestnut Oak-Willow Oak Series** These forests will develop in occasionally inundated floodplains of east Texas Red maple, water hickory and willow oak are usually intermixed in the **Overcup Oak** community Some baldcypress swamps, shrub swamp, and typical (drier) water oak or willow oak development will occur

In other periodically flooded **Floodplain Forest** areas, development of the **Water Oak-Willow Oak Series** will occur Better drainage, elevation changes and soil texture allow more rapid drying after flooding, creating conditions for the development of this community. Common components include sweetgum, cherry bark oak, ash and overcup oak with ironwood, eastern hophornbeam, deciduous holly, and Florida maple in the understory Swamps and marshes are often intermixed, and surrounding uplands are usually oak-hickory or oak-pine types

Swamp Chestnut Oak-Willow Oak Series occur on tributary flats in the southeastern portions of the NFGT This series is generally very similar to Water oak-Willow oak series, with water oak of lesser importance This type occurs primarily on ridges of the first bottoms, thus being rarely subject to flooding Within the floodplain forest variants, this type will develop farthest from the stream or river and may adjoin the lower slope, upland communities Species such as sweetgum, overcup oak, cherrybark oak are important overstory components, and dwarf palmetto is common in the understory This type is closely related to the typical water oak-willow oak series of floodplains, but lacks water oak as an important species

Grassland Perennial Streams

On LTA's of the Grasslands, perennial streams that do not display typical floodplain forest characteristics, will develop a mix of hardwood species best described as the **Pecan - Sugarberry Series** and **Sugarberry - Elm Series** These streamcourses are generally fair to well-drained floodplains, with a substantial mix of more upland tree

and herbaceous species Multiple terrace systems may be found along these drainages, creating a mosaic of habitat conditions Important components of the **Pecan - Sugarberry Series** may include netleaf hackberry, cedar elm, bur oak, American elm, Texas oak, black walnut, box-elder and ash In the **Sugarberry - Elm Series** some of these following species may be important, cedar elm, American elm, pecan, ash, bur oak, chinkapin oak and sycamore

Floodplain Forest Intermittent Streams

Intermittent streams in both Forest and Grassland landscapes will develop on well-drained streamcourses These streamside zones may be difficult to distinguish from the adjacent upland areas due to a vegetation mix of species, especially if the surrounding uplands are oak-hickory or oak-pine types The floodplain and topographical situation will help define this area, and in the more mesic intermittent streams, species from the periodically flooded perennial streams or **Floodplain Forest** areas may occur

Species and community series in 4 Forest LTA's of east Texas may include the **Water Oak-Willow Oak Series** and the **Swamp Chestnut Oak-Willow Oak Series** These types will occur on primary bottomlands that flood on occasion. Future conditions displaying these vegetation characteristics will persist on only the most mesic of larger intermittent streams These groups tend to blend with adjoining lower slope and upland communities

Mesic Forest Intermittent Streams

These forests will develop on side slopes and areas between uplands and stream bottoms Desired natural condition will be a multi-aged forest with many large-sized individuals The forest may develop a three-layered appearance with an essentially closed canopy, though some snags and small gaps will exist An open, park-like condition at ground level will develop with age, although a variety of shrubs and regenerating trees may be found Downed woody material and thick hardwood leaf litter are typical features There is usually a rich assemblage of lichens, mosses and liverworts on soil, fallen logs, stumps, shrubs and trees Although mature hardwood-dominated forests support relatively few herbaceous understory plant species, mesic, close-canopied, hardwood-dominated forests create special understory conditions that seem necessary for many herbaceous "rich woods" species to be present Desirable attributes include Trees of multi-age, size, and form present, old specimens present (>200 yrs), Snags, cavities, canopy gaps, and downed wood common, Hardwood species dominant (loblolly pine only a minor associate), Well-developed litter layer, Multi-layered structure

American beech - southern magnolia series will be an uncommon, primarily hardwood dominated series occurring on mesic slopes or in

shallow creek bottoms American beech and southern magnolia attain large sizes Large diameter loblolly pine may be present but rarely dominant Other species include white oak, cow oak, cherrybark oak, black oak, American holly, various hickories These communities will usually support a variety of "rich woods" herbaceous species Some that may occur include ferns, Jack-in-the-pulpit, Walter's violet, partridge-berry, wake-robbins (*Trillium spp*), may-apple, Carolina lily, giant cane and melic grass

American beech - White oak series occupies ravines and ridges within creek bottoms, especially on steep slopes Southern magnolia is generally absent, and calciphilic species are more common Some other species include water oak, blackgum, chalk maple, hophornbeam, American holly, dogwood and ironwood The understory may develop with giant cane, paw-paw, and ferns, or may be largely open and dominated by leaf litter

Grassland Intermittent Streams

On LTA's of the Grasslands, intermittent streams will be the most difficult streamside zone to define Wide variation in both the physical and biological character may exist depending on soil, surface geology and landform Some areas will not have typical alluvial soil, and will have to be delineated based on site-specific filtration zone needs Some species may be found in these streamside areas include the **Pecan - Sugarberry Series** and **Sugarberry - Elm Series** These areas will have a mix of upland tree and herbaceous species Important components of the **Pecan - Sugarberry Series** should develop through time, including netleaf hackberry, cedar elm, bur oak, American elm, Texas oak, black walnut, box-elder and ash In the **Sugarberry - Elm Series** cedar elm, American elm, pecan, ash, bur oak, chinkapin oak and sycamore will be found

Inclusional Wetlands

These inclusional communities will be associated with the longleaf pine landscapes of the Mayflower and Sandy Uplands LTA's In limited situations these may develop outside those LTA's

Shrub Wetlands along **Seepage Slopes** include the **Sweetbay Magnolia Series**, this mainly deciduous to evergreen low forest will develop on seeps, wet creek bottoms, and in other permanently moist soils Composition will consist of gallberry holly, black titi, waxmyrtle, red maple, buttonbush, swamp gum, laurel greenbriar, possumhaw viburnum and maleberry These sites are often associated with the **Sphagnum-Beakrush Series** (bogs) and may be successional to bogs in the absence of fire Locally referred to as "baygall", these areas could form a dense evergreen shrub thicket The water table is generally close to the surface for long periods and deep standing pools are common

Herbaceous Wetlands will include upland **Hillside Bogs** such as the **Sphagnum-Beakrush Series**, a grasslike dominated community Grass-like sedges, rushes, yellow-eyed grass, nutrush and grasses will occur in conjunction with the pitcher plant This community may develop into many (usually small and isolated) wetlands within the upland pine or pine-oak forest Surrounding uplands often occur over a sandy substrate, on which open oak or pine woodlands are common Subsurface water percolation and frequent fires from surrounding uplands are important factors maintaining these habitats.

Management Emphasis

These areas will be managed to maintain the role and function of aquatic, riparian and wetland ecosystems while providing opportunities for compatible multiple uses

This management area will be managed to meet the recommendations in the Texas Wetlands Plan (TPWD 1988) and the Best Management Practices (BMP) established by the state Management is designed to maintain the role and function of riparian area and wetland ecosystems This includes the maintenance and/or enhancement of all riparian dependent resources and values such as flood attenuation, nutrient, waste and sediment filtering, erosion control, groundwater recharge; and fish and wildlife habitat

Primary objectives to manage for:

* Maintenance of high quality water and abatement of downstream flooding,

* Enhancement of all associated resources;

* Protection of aquatic, riparian habitat and special plant communities

Secondary objectives to manage for:

* Dispersion for animal and plant species by maintaining connecting habitat among mature and old growth stands of trees,

* Maintenance or improvement of mast-producing wildlife habitat,

* Recreation and scenic use compatible with other riparian management objectives, and,

* Special wildlife habitat needs such as for threatened and endangered species, raptor nests and perches, and nests/dens for cavity dependent species

Area Identification

The actual streamside riparian management area boundaries shall be identified as an ***Intermittent Stream*** (at times classified as 2-3 order streams) or ***Perennial Stream*** (generally considered 3-4 order streams) Determination of those classifications shall be by an on-site reconnaissance of topographic and biotic features, or as determined by the Forest Soil Scientist, Botanist or Hydrologist during site-specific environmental analysis.

A ***Primary Zone*** and a ***Secondary Zone*** will be identified within the SMZ

The ***primary zone*** will be a 50-foot protection zone to ensure primary objectives of the area are achieved This primary zone will extend from the stream channel edge outward 50 feet on either side of the stream

The ***secondary zone*** will be delineated from the primary zone outward to the extent of the SMZ to achieve objectives of this zone The outer edge of the SMZ will vary depending on both biological and physical factors within the LTA, historical use and topographical position One or more criteria that shall be used when delineating the outermost edge of the secondary zone or the management area boundary are·

* All riparian areas dominated by obligate hydrophytic vegetation
* Within the 100-year floodplain as defined by topographical reference,
* Having vegetation potentially capable of shading or contributing organic matter to the water body,
* Having vegetation that contributes significantly to bank stability,
* Incorporate natural irregularities of topography and consider recreation and wildlife use patterns, and,
* Required to provide large woody material to the water body
* Minimum widths from streambanks should consider topography and do not generally extend protective areas beyond ridgetops
* The width of protective buffers around wetlands shall be based on a case-by-case evaluation considering factors such as soils, hydrology, topography, and biotic values in and around the wetland

This evaluation will be accomplished during the environmental analysis for any proposed projects which might impact these areas

