



MANAGEMENT OF FOREST LAND
ON THE ALABAMA AGRICULTURAL
EXPERIMENT STATION
~~~~~ 1995-2000

ALABAMA AGRICULTURAL EXPERIMENT STATION  
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**MANAGEMENT OF FOREST LAND ON THE  
ALABAMA AGRICULTURAL EXPERIMENT STATION**

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Management Planning  
for the  
Forest Land  
on the  
Alabama Agricultural Experiment Station

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Management Planning  
for the  
Forest Land  
on the  
Alabama Agricultural Experiment Station

Introduction

**Scope of the plan:**

This management plan is written to cover the forested land located on the Alabama Agricultural Experiment Station and has been prepared under the direction of the Director, Dr. Lowell T. Frobish. Recommendations presented within the plan are intended to expedite the development of a forest better suited for research use. Their function is not to supersede the authority of substation superintendents or department heads over lands assigned to their control, but to provide a unified approach to the management of the Experiment Station's forest.

The plan covers all of the forested land under administrative control of the Alabama Agricultural Experiment Station. This includes forest land at the Main Station on the Auburn campus, the North Auburn Unit, the Turnipseed Ikenberry Place at Union Springs, the E.V. Smith Center at Milstead, the Plant Breeding Unit at Tallassee, the four experimental Forests at Prattville, Clayton, Alexander City and Fayette, the agricultural substations: Tennessee Valley Substation at Belle Mina, Sand Mountain Substation at Cullman, Upper Coastal Plain Substation at Winfield, Chilton Area Horticulture Substation at Clanton, Piedmont Substation at Camp Hill, Blackbelt Substation at Marion Junction, the Lower Coastal Plain Substation at Camden, the Wiregrass Substation at Headland, the Gulf Coast Substation at Fairhope, and experiment fields at Monroeville, Prattville and Brewton (Table 1).

**Administration:**

The authority for administration of the Experiment Station Forest rests with the Director of the Alabama Agricultural Experiment Station. Management and treatment plans are to be drawn up under his direction through the Associate Director. Coordination with the superintendents of the various units of the Experiment Station is intended to be continuous as management plans are constructed and treatments conducted. It is the responsibility of the unit superintendents to insure that sales and treatments do not interfere with other activities on the unit.

The overall management plan is to be circulated to each of the unit superintendents for input. However, responsibility for approval of the harvest and treatment recommendations in the finalized plan rests with the Director of the Alabama Agricultural Experiment Station. The finalized plan is to be presented to the Board of Trustees by the Director of the Experiment Station through the President of Auburn University. Approval of the plan shall then constitute approval of the recommended harvests as required under Alabama Act Number 473 section 239, the "State Bid Law".

Sales are to be conducted by the Experiment Station's Forest Manager through the Purchasing Agent of Auburn University. All sales must comply with the provisions of Alabama Act Number 473. Certain salvage sales of timber are specifically excluded from the provisions of this law. This exclusion is interpreted to include salvage sales conducted for the following purposes: salvage cutting for the control of southern pine beetle or other insect infestations; salvage cutting for the removal of timber killed by fire or disease; cutting to remove timber from construction sites

including ponds, fence lines, drainage ditches, roads and buildings; cutting as required for the establishment of research plots or installation of research equipment. As a matter of policy, salvage sales may be conducted at the discretion of the substation or unit manager if the total value of the sale is \$5,000 or less. If the total value of salvage exceeds \$5,000 or if the sale is conducted under contract, permission must be granted by the Director of the Experiment Station.

**Table 1.** Units of the Alabama Agricultural Experiment Station included within the forest management plan.

| <u>Unit</u>                           | <u>Total Acres</u> | <u>Forested Acres</u> |
|---------------------------------------|--------------------|-----------------------|
| Autauga Co. Experimental Forest       | 300.0              | 300.0                 |
| Barbour Co. Experimental Forest       | 178.0              | 178.0                 |
| Blackbelt Substation                  | 116.0              | 52