MA-4 Standards and Guidelines

Air Quality

See Forest-wide Standards and Guidelines

Aquatic Resources

MA-4-01 **Construct physical structures or initiate mitigation where USFS or USFS related management activities are causing or may cause deterioration of the streamside environment, or water quality impairment as determined by site-specific environmental analysis. (See Forest-wide Aquatic Standards and Guidelines.)**

a *Implement action to protect or improve the aquatic and streamside environment including the hydrologic function of the riparian area*

b *Actions include, but are not limited to, construction of sediment traps, stream stabilization structures, or vegetative planting or manipulation.*

MA-4-02 **Investigate and document fish kills.**

MA-4-03 **Stock fish only when necessary to restore native populations.**

Biological Diversity

MA-4-11 **This management area is classified as potential old growth.**

Some areas may later be classified as old growth or restored old growth

MA-4-12 **Maintain or restore native plant communities.**

Watershed improvement measures or facilities may be revegetated with desirable non-natives where necessary to quickly establish a protective vegetative cover, however, subsequent management of these areas shall be designed to restore these to native plant communities

Chemicals

See Forest-wide Standards and Guidelines

MA-4-13 **Prohibit non-aquatic herbicide uses except hand applications for noxious weed control following restrictions on the herbicide label.**

Cultural Resources

See Forest-wide Standards and Guidelines

Facilities

MA-4-21 **Prohibit livestock loading chutes and corrals.**

MA-4-22 **Limit new road construction only to stream crossings or recreation facilities except where valid existing rights would allow.**

Stream crossings should be constructed at right angles to the stream or riparian areas

MA-4-23 **Bridges are constructed so as to not constrict clearly defined stream channels.**

a *Design permanent bridges for 100-year flood levels to extent practicable*

b *Bridge approaches should be constructed to prevent erosion, use of culverts or box culverts that adversely restrict flow and native fisheries should be avoided*

c *Limit the use of construction equipment in streams to the amount of time absolutely essential for completion of the project*

MA-4-24 **Require appropriate structures at all designated trails, permanent and temporary road system stream crossings.**

a *Design these structures to permit fish passage.*

b *Consider bridges on all perennial streams*

c *Use culverts, anchored corduroy, bridges, gravel and/or concrete fords at intermittent and certain ephemeral streams that are determined during site specific analysis to require protective measures*

d. *Conforms with mandatory BMP for Section 404 for roads constructed for silvicultural purposes and Section 404 nationwide, general and individual permits for facility construction and maintenance when facilities are not for silvicultural purposes*

e *Minimize or avoid crossings for roads and trails with deeply-incised stream banks*

MA-4-25 **Protect road and trail approaches to and from perennial streams with anchored corduroy, gravel, or concrete for a minimum distance of 20 feet from the edge of stream channel.**

Re-enforced approaches to bridges may be necessary and the need for these will be determined on a case-by-case basis Extend the protection to the gradient break to include nearby transitions between the stream floodplain and other landforms

MA-4-26 **Construction of physical structures within stream channels will be designed and engineered.**

Construction will consider physical stream systems, including fishery habitat improvement structures, through coordination with other resource specialists

MA-4-27 **Roads and trails will be constructed and maintained as per section 404 of the Clean Water Act.**

Fire

MA-4-31 **Prescribed fire may be used to enhance riparian vegetation or wildlife habitat.**

a. *Encourage the use of green lines, wet lines or foam lines rather than plowed firelines Minimize the amount of plowed fireline which might impair the hydrology of the riparian ecosystems Generally plowed firelines will not be allowed within the primary zone*

b *Prescribed fire will generally not be used in large riparian areas*

c. *Low intensity backing fires may be used in smaller streamside zones*

d *Fire maintained wetlands, baygalls and bogs should be burned frequently to meet the desired future condition.*

MA-4-32 **The appropriate wildfire suppression response may be confinement, containment, or control.**

Integrated Pest Management

MA-4-41 **Treatment of SPB infestations should be compatible with treatment in adjoining management areas.**

MA-4-42 **Allow SPB infestations to run their natural course and/or move out of the management area unless a site-specific environmental analysis indicates that successful control can be expected and the spot(s):**

* **Threaten essential habitat for Federally listed threatened and endangered species; or**

* **Trees infested by southern pine beetle (SPB) pose a public safety hazard when vacated; or**

* **The SPB growth model and/or Forest Health entomologist predicts the spot will exceed two acres in size; or**

* **Pending site-specific environmental analysis, it is determined the spot would impair the scenic or physiographical qualities within the management area or an adjacent management area in which SPB suppression is also generally restricted; or**

* The SPB spot growth model and/or Forest Health entomologist predicts the spot would expand out of the management area, and through site-specific environmental analysis, was predicted to cause unacceptable damage to resources on adjacent state, private, or federal lands.

MA-4-43 **SPB treatment methods which may be implemented, in order of priority, are:**

a Cut and leave, or

b Cut and remove

MA-4-44 **Fall trees away from the stream course during SPB suppression activities. Trees which cannot be safely felled away from the stream course should not be included in the treatment unless necessary to achieve effective spot suppression.**

Lands

MA-4-51 **Issue special use permits when compatible with the management of the area or where they are necessary to support valid existing rights.**

MA-4-52 **Discourage new transmission lines, gas lines, etc. Where no reasonable alternative exists, additional or new facilities should be restricted to existing rights-of-way.**

Rights-of-way may cross these zones subject to mitigation requirements determined through site-specific environmental analysis Obtain U S. Corps of Engineers clearance for impacted jurisdictional wetlands and other waters of the United States

MA-4-53 **Identify base floodplains and jurisdictional wetlands in all land exchanges.**

The environmental analysis for any land exchange shall identify wetland and riparian values of all tracts. For land exchanges, 1) the amount and quality of wetlands received will be greater than those conveyed and 2) the recepient will be made aware of the flood-hazard of lands conveyed, and if needed, the deed will restrict inappropriate uses of the floodplain

Minerals

MA-4-61 **Prohibit removal of common variety minerals.**

MA-4-62 **Make public owned leasable minerals available for leasing.**

To the extent practicable, new exploration and production activities shall be compatible with the soil, water, wildlife, and fisheries management emphasis for this area

MA-4-63 **Federal oil and gas leases shall contain a stream protection stipulation requiring oil and gas well sites and containment facilities be located outside the SMZ of perennial or intermittent streams and buffer zones of wetlands or lakeshores.**

a. *Further setback may be required as determined necessary through site-specific environmental analysis*

b *Pipelines and seismic survey projects may cross streamside zones subject to mitigation requirements determined through site-specific environmental analysis Obtain U S Corps of Engineers clearance for impacted jurisdictional wetlands and other waters of the United States*

c *Reccommend well sites and facilities for reserved and outstanding oil and gas operations be located outside of the SMZ*

Planning

See Forest-wide Standards and Guidelines

Range Management

MA-4-71 **Permit livestock grazing where consistent or compatible with adjacent management areas.**

Monitor any livestock grazing within this management area and restrict, control, or exclude cattle if evidence of degradation occurs

MA-4-72 **Protect watershed improvements from grazing until project objectives have been met. In most cases this would entail a three-year protection period.**

MA-4-73 **Allow no supplemental livestock feeding nor salt/mineral blocks within this management area.**

Recreation Management

MA-4-81 **The recreation opportunity spectrum (ROS) for this management area shall generally be semi-primitive non-motorized or roaded natural at trail or road crossings.**

These designations should refer to established ROS maps

MA-4-82 **Grant group events special use permits, temporary or non-conflicting, where such furthers use of a National Forest recreation resource.**

MA-4-83 **Manage dispersed recreation opportunities consistent or compatible with adjacent management areas.**

MA-4-84 **Trails, except off-road vehicle (ORV), may be constructed within this management area where consistent or compatible with adjoining management areas.**

MA-4-85 **Prohibit ORV use except at designated ORV trail crossings. Permanent ORV Trails will conform to Forest-wide standards and guidelines within Plan Appendix E.**

Scenic Resources

MA-4-91 **The visual quality objective (VQO) varies depending upon the location and the visual sensitivity of adjacent management areas; however, most streamside zones require a retention or partial retention VQO.**

Silvicultural Practices

MA-4-101 **This area is classified as unsuitable for timber production.**

a *Unregulated timber harvest may be utilized to accomplish non-timber related goals and desired future conditions of the ECS and as approved through site-specific environmental analysis.*

b *No harvest shall occur within the primary zone unless for forest health, safety or to provide habitat for threatened or endangered species*

c *Harvest and silvicultural management may occur within the secondary zone to achieve the desired future condition*

MA-4-102 **Designate all perennial and intermittent stream courses as protected stream courses in the timber sale contract and protected as described in standard contract provisions.**

MA-4-103 **Exclude skidders and other logging equipment from the primary streamside zone. Entry into the secondary zone may be authorized by the sales administrator on a case-by-case basis and at designated stream crossings.**

a *Do not authorize equipment use during wet ground conditions*

b. *Designated crossings for perennial stream must be identified during site specific environmental analysis Other protected streams that may require a designated crossing shall be identified during site-specific environmental analysis*

c *Crossings should be at right angles to the stream or riparian area*

d *All stream crossings and their operation and maintenance will be done according to the mandatory BMP's for silvicultural roads and trails in the regulation for Section 404 of the Clean Water Act*

MA-4-104 **Leave vegetation and naturally-felled timber wherever they afford shade over a stream channel or maintain the integrity of the soil near such a stream.**

Following incidents of extreme catastrophic occurrence, action may be taken to enhance the natural integrity of the streamside zone.

MA-4-105 **Silvicultural practices for riparian areas damaged by past management or catastrophic events will be designed to reestablish stands that provide desired vegetation characteristics.**

a *Use information from the established ECS and vegetation community to achieve riparian ecosystem goal; restoration activities will be designed to maintain or improve the stated desired ecological condition*

b. *When designing a timber sale, locate cutting areas and access so as to avoid stream crossings*

MA-4-106 **Stream channels shall not be used at any time as skid trails.**

MA-4-107 **Servicing of equipment shall not be permitted within the management area.**

MA-4-108 **Remove any debris deposited by current management actions in stream channels that may adversely affect the integrity of the stream**

Site-specific conditions may exist that could consider leaving logging debris in the stream channel if such actions would improve or maintain stream integrity

MA-4-109 **Mechanical site preparation shall be prohibited.**

MA-4-110 **Any tree planting shall be done by hand.**

MA-4-111 **Retain, where available, hardwood den trees, snags, or SPB vacated trees (12 inches diameter breast height (DBH) or greater) during all stand entries, and silvicultural treatments.**

Salvage operations are normally prohibited unless safety hazards, successful SPB control or enhancement of the riparian condition deem salvage appropriate

Soil and Water

MA-4-121 **Subject to valid existing rights, no soil disturbing activities within this management area will be permitted except for the following types of projects when approved through site-specific environmental analysis: (a) Restoration of eroded or disturbed sites; (b) construction or repair of ponds; (c) special use, utility and pipeline crossings; (d) seismic surveys; (e) road or trail construction, reconstruction or maintenance; (f)**

timber harvest for non-timber or vegetation enhancement purposes; (g) recreation facilities; and (h) correction of safety hazards.

MA-4-122 **Allow ponds, greentree reservoirs, or flood control structures to be constructed if approved through site-specific environmental analysis.**

MA-4-123 **Prohibit concentrated recreation use unless appropriate mitigation has been provided.**

Where appropriate facilities are provided for concentrated recreational use and where no environmental damage is indicated, activities may continue.

MA-4-124 **Activities located on navigable waters or waters of the U.S., will comply with the Clean Water Act.**

MA-4-125 **Where a jurisdictional wetland or waters of the U.S. are involved, obtain Section 404 permits from Corp of Engineers when an activity is not under the silvicultural exemptions, national or general permit provisions.**

MA-4-126 **Lake banks shall be protected, restored or enhanced to meet non-point source pollution goals and aquatic habitat objectives.**

Wildlife

MA-4-131 **Construct artificial cavities for wildlife where necessary and feasible.**

Placement of these cavities should be compatible and consistent with the adjacent management areas

MA-4-132 **Wildlife food plots requiring soil disturbance are not authorized within this management area.**

MA-4-133 **Development of greentree reservoirs, ponds, and other wildlife habitat improvements as defined in the Forest Service wildlife habitat handbook are permitted.**

a *These wildlife improvements will consider compatibility and be consistent with the adjacent management areas.*

b *These reservoirs, ponds, and other wildlife improvements will be accomplished following, when indicated, the requirements of Section 404 of the Clean Water Act*

MA-4-134 **Habitat management activities essential for population enhancement of federally listed threatened or endangered species may be conducted.**

a *Habitat management shall be directed to restore or enhance the plant community as directed through ECS*

b *Fisheries habitat improvement structures will be constructed only after environmental need has been determined*

c *These improvements will be analyzed for hydraulic functioning prior to installation and will comply with the regulation for Section 404 of the Clean Water Act*

Management Area 5
Major Aquatic Ecosystems

Theme

Major Aquatic Ecosystems - Areas managed to maintain the aquatic ecosystems while providing opportunities for compatible multiple uses.

Description

This management area consists of man-made lakes and reservoirs and the lands inundated by these water bodies. These areas are suited for aquatic ecosystem management and for production of goods, uses, and values such as fishing, water quality, water supply, and biological diversity.

This management area of approximately 16,300 acres does not include lands adjacent to these water bodies The adjacent riparian ecosystems are included in Management Area 4 - Streamside Zone Ecosystem. This management area prescription applies to 15,682 acres of lakes, reservoirs and the lands inundated by them at normal pool level They are:

Caddo National Grassland:
Lake Fannin - 35 acres
Coffee Mill Lake - 651 acres
Lake Crockett - 360 acres

LBJ National Grassland·
Black Creek Lake - 33 acres
Cottonwood Lake - 45 acres

Angelina and Sabine National Forests:
USFS Lands Inundated
By Sam Rayburn Reservoir - 9,427 acres

Sam Houston National Forest
USFS Lands Inundated
By Lake Conroe - 5,131 acres

In addition to the areas described above, the U S. Government retains management authority for a significant area of mineral rights under Toledo Bend Reservoir. Thus in regard to mineral activities only, management direction in this area includes land under Toledo Bend Reservoir. While there are National Forest lands under Sam Rayburn Reservoir, there are no federal minerals

Toledo Bend Reservoir, Lake Conroe, and Sam Rayburn Reservoir are all managed by entities other than the Forest Service. These lakes are

not subject to the Standards and Guidelines except as stated above for minerals and special uses

Ponds and lakes not listed above are included in the management area where they occur because their use and ecology is dominated by those management areas. Standards and guidelines are incorporated in the various management area prescriptions which provide direction for managing them.

Desired Future Condition

These areas provide a range of settings offering clean water, wildlife habitat, hunting, fishing and other recreational opportunities dependent on aquatic environments, with access from adjacent developed or primitive recreation areas. Regardless of their initial purpose of construction, good water quality, opportunities for fishing and other recreation, and habitat for aquatic-dependent wildlife are provided. A large portion of perennial streams, draining into these areas, support native fish populations that can provide fishing opportunities and riparian-dependent species, such as waterfowl, that can provide hunting and wildlife viewing opportunities

Over most of the area you will view lake environments and landscapes with adjacent riparian vegetation. Both submergent and emergent vegetation are maintained for fish and wildlife habitat. Shorelines are managed by the U S. Forest Service according to this and other management area prescriptions to maintain a natural appearance Motorized recreation opportunities are provided on the larger lakes and reservoirs, while non-motorized opportunities are provided on the smaller lakes.

Management Emphasis

These areas are managed to maintain all components of aquatic ecosystems while providing opportunities for compatible activities. Within the bounds of the Forest Service's authority, the goals of this management area are to.

* Maintain high quality, functioning aquatic ecosystems,

* Maintain water quality sufficient to meet Clean Water Act and Texas Water Standards;

* Minimize risks of downstream flooding,

* Maintain viable populations of native fish and aquatic dependent wildlife species which would be found in man-made reservoirs, and

* Provide a safe, healthful, aesthetic, non-urban aquatic environment for the pursuit of natural resource-based recreation

MA-5 Standards and Guidelines

NOTE The U S. Forest Service has very limited authority over surface management on the two large reservoirs included within this management area (Sam Rayburn and Lake Conroe). The only standards and guidelines applicable to these two reservoirs are so noted in the following standards.

Air Quality

See Forest-wide Standards and Guidelines.

Aquatic Resources

MA-5-01 **Lakes shall be managed to provide a recreational fishery.**

MA-5-02 **Aquatic weed control, including use of Environmental Protection Agency (EPA) approved aquatic pesticides, biological agents, and fisheries habitat improvements shall be permitted.**

Actions are initiated pending appropriate site-specific environmental analysis. All pesticide applications must be done under the supervision of a certified pesticide applicator

MA-5-03 **Conduct inventories to identify any Threatened, Endangered, or Sensitive species.**

MA-5-04 **Emphasize native game fish compatible with recreational use and found in man-made reservoirs.**

MA-5-05 **Fish can be stocked to meet sports fisheries management objectives if viable native fish populations can be maintained.**

MA-5-06 **Perform fish population balance checks at least once every two years.**

MA-5-07 **Tailor special creel limits to the needs of each individual lake based upon the results of the population balance checks.**

MA-5-08 **Coordinate fisheries management with the fisheries section, Texas Department of Parks and Wildlife.**

Biological Diversity

MA-5-11 **Retain existing native woody cover adjacent to shoreline within 100 feet of normal pool elevation in lakes except selected felling of dead, dying, or crowded trees for fish structures may occur.**

MA-5-12 **About 30 percent of the lake margins should be maintained in emergent aquatic vegetation for bank protection and for fish and waterfowl habitat.**

This standard is applicable to both the lakes and, to the extent practical, the large reservoirs managed by other government entities.

MA-5-13 **Maintain 10 to 50 percent of the surface area of lakes in submergent native aquatic vegetation for fish and waterfowl habitat.**

Chemicals

See Forest-wide Standards and Guidelines.

Cultural Resources

MA-5-21 **Monitor the effects of shoreline erosion on cultural resources.**

Mitigation measures may be initiated if adverse effects are documented

Integrated Pest Management and Lands

See Forest-wide Standards and Guidelines

Minerals

MA-5-31 **Leases for oil and gas shall prohibit surface occupancy within this management area. (Applicable to Sam Rayburn and Lake Conroe also.)**

Exceptions to this standard may be made for (1) Laying of geophone lines, and (2) mineral exploration and development in Toledo Bend Reservoir when there is no practical alternative, when appropriate mitigation measures and environmental protection precautions are employed.

MA-5-32 **Prohibit removal of common variety minerals adjacent to or in water bodies. (Applicable to Sam Rayburn and Lake Conroe also.)**

Planning and Range

See Forest-wide Standards and Guidelines

Recreation Management

MA-5-41 **Periodic law enforcement patrols shall be provided as monitoring warrants the need.**

MA-5-42 **Projects to reduce safety hazards because of dead, defective or hazardous trees in lakes and adjacent riparian areas shall be analyzed and evaluated to ensure adverse effects are recognized and mitigated.**

MA-5-43 **Recreation opportunities compatible with the Recreation Opportunity Spectrum (ROS) classification of the adjoining management area(s) shall be provided to the extent these are compatible with the visual quality**

objective (VQO) of retention. (Applicable to Sam Rayburn and Lake Conroe also.)

These designations should refer to established ROS maps

MA-5-44 **On lakes 50 acres or less, limits on outboard motors may be applied.**

Scenic Resources

MA-5-51 **All projects or practices will be designed to meet VQO of retention. (Applicable to Sam Rayburn and Lake Conroe also.)**

Silvicultural Practices

MA-5-61 **Vegetation removal in the lake or littoral zone shall be allowed only to maintain or enhance visual quality and recreational experience, to remove a safety hazard, or to improve wildlife habitat.**

Tree harvesting may be utilized to accomplish these tasks.

MA-5-62 **Non-aquatic herbicides shall not be used where restricted by label and shall not be used within at least 100 feet of lakes.**

Non-aquatic herbicide use may occur by hand application within 100 feet of lakes pending appropriate site-specific environmental analysis:

a For noxious weed control; and

b. For control of woody growth that threatens the structural safety of the dam.

MA-5-63 **This area is classified as unsuitable for timber production.**

Soil and Water

MA-5-71 **Water pH should be maintained generally between 6.2 and 8.3, except when due to natural causes, and should not be below 5.0 or more than 9.0.**

MA-5-72 **Lake fertility may be augmented with the application of fertilizer as long as water quality remains in compliance with state standards and section 404 regulations.**

The following water quality parameters should not be exceeded

* *nitrate nitrogen < 10 milligrams/liter*
* *total phosphorus < 25 micrograms/liter*

MA-5-73 **Clarity should be such that a Secchi disk is visible at a minimum depth of 18 inches, unless the lack of clarity is due to natural causes.**

Operation and Maintenance

MA-5-74 **Water withdrawals from lakes shall not be permitted if adverse effects occur on aquatic ecosystems or adjacent riparian-dependent resources.**

Water withdrawals may be made where necessary to rid lakes of undesirable fish species, to control excessive aquatic vegetation, and to deepen shorelines.

MA-5-75 **Municipal water supply reservoirs shall be protected in accordance with state regulations.**

Wildlife

MA-5-81 **Waterfowl nest structures shall be considered in association with island areas.**

Management Area 6
Longleaf Ridge Special Area

Theme

·Upland Longleaf Pine Woodlands and Savanna Ecosystems-landscapes managed for large, older trees within the longleaf pine-little bluestem dominated community, while offering a range of compatible multiple uses, but primarily for the enhancement of westernmost example of longleaf pine communities and species such as the red-cockaded woodpecker (RCW).

Description

This area of approximately 32,300 acres is located on the southern portion of the Angelina National Forest and was part of the area identified as general forest or Management Area 5 of the 1987 Forest Plan This area also includes all of the three-fourths (3/4) mile management zones surrounding red-cockaded woodpecker (RCW) clusters on the southern Angelina National Forest. The management philosophy for this area includes the strategy for management of the red-cockaded woodpecker as described in Management Area 2. The RCW population objective for this area is 125 active clusters.

This management area contains some of the areas affected by the court order and injunction entered June 17, 1988, as modified on October 20, 1988, by United States District Court Judge Robert M Parker for the Eastern District of Texas requiring a Comprehensive Plan for the Management of the Red-cockaded Woodpecker Habitat in the National Forests in Texas. Since the Standards and Guidelines for this management area modify the "Comprehensive Plan" it must be submitted to the Court for approval before implementation inconsistent with the Court's order may occur.

This management area is found within the Pineywoods Ecological Region as described by the Texas Natural Heritage Program (TNHP), and is an area typified by longleaf pine dominated forests. Within this area, United States Forest Service (USFS) specialists have defined two ecological sub-regions in an Ecological Classification System (ECS). This ECS describes unique physical and biological characteristics of the Pineywoods. All of the Angelina National Forest occurs in the *West Gulf Coastal Plain and Flatwoods Section*. This area is further subdivided into *Western Coastal Plain Subsection* [consisting of the Mayflower Upland and the Deep Sandy Upland Land Type Associations (LTA) [Plan Appendix A.]

These LTA's include some plant communities that reach their western limits in Texas on the NFGT, including longleaf pine forests and savannas, pitcher plant bogs, and evergreen acid seep forests (which are more typical of Southeastern Coastal Plain forests)

Some areas within MA-6 have been identified as having significant wildlife, riparian, and other biological attributes These sites will be managed for the protection and enhancement of these characteristics

Desired Future Condition

For the **Western Coastal Plain and Mid-Coastal Plain Transition Subsection** (Mayflower Uplands and Deep Sandy Uplands LTA's) of the southern and central Angelina National Forests.

Over this landscape you will view open longleaf pine forests, situated on rolling hills with droughty soils Ridgetops and upper slopes of hills will be dominated by the longleaf pine communities Some areas in this LTA were planted to slash pine, and these areas will be restored to the native longleaf The understory vegetation is dominated by perennial prairie grasses, (primarily little bluestem, switchgrass, and Indian grass) with a variety of herbaceous species such as sunflowers, tickclover, gayfeather and bushclover becoming more common understory components Some plant communities develop a savanna or prairie-like appearance, especially in the uplands Tree species adapted to frequent fire and nutrient limitations will replace other less tolerant species, especially those which were planted or which increased during fire suppressed periods Blackjack, bluejack and post oak trees will be the few hardwood species that co-exist with the longleaf pine Populations of species for which viability is of concern will recover

Interspersed within this longleaf pine ecosystem are some mixed forests, on or adjacent to the streams Hardwood bottomlands, drainages, seeps, and bogs will provide diversity between the uplands and larger stream courses Most stream courses will portray characteristics of the mixed forest ecosystem, but in some situations bottomland plant communities may exist The dominant character of this area is its open mature longleaf pine Some loblolly and shortleaf pine will occur across the landscape, but this will gradually be replaced by longleaf pine through time due to frequent prescribed fires and selective management activities that perpetuate the older pine woodlands character

The continued use of frequent prescribed fires (including growing season ignitions) will maintain an open, herbaceous dominated understory throughout the majority of the area As trees mature, reproduce, and die, the overstory will become increasingly uneven aged Trees of various sizes will replace the present stands of uniformly sized trees Overall tree density will become more varied Patches of regenerating grass-stage and juvenile longleaf pine will be common, interspersed with occasional dense clumps of mature trees, hardwood areas, and canopy

openings with few to no trees Signs of fire (including scarred trunks, and occasionally browned needles) will be prevalent Some natural mortality and downed trees will be evident due to lightning strikes, fire, disease damage, and windthrow

This area will provide a mature forest setting with evidence of regenerating longleaf pine throughout the area Many recreation opportunities are provided, but recreational use will be oriented to the sustainability of the longleaf pine ecosystem and associated communities Management activities will be evident throughout this area due to a focus on management and restoration of longleaf pine communities These communities will provide essential habitat for selected threatened or endangered species that require older longleaf pine dominated ecosystems Management will include protection and enhancement of the RCW population in this area

Recreation associated with this area will be on roads from vehicles as well as nonmotorized forms of activity Fishing opportunities will be available in the many ponds, lakes and streams Motorized trail riding opportunities will be evident from signs on both roads and trails. Interpretive facilities can be seen with informational signs, maps, and brochures readily available to help the recreationist locate public lands and key recreation attractions

A developed road system is evident in some areas, providing access for recreation, timber harvest, and other multiple uses Evidence of some old roads and off-road vehicle use will gradually fade in areas where sensitive species and restoration activities are emphasized

Management Emphasis

This management area is managed for maintenance of habitat components favorable to the development of longleaf pine communities and species of wildlife like RCW Restoration and regeneration of the upland pine forest communities and these species is the objective A wide range of silvicultural management techniques will be available to provide areas of continuous canopy and within-stand diversity for selected species of wildlife and plants

These forest management techniques will also provide for adequate regeneration of the upland pine communities Restoration opportunities will provide for deviations from rotation schedules and allow greater opportunity for diversity between stands The conditions will create multi-aged and two-aged forests, as well as some single-aged stands These stands will have rotations of 140 years for longleaf pine. In uneven-aged stands, diameter limits will help regulate species composition based on site-specific conditions Diameter limits will generally range from 18 to 28 inches, with larger diameters occurring in bottomland sites Prescribed fire and herbicide usage are allowed to maintain the open conditions that favor the grass and grass type ground level

vegetation, and provide open forest conditions considered optimum for *species like the RCW*

Management emphasis and forest stand composition will be guided through the ECS at the LTA level (See Plan Appendix A). Broad species composition, by LTA and in order of dominance, is as follows:

LTA	Approximate Acres	Dominant Species
Sandy Uplands	7,580	Longleaf Pine, Little Bluestem
Mayflower Uplands	24,700	Longleaf Pine, Little Bluestem

The longleaf ridge area is replete with many examples of significant natural heritage sites representative of the upland longleaf pine-little bluestem landscape. These smaller sites or micro-sites have been fully described in the Texas Natural Heritage Report (1992). Generally these sites are described as bogs, baygalls, barrens or xeric longleaf pine uplands. All the following sites are in the Mayflower Uplands LTA in Longleaf Ridge except Big and Green Creek which is in the Sandy Uplands LTA The following sites occur within Longleaf Ridge:

Heritage Sites	Acres	Compartments
Big and Green Creek	600	C71,72,91 & 93
Big Creek Bog Complex	13	C91
Black Branch Barrens	161	C84
Bouton Lake	185	C93
Boykin Annex	144	C92
Boykin Springs	172	C92
Buck Branch Barrens	12	C85
McGee Bend	632	C82
Millstead Branch	9	C91
Rocky Branch Barrens	72	C86
Sexton Branch	27	C88
Shearwood Creek	1380	C87
Trout Creek	2150	C77
Ebenezer Bog	6	C81
FDR 327 slender gay-feather	11	C88
FDR 347 leadplant	4	C76
TX63 slender gay-feather	1 5	C73
Upper Clear Creek Seep	6	C74

These micro-sites within Longleaf Ridge will be managed for the appropriate character and for development of the various sensitive plant

and animal species found within that site. Specific descriptions, management direction and future condition for some of the upland, bog and barren reference sites include

Boykin Springs is in Compartment 92 about 10 miles southeast of Zavalla, Texas, immediately north of Boykin Springs campground and lake This area features the finest quality remnant of a fire-maintained, old-growth, (species-rich dry upland longleaf pine savanna) in the West Gulf Coastal Plain (Orzell 1992, TNHR) Stands of nearly pure longleaf pine dominate the overstory on upland portions of the area, with thick, nearly continuous grass cover beneath These open savanna-like conditions foster high levels of plant species diversity, including several unique plant species Boykin Springs savannas include populations of rare West Gulf Coastal Plain endemics.

Unique species which occur in these upland, dryer habitats include

Slender gay feather (Liatris tenuis)
Louisiana squarehead (Tetragonetheca ludoviciana)
Erect milkpea (Galactia erecta)
Leadplant (Amorpha canescens).

Hillside bog (pitcher plant bogs) communities, dominated by herbaceous wetland species, including many carnivorous plants, and orchid species, will be perpetuated The open aspect of bogs through frequent fire, will provide the essentials for the propagation of many rare and restricted species In larger, wet areas where fire is less frequent, baygall habitats will be seen These acid seep forests, with thick evergreen shrub communities (often lacking a true overstory) will have abundant ferns and mosses in the understory

Unique species which occur in these bog habitats include:

Bog coneflower (Rudbeckia scabrifolia)
Drummond's yellow-eyed grass (Xyris drummondii)
Yellow fringeless orchid (Platanthera integra)
Grasspink (Calopogon tuberosus)
Rose pogonia (Pogonia ophioglossoides)
Rough-leaf yellow eyed grass (Xyris scabrifolia).

Catahoula Barrens are found in Compartments 84, 85, and 86 near State Highway 63, 15 miles southeast of Zavalla, Texas. This botanical area consists of 3 sites (Black Branch Barrens, Buck Branch Barrens, and Rocky Branch Barrens) which are separated due largely to fragmented ownership patterns They are referred to collectively as the Catahoula Barrens because the plant communities have a sparsely vegetated appearance ("barrens") and because they occur exclusively on a particular geological formation ("Catahoula")

Due to unique combinations of soil influences and environmental factors the vegetation in this botanical area is quite variable This variation includes, exposed rock outcrops, longleaf pine savannas, oak woodlands, riparian vegetation, and shallow soil glades The ecotones between each of these types is often very subtle and difficult to identify In general, growing conditions are not conducive to woody plant growth Both pines and hardwoods tend to be scattered, stunted, or malformed Oak woodlands, with blackjack (Quercus marilandica) and post oak (Q stellata), appear remarkably similar to those of central Texas A population of Navasota Ladies Tresses (Spiranthes parksii), a Federally endangered species, occurs in these habitats separated by nearly 200 miles from its primary locations in central Texas Natural prairie-like openings are interspersed commonly throughout the area between fairly dense pine-hardwood forests (often with residual longleaf pine trees) and longleaf pine savannas which both tend to occur on somewhat deeper soils

Unique Plant Species:

Riddell's spike moss
Texas saxifrage
Golden Hedgehyssop
Slender Gay-feather
Texas Sunnybell
Navasota Ladies'-tresses

Recreation

This management area contains lands physically suited for motorized recreation use, including off-road vehicles (ORV), and many other forms of dispersed recreation use

Motorized trail riding opportunities will be provided only on existing road and trail systems

Recreational fishing opportunities will be provided in all suitable ponds and streams Interpretive facilities such as informational trailheads and parking areas will be provided, all would include maps, brochures and/or signs to help the recreationist locate public lands, identify unique plant and animal communities, and key recreation attractions Semi-primitive motorized or roaded-natural recreation opportunities will be available Management direction will ensure considerations for wildlife, water quality, soil productivity, and biological diversity while providing commercial production of forage and timber, and exploration for and extraction of minerals

This area is managed to provide quality wildlife habitat, particularly for threatened and endangered species, and quality recreation opportunities while affording environmentally sensitive commodity production

Specific activities are centered around consumptive and nonconsumptive use of land and water areas including timber harvest and production, limited grazing, minerals exploration and production, hiking, fishing, hunting, horseback riding, ORV use, canoeing, nature study, camping, boating, and mountain biking The goals of this management area are to

* Provide for the development of upland longleaf pine savannas that allow populations of threatened, endangered, or sensitive species dependent on these communities to flourish,

* Provide habitat for recovery of RCW populations and sub-populations, while allowing maximum potential for effective dispersal and social interaction of individuals between clusters The population objective is 125 active clusters.

* Provide opportunity for timber production, mineral exploration and production, and grazing while maintaining a natural appearing landscape, clean water, productive soil, little soil erosion, viable populations of wildlife, and habitat for other threatened, endangered, or sensitive species of plants and animals,

* Provide a wide spectrum of dispersed recreation opportunities through the management of user activities and natural resource settings as follows

  - Provide users the opportunity to experience a sense of solitude, tranquility, self-reliance, and closeness to nature These experiences are provided through activities involving the application of outdoor skills in an environment that offers some challenge and risk,

  - Provide some opportunity to experience a high degree of interaction with the natural environment using both motorized and nonmotorized forms of recreation (where the challenge and risk opportunities associated with more primitive types of recreation are not important); and

  - Provide users the opportunity to enjoy consumptive and nonconsumptive use of wildlife

MA-6 Standards and Guidelines

All standards and guidelines pertaining to the protection and management of RCW as described in MA-2 will apply within the Longleaf Ridge Management Area (MA-6) Efforts to enhance and develop RCW populations to stated objectives will follow MA-2 direction and guidance within the regional handbook for RCW.

Air Quality and Aquatic Resource

See Forest-wide Standards and Guidelines.

Biological Diversity

MA-6-01 **Provide old growth allocations in forested microsites as inclusions identified within the Texas Natural Heritage Report.**

Other older forest conditions will develop in areas throughout Longleaf Ridge. These sites exist in the many 10 to 100-acre RCW clusters that are found in this management area

Chemicals and Cultural Resources

See Forest-wide Standards and Guidelines

Facilities

MA-6-11 **New trails and roads are developed as necessary to provide access for recreation and other compatible multiple uses.**

New trails, trailheads, or parking facilities may be built where needed to improve recreation opportunities. Provide facilities and access to key attractions such as recreational fisheries. Access for people with disabilities shall be provided in the design and construction of facilities.

MA-6-12 **All system roads shall be planned, located, designed, constructed, and reconstructed to provide the road density necessary to meet resource management and commodity production.**

Other criteria considered are.

Resource management objectives,
Environmental needs and requirements,
Safety,
Traffic requirements;
Vehicle characteristics;
Road users, including users with disabilities,
Use seasons; and
Economics

MA-6-13 **Develop a total road density, including temporary roads, for timber sales using a maximum skid distance of approximately 1300 feet.**

MA-6-14 **Construct and reconstruct Forest Development Roads to standards appropriate for Traffic Service Levels B through D.**

MA-6-15 **Provide appropriate maintenance and operational management for the FDR System to accommodate commodity production, other access needs, safety, and resource protection.**

This includes the use of Environmental Protection Agency (EPA) approved pesticides, where approved through site-specific environmental analysis.

MA-6-16 **Require commercial users of system roads to contribute to road maintenance commensurate with the levels of use.**

Contributions will be in the form of reimbursement or actual work performed.

MA-6-17 **Local roads constructed or reconstructed in conjunction with timber sale or special use activities may be closed or remain open for secondary purposes.**

These special use roads may be managed as linear wildlife openings; open for limited use if needed for recreation or administrative uses, or encouraged for nonmotorized travel

MA-6-18 **Obliterate and revegetate temporary roads as part of the project work.**

Methods used, timing, and mitigation measures shall be in accordance with the site-specific project plan. Such roads shall be designed to re-establish vegetative cover on the disturbed area as soon as practicable (not to exceed ten years after the termination of the contract, permit, or lease)

Fire

MA-6-21 **Utilize prescribed fire to control midstory, promote open upland forest communities, and to reduce fire hazard.**

a. *Specific frequency, season, and prescription for burning in any area may vary depending upon vegetation, site and weather conditions, and RCW management priorities*

b *Burn cycles should control encroaching vegetation while minimizing risk to cavity trees*

c *Cavity trees will be protected during burning operations.*

d. *Plow lines will not be constructed within 200 feet of cavity trees unless needed to protect the cavity trees during an emergency*

e. *Emphasis is on growing season burning in habitat that was historically maintained by growing season fires*

MA-6-22 **Wildfire suppression response may be confinement, containment, or control with the primary objective of protecting RCW cavity trees.**

Integrated Pest Management, Lands, Minerals, and Planning

See Forest-wide Standards and Guidelines

Range

MA-6-31 **Livestock grazing is permitted.**

a Consider grazing compatibility with adjacent management areas and areas that may require protection from cattle in any allotment authorization

b De-emphasize livestock grazing on forested areas

MA-6-32 **Permitted livestock grazing is emphasized during growing season use over dormant season grazing.**

Monitor competition between cattle and wildlife for key browse and herbaceous plant species

Recreation Management

MA-6-41 **Feature semi-primitive motorized and roaded-natural recreation opportunities in this management area.**

These designations should refer to the established ROS maps

MA-6-42 **Manage for a wide spectrum of dispersed recreation use opportunities.**

a Provide for hiking, horseback, mountain bike, and motorized trail use

b Provide trailhead parking areas for trail users

c Provide ORV use in areas that do not disturb RCW clusters, sensitive species or their habitat ORV use will only be available on identified trail systems

MA-6-43 **Design trails to offer a challenging experience and to blend in with the natural environment.**

They are constructed and maintained to the minimum standard necessary to prevent resource damage, protect visual quality, and visitor safety

MA-6-44 Campsites and other areas of concentrated use are managed for a low level of change in natural conditions.

MA-6-45 Overused sites are rehabilitated, considering temporary or permanent site closure when other management techniques are not successful.

Scenic Resources

MA-6-51 Meet partial retention visual quality objective (VQO) for management practices along highways, paved state or county roads, and primary Forest Service system roads and trails; and modification VQO in other areas.

These designations should refer to established VQO maps

MA-6-52 Emphasize natural appearing landscapes by designing vegetation treatments to maintain the character of that landscape by following natural vegetation changes and landscape features.

Well site locations, well site access roads, pipelines, and other site disturbing uses proposed within the foreground of highways or paved state or county roads may require special mitigation Any special measures required will be identified through analysis of the specific proposal

MA-6-53 Modify timber management practices on visually sensitive areas to maintain or enhance the visual resource, as described in the USFS VQO Handbook and in Forest-wide Scenic Resource Standards.

Silvicultural Practices

MA-6-60 This area is classified as suitable for timber production.

FOR OTHER STANDARDS SEE MA-2

Rotation and Regulation

MA-6-61 Use the following rotations for acres in the suitable land classification:

Species	Rotation
Loblolly	80
Shortleaf	80
Longleaf	140
Upland Hardwood	120
Bottomland Hardwood	120
Mixed Pine/Hardwood	120

Soil and Water

MA-6-71 Spot treat roads, skid trails, and log landings with mulch as needed to provide a protective cover according to specifications in appropriate R8-CT provisions provided for timber sale contracts.

MA-6-72 Rip, scarify, and break to a minimum depth of four inches tightly compacted soils resulting from timber harvest or other management activities.

MA-6-73 After a road, log landing, or skid trail has served its purpose, remove bridges, culverts, ditches, ruts, and berms; and outslope the road bed and revegetate to 70 percent ground cover within one year.

MA-6-74 Require timber purchaser to provide maintenance of erosion control structures until 70 percent of the area is revegetated or up to one year during the period of the contract.

MA-6-75 Plan vegetation management practices so as to retain enough duff and vegetation to maintain a healthy forest ecosystem and ensure adequate nutrient cycling.

MA-6-76 Vegetation management practices shall ensure treatments for protection, enhancement, and/or restoration of soil and water resources as well as procedures for monitoring and evaluation of the management practices.

MA-6-77 Meet State water quality standards through approved Best Management Practices (BMPs) during all silvicultural activities.

MA-6-78 Protect soil and water values by implementing NFGT Permanent ORV Standards and Guidelines for soil and water protection.

Wildlife

See Standards for Wildlife MA-2

Management Area 7
Wilderness

Theme

Wilderness, Current Direction - Areas of the Forest Congressionally designated as wilderness

Description

This management area of approximately 37,200 acres contains five wilderness areas (Big Slough, Indian Mounds, Little Lake Creek, Turkey Hill and Upland Island)

According to the Wilderness Act of 1964, wilderness is an area where the earth and its community of life are untrammeled by humans, where a person is a visitor who does not remain, an area of undeveloped Federal land containing its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of human work substantially unnoticeable, (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation, (3) is of sufficient size as to make it practical for its preservation and use in an un-impaired condition, and (4) may also contain ecological, geological, or other features of scientific, education, scenic, or historical value

Desired Future Condition

Lands within this management area are administered to maintain or achieve a natural state The area is generally maintained in a natural condition by allowing physical and biological processes to operate without human intervention. Activities are integrated in such a way that current human use leaves only limited and site-specific evidence

Within wildernesses, the enduring resource of wilderness is maintained and perpetuated as one of the multiple uses of National Forest System land. Wilderness character and public values are protected and perpetuated including, but not limited to, opportunities for scientific study, solitude, education, physical challenge and stimulation, inspiration, and primitive recreation experiences Opportunities are provided for a variety of recreation pursuits with emphasis on activities that are in harmony with the natural environment and consistent with the recreation role of the National Forest Consistent with management of the areas as wilderness, opportunities are provided for public use, enjoyment, and understanding of wilderness through experiences that depend on a wilderness setting Opportunities are provided for solitude and a primitive and unconfined type of recreation

Wildernesses are generally maintained in a natural condition by allowing physical and biological processes to operate without human intervention In wilderness, all resource management activities are integrated in such a way that current human use leaves only limited and short-term evidence of passing Resource management activities are limited to protection of critical habitat for federally listed threatened or endangered species, trails and signing for user safety, and to those existing uses that do not affect existing wilderness attributes

Little evidence of other users and low interaction between users occurs Facilities of a primitive nature may be present to protect the resources and the safety of visitors Visitors could normally expect to view wildlife requiring old growth environments and low levels of disturbance Little evidence of old roadbeds with no motorized use exists

Due to the relatively small size of the wildernesses and the proximity of roads, most of these areas cannot meet the strict criteria for a primitive recreation opportunity spectrum (ROS) classification Given this, opportunities for primitive dispersed recreation experiences that emphasize solitude and challenge consistent with wilderness recreation may not be met During the LAC process and through later wilderness plans, opportunity classes will be developed as appropriate to ensure a quality wilderness experience

Human travel is principally on system trails when provided Campsites may be designated and show evidence of repeated, but acceptable levels of use Trailheads and unobtrusive signing are provided adjacent to the wilderness boundary Use is managed through informational services including trailhead information stations and public contact through wilderness education programs

The vegetation is primarily the result of natural succession and processes Ecosystems are relatively unaffected by human manipulation and influences so that plants and animals develop and respond to natural forces The forest cover retains the primeval character of the environment Natural succession could eventually result in an older forest of predominantly shade tolerant vegetation Portions of the management area attain the characteristics of old growth over time An environment is provided where human actions are minimized, allowing the forces of natural selection and survival (rather than human actions) to be the major determining factor for which and what numbers of wildlife species exist. Wildlife favoring mature vegetation or the late successional stages of vegetation predominate in wilderness Large areas of contiguous forest habitat are provided for many wildlife species Wildlife and fish indigenous to the area are protected from human-caused conditions that could lead to federal listing as threatened or endangered

MA-7 Standards and Guidelines

The following standards and guidelines incorporate some of the Limits of Acceptable Change (LAC) recommendations prepared for Upland Island and Turkey Hill wildernesses on the Angelina National Forest These recommendations, in some cases, have been modified for applicability to other existing wilderness areas

Air Quality

MA-7-01 **Ensure that management activities such as minerals, oil, gas, or other developments on National Forest lands adjacent to wilderness maintain appropriate air quality. See Forest-wide standards to assure quality control through compliance and monitoring.**

Aquatic Resources

MA-7-11 **Native aquatic resources are emphasized in managing fisheries in wilderness.**

MA-7-12 **Fish control projects may be done with Regional Forester's approval.**

MA-7-13 **Wildlife habitat improvement may be done with the Chief's approval.**

Biological Diversity

MA-7-21 **Wilderness is allocated as future old growth.**

Some areas may be classified as designated old growth

Chemicals

See Forest-wide Standards and Guidelines

Cultural Resources

MA-7-31 **Complete a cultural resources inventory on areas expected to provide information significant to understanding the cultural past.**

MA-7-32 **Interpretive facilities are not provided at cultural resource sites and cultural resources are not restored or enhanced for recreational purposes.**

MA-7-33 **Stabilizing or restoring and subsequently maintaining structures with cultural resource values may be done with Regional Forester approval.**

MA-7-34 **Shovel tests may be conducted during cultural resource surveys.**

Facilities

See Forest-wide Standards and Guidelines

Fire

MA-7-41 Fires should be prevented from threatening or causing damage to human life and adjacent non-wilderness property.

MA-7-42 Fires are managed in accordance with approved Fire Management Plan for each wilderness.

MA-7-43 Prescribed fire may be used to manage wilderness as determined through site specific environmental analysis. Prescribed fire plans should address:

a. *The role of natural fire in fire dependent or related ecosystems, and*

b. *Fuel loadings which are a fire risk to resources and values outside the wilderness*

MA-7-44 Favor suppression methods and equipment that cause the:

Least alteration of the wilderness landscape;
Least disturbance of the land surface;
Least disturbance to visitor solitude;
Least reduction of visibility during periods of visitor use; and,
Least effects on other air quality-related values.

MA-7-45 Mechanical equipment may be used in wildfire suppression in accordance with Forest Service Manual direction.

MA-7-46 Firelines shall be rehabilitated as soon as possible after controlling wildfires.

MA-7-47 A prescribed fire action plan for each wilderness will identify the specific areas where prescribed fire can be applied to reduce fuel loading so that outside resources may be protected and maintain a fuel level that would allow fire to play its natural role.

Integrated Pest Management

MA-7-51 Indigenous insect and plant diseases are allowed, as nearly as possible, to play their natural ecological role within the wilderness.

MA-7-52 Protect the scientific value of observing the effect of insects and diseases on ecosystems and identifying genetically resistant species.

MA-7-53 The affected and interested public will be informed or involved as appropriate in the decision to control insects and disease in wilderness.

MA-7-54 All active Southern Pine Beetle (SPB) spots or spot heads within 1/3 mile of susceptible hosts on state or private lands or high value federal lands will be monitored weekly from May through October, and at least monthly from November through April.

For Southern Pine Beetle control the following standards from the Record of Decision of the southern pine beetle Final Environmental Impact Statement (FEIS) will apply:

MA-7-55 No SPB control action shall be taken in wilderness unless within 1/4 miles of susceptible host on State or private lands or high value forest resources on Federal land (other than commercial timber) and is predicted to spread onto that land causing unacceptable damage on that land before control action is considered. Infestations will be allowed to run their natural course unless the aforementioned resources are threatened.

MA-7-56 Aerial detection will be used to identify and locate for ground checking all infestations in wilderness within one-fourth (1/4) mile of susceptible host on State, private or high-value Federal forest resources.

Infestations located within one-fourth (1/4) mile of susceptible host on State, private or high-value Federal forest resources will be ground checked soon as possible (generally two days) following detection to collect data for input in a SPB spot growth model and determine the direction of spread.

Spot growth model predictions will be completed as soon as possible (generally three days) from ground check.

Forest Health personnel will provide the extent of tree kill predicted by the model This information will be used to estimate the location and extent of possible damage on adjacent lands from the uncontrolled infestation.

MA-7-57 No SPB control action will be taken in wilderness until a site specific analysis of the infestation and surrounding site conditions is completed and documented. The site-specific analysis must indicate that successful control can be expected, given: (a) The intensity of the infestation; (b) constraints applied to the control methods for use in wilderness; and (c) the resources available to control the spot.

Where the spot is threatening adjacent lands, the site-specific analysis will assess the predicted impacts to adjacent land considering landowner's management objectives, age and condition of trees and the current threat of SPB impacts from other non-wilderness resources.

Direct, indirect and cumulative impacts to the wilderness attributes and other resources will be assessed and considered equally in the control decision process.

MA-7-58 Integrated pest management treatment methods for SPB treatment in wilderness priorities will be based on site-specific evaluation and will be based on the following:

Cut and Remove - use helicopter, draft animals or cable skidding from public roads, or access, to remove infested logs In visually sensitive zones such as along hiking

trails, remove entire tree if feasible or otherwise remove slash from visual zone Helicopter flight lines will avoid trails where possible

Cut and Leave - Cut slash to lay close to the ground or remove slash if feasible in visual zones to mitigate visual impact

Cut and Hand Spray - Cut slash to lay close to the ground or remove slash if feasible in visual zones to mitigate visual impact

Pile and Burn - This method will not be used in wilderness

MA-7-59 **Monitoring, ground checking and tree felling crews will travel to infestation by non-motorized methods.**

Only under extenuating circumstances, such as an intense outbreak or lack of adequate resources to implement the preceding control method, will motorized equipment be allowed. This requires advance approval by the Regional Forester

MA-7-60 **In extenuating circumstances, such as an intense outbreak or lack of adequate resources to implement the preceding control methods in wilderness, use of motorized ground vehicles may become necessary to protect essential RCW cluster sites and habitat or adjacent lands outside of wilderness.**

Use of motorized equipment to do control work in wilderness would require complete documentation of the extenuating circumstance and approval in advance by the Regional Forester This deviation would be used only as a last resort when destruction of any essential RCW habitat or unacceptable damage on adjacent lands is imminent

MA-7-61 **When the use of motorized ground vehicles is permitted in wilderness by the Regional Forester or other authorizing official, the following management requirements apply:**

Use only the existing roads or access ways. Limit road improvements to a standard no higher than required for safe passage of equipment and workers, and to protect the soil.

Return existing roads to as near their pre-use condition as soon as they have served their purpose.

Close all roads and access ways to motorized public use. Only use that is associated with the approved treatment and administration will be allowed.

Use fords (no structures) where possible, but only under conditions where mitigation measures insure little or no change in stream characteristics.

Install temporary stream crossing structures using native woody materials. Crossings will be removed completely after control operations. Stream banks and bottoms will be reclaimed to approximately the original conditions.

MA-7-62 All practical efforts to protect hardwoods will be made when SPB treatment actions are implemented. No hardwoods will be cut unless to insure the safety of crews or wilderness user.

Lands

MA-7-71 Acquire from willing sellers by exchange or purchase those non-Federal lands within or adjacent to designated wilderness.

MA-7-72 Disposal of wilderness lands is not permitted.

MA-7-73 Special use authorizations for permanent improvements shall be limited to valid existing rights such as access to private property, utilities under permit, etc.

MA-7-74 Special use authorizations having purposes that are compatible with wilderness preservation may be allowed if site-specific analysis determines its acceptability. Examples are outfitter guides, educational, and scientific studies.

MA-7-75 Where possible, and with the concurrence of the permittee, existing land use authorizations for permanent improvements will be terminated.

Minerals

MA-7-81 Subject only to valid existing rights, motorized surface activities related to seismic exploration or mineral exploration and development will not be authorized in designated wilderness areas.

The gathering of information on mineral resources may be permitted if conducted in a manner that does not result in significant disturbance to the surface

MA-7-82 As provided by law, no new leases of U.S. mineral rights will be issued in designated wilderness areas, except:

a *Where a nearby well either on private rights or in federal minerals with a lower royalty rate, is draining oil/gas from adjacent U S minerals, a lease may be issued with a no surface occupancy stipulation*

b *No surface occupancy for drilling purposes will be allowed*

MA-7-83 Where permit proposals with valid existing rights could create a lasting impact in wilderness areas, the Forest Service (prior to approval of permits) will offer to purchase or exchange these rights for those of equal value outside the wilderness.

MA-7-84 Appropriate protective measures, subject to valid existing rights, will be required in the event of proposals to explore and/or develop currently leased U.S. mineral rights and private rights on existing wilderness areas.

Planning

See Forest-wide Standards and Guidelines

Range

MA-7-91 Discourage grazing.

MA-7-92 Supplemental livestock feeding, use of salt or mineral blocks, or construction of livestock facilities shall be discouraged within wilderness.

MA-7-93 No new grazing permittees shall be authorized.

Recreation Management

MA-7-101 The ROS for this management area is primitive.

Recreation opportunities requiring predominately unmodified natural settings with a high degree of challenge and risk are provided if possible Opportunity classes will be developed during the LAC process to assure the most appropriate wilderness experience for each area.

MA-7-102 Camping is prohibited at trailheads and parking areas adjacent to the wilderness boundary.

MA-7-103 Designate campsites for outfitter-guides in areas without trails.

MA-7-104 Campsites and other areas of concentrated use are managed for a low level of change in naturalness recognizing that different areas or zones in wilderness have varying degrees of human influence.

MA-7-105 The use of bicycles and other forms of mechanical transport, such as wagons or carts, is prohibited with the exception of wheelchairs when used as a necessary medical appliance.

Operation and Management

MA-7-106 Wildernesses are managed in accordance with applicable laws and regulations and the provisions of:

The Wilderness Act of 1964 (Public Law 88-577);
Texas Wilderness Act of 1984 (Public Law 98-547);
Forest Service Manual 2320, Wilderness Management;
Forest Service Manual 5100, Fire Management;

MA-7-107 **Appropriate camp sites are naturalized or rehabilitated if impacts become unacceptable.**

Temporary or permanent campsite closures are implemented when other management techniques are not successful.

MA-7-108 **Conflicts which develop between wilderness activities are resolved in favor of those activities that: (1) Least alter the wilderness environment; and (2) are most dependent upon the wilderness environment.**

Some activities may be restricted or controlled to preserve the opportunities for solitude and primitive recreation experiences

MA-7-109 **Contest and fund raising events are prohibited.**

MA-7-110 **Use of wilderness by persons with disabilities is provided without special provisions or improvements**

MA-7-111 **Convenience facilities are not provided so that a primitive experience will be maintained.**

Wilderness visitors should be allowed to experience a wilderness environment that may contain risks associated with adverse weather, isolation, natural physical hazards, and primitive travel and communications

MA-7-112 **Visitor use is dispersed through information, education and trail design.**

MA-7-113 **"Wilderness awareness" and "no trace use" are promoted. The concept that wilderness is primitive and rugged and that certain outdoor skills are necessary for using these areas is promoted.**

Educate and inform public on wilderness ethic through personal and group contacts

MA-7-114 **Visitors are provided the opportunity to experience wilderness with the minimum regulation and minimum signing consistent with resource protection.**

MA-7-115 **Management activities are accomplished with non-motorized equipment and non-mechanical transport of supplies and personnel.**

Informational and Regulatory Signs

MA-7-116 **Trail signing is only used for identifying a trail, dispersing use or for administrative purposes.**

Signing is not provided for visitor convenience or for environmental interpretation within wilderness

MA-7-117 **Signs are made of natural, native materials and/or natural appearing stained wood with routed letters mounted on natural colored stained posts inside the wilderness boundary.**

MA-7-118 **Trail blazing is kept to the minimum necessary to provide for user safety**

Reassurance markers for the trail traveler should be placed only at locations where one is likely to get lost.

MA-7-119 **Regulatory or informational signs are only used in situations where control is needed to prevent excessive resource damage or other corrective actions are unsuccessful.**

MA-7-120 **Bulletin boards and trail registration stations may be installed and maintained at primary access points just outside the wilderness boundary.**

MA-7-121 **Bulletin boards should include the following:**

Rules and regulations governing the use of wilderness;
Emergency telephone numbers and locations of phones;
Special warnings about hazardous conditions (fire danger, hunting seasons, treating water for drinking, flood hazards, hypothermia, etc.); and,
"No Trace" camping information and techniques.

MA-7-122 **Place wilderness boundary signs along all roads adjacent to wilderness and in the general forest area so that they are easily seen.**

Research and Scientific Study

MA-7-123 **Information is gathered and research conducted in a manner compatible with preserving the wilderness environment to increase understanding of wilderness ecology, wilderness uses, management opportunities and visitor behavior.**

MA-7-124 **Non-manipulative scientific study dependent and compatible with the goals and objectives of the wilderness are provided for and encouraged consistent with the preservation of the wilderness resource.**

MA-7-125 **Studies approved for wilderness must be compatible with the goals and objectives of the wilderness.**

MA-7-126 **Test plots should be marked in a temporary manner not visually evident to the casual visitor.**

Trails Management

MA-7-127 Trails are designed, constructed, reconstructed and maintained to the standard necessary to minimize or prevent resource damage, to protect visual quality, and for the safety of visitors.

MA-7-128 Native materials are used in trail construction and maintenance.

MA-7-129 Trails will be maintained at a primitive or near primitive level.

MA-7-130 Trailside snags shall not normally be felled unless they present a definite and immediate safety hazard.

MA-7-131 Trails are constructed and maintained with non-motorized equipment. Exceptions require Regional Forester approval.

MA-7-132 Any trails that have been constructed or maintained beyond wilderness standards before wilderness designation are allowed to return to the appropriate standard through natural processes.

MA-7-133 Use outslope, waterbar, or other drainage devices to minimize erosion.

MA-7-134 Bridges and culverts are not installed for visitor convenience, but constructed and maintained for user safety or resource protection needs.

MA-7-135 No additional trails are constructed in wilderness unless essential for safety of visitors; to distribute use or to minimize or prevent resource damage.

Scenic Resource

MA-7-141 These areas are managed for VQO of preservation.

Silvilculture Practices

MA-7-151 The area is classified as unsuitable for timber production.

Soil and Water

MA-7-161 Prohibit any soil disturbing activities; unless needed for resource protection, visitor safety, treatment of SPB, or as necessary to support valid existing rights.

MA-7-162 Initiate no measures that modify or change normal water flow or degrade water quality within streamcourses.

MA-7-163 No water developments such as impoundments or water wells should be constructed in wilderness unless necessary to fulfill valid existing rights.

MA-7-164 Water quality measurements as prescribed by State and/or Federal laws, policies and/or procedures should be made with portable or non-permanent equipment.

MA-7-165 Users are informed of the need to purify drinking water and any other special or unusual conditions which they need to be aware of, such as flooding potential.

Wildlife Management

MA-7-171 Native species are emphasized in managing wildlife in wilderness.

MA-7-172 Threatened, endangered and sensitive species (TES) and their associated habitat will be inventoried and monitored.

MA-7-173 Provide protection and management for known populations of Federally listed threatened and endangered species and their habitats, to the extent they are considered along with wilderness values. Management that promotes natural processes and ensures habitat enhancement for (TES) will be described in each wilderness plan.

Management Area 8a
Research Natural Areas

Theme

Research Natural Areas (RNA) are part of a national network of ecological areas designated in perpetuity for research and education and/or to maintain biological diversity on National Forest System lands Research natural areas are for non-manipulative research, observation, and study. They also may assist in implementing provisions of special acts, such as the Endangered Species Act and the monitoring provisions of the National Forest Management Act.

Description

This management area includes the 380 acre Cross Timbers Research Natural Area and the 225 acre Mill Creek Cove currently managed as a scenic area RNA designation for Mill Creek Cove must be approved by the Regional Forester following the process described in the RNA Appendix G to the Environmental Impact Statement (EIS) accompanying this Forest Plan.

The Cross Timbers Research Natural Area (RNA), located on the Lyndon B Johnson (LBJ) National Grassland in Wise County, was established in 1977 The RNA lies in the Western Cross Timbers Ecological Region National Forests and Grasslands in Texas (NFGT) limestone mesa and cross timbers landtypes are found in this RNA Three Texas Natural Heritage Program (TNHP) exemplary plant communities (Bluestem Tallgrass Prairie, Western Post Oak-Blackjack Oak Woodland, and Texas Oak Woodland) are found in the area

The Mill Creek Cove area recommended for RNA status, is on the Sabine National Forest adjacent to Toledo Bend Reservoir This area was recommended by the Texas Natural Heritage Program as a RNA because of its American Beech-Southern Magnolia sensitive plant communities It occurs at about the transition zone between the Clayey Uplands and the Lignitic Uplands Landtype Associations Although dominated by American beech and southern magnolia, other canopy trees include laurel oak, sweetgum, and other associated hardwoods and scattered pine The understory has hophornbeam, American holly, yaupon holly, beauty-berry, and Carolina buckthorn

These areas provide a wide spectrum of pristine values or natural settings that have unique educational and scientific interest The area will have a natural appearing landscape accessible by cross-country travel Some evidence of activities associated with scientific or research studies may be apparent from time to time

Access is limited to existing non-motorized trails that do not compromise the objectives of the RNAs Few roads were ever in these areas, but those that were have been closed and revegetated with native vegetation

Desired Future Condition

Plant and animal communities native to the area evolve with little or no impact from humans The forest and woodlands you see appear as a mix of many species of some young, but primarily old trees You also see areas of native tallgrass prairie Late seral or climax plant communities predominate

Some areas may show signs of recent wildfires or insect or disease outbreaks In these areas you will see dead standing and down trees with patches of bark and branches missing and brown needles or leaves These trees may have cavities in them and show small holes that are the signs of woodpeckers or other animals and insects

If you stop and look for wildlife, you discover several species What you find depends on whether you are in the forest, woodland or grassland Most of the species you see will be associated with mature habitat conditions The areas provide some, but probably not optimal, habitat for most game species such as deer, turkey and quail

While traversing the RNAs, you will not see any programmed timber harvest, extraction of locatable minerals, or construction of new roads, trails or other facilities Where the Cross Timbers RNA Establishment Report determined prescribed burning or grazing is needed to establish or maintain vegetative communities, you may see these activities You may see oil and gas operations nearby that do not involve surface occupancy within RNAs, due to private ownership of the underground minerals

Management Emphasis

Research natural areas are part of a national network of field ecological areas designated for research and education and/or to maintain biological diversity on National Forest System lands Research natural areas are managed for nonmanipulative research, observation, and study RNAs serve as control areas for comparing results from manipulative research, and for monitoring effects of resource management techniques and practices Management is designed to maintain the areas in a natural condition by allowing physical and biological processes to operate without human intervention These areas are used for

* Comparison with those lands influenced by man
* Provision of educational and research areas for ecological and environmental studies
* Preservation of gene pools for typical as well as rare and endangered plants and animals

MA-8a Standards and Guidelines

Air Quality and Aquatics Resources

See Forest-wide Standard and Guidelines

Biological Diversity

MA-8a-01 RNAs are allocated as designated old growth.

MA-8a-02 Maintain old-growth characteristics or natural plant succession as natural conditions determine.

MA-8a-03 Manage for the biological characteristics and attributes identified for each specific RNA within the Ecological Classification System hierarchy.

MA-8a-04 Permit no introduction of exotic plant and animal species.

Re-introduction of former native species may be permitted if RNA objectives are met

MA-8a-05 Allow any existing non-native plant communities to revert to native plant communities.

MA-8a-06 Prohibit cutting and removal of all vegetation, including firewood, grass, fruit, seeds, etc.; except as part of approved scientific investigation and/or valid existing rights.

MA-8a-07 Leave any felled trees in place, unless lying across maintained trails. Do not remove any trees.

Hazard tree felling may be permitted along boundary trails or roads for safety

Chemicals

See Forest-wide Standards and Guidelines

Cultural Resources

MA-8a-11 An inventory of cultural resources will be conducted according to the prioritizations described in the Heritage Management Plan for the NFGT.

Facilities

MA-8a-21 Subject to valid existing rights, prohibit new roads, trails, fences or signs unless they contribute to the objective or protection of the RNA.

Boundary fencing is permitted for protection against livestock or excessive human use Buildings are not permitted In rare instances, temporary gauging stations and instrument shelters may be permitted

Fire

MA-8a-31 **Limit suppression strategies, practices and activities to those which have minimal impacts to RNA values. Extinguish wildfires endangering the RNA.**

MA-8a-32 **Avoid using chemical fire retardants.**

MA-8a-33 **If fire is used to perpetuate a seral or successional stage, it should mimic a natural fire, but with prudent measures to avoid a catastrophe.**

Managed or naturally occurring fire may be used to perpetuate a desired series of plant formation or changes

MA-8a-34 **Normally allow fuels to accumulate at natural rates unless they threaten the objectives of the RNA.**

Leave fire-caused debris for natural decay

Integrated Pest Management

MA-8a-41 **Do not take action against insects or diseases unless the outbreak is a significant, immediate threat to adjacent private lands or the outbreak jeopardizes Federally listed threatened or endangered species.**

Take no actions unless the Regional Forester and Station Director deem such action necessary to protect the features for which the RNA was established or to protect adjacent resources

MA-8a-42 **Indigenous insect and plant diseases are allowed, as nearly as possible, to play their natural ecological role within the RNA.**

MA-8a-43 **Protect the scientific value of both observing the effect of insects and diseases on ecosystems and identifying genetically resistant plant species.**

MA-8a-44 **The affected and interested public will be informed or involved as appropriate in the decision to control within the RNA.**

MA-8a-45 **All active southern pine beetle (SPB) spots or spot heads within one-third (1/3) mile of susceptible hosts on state or private lands or high value federal lands will be monitored weekly from May through October, and at least monthly from November through April.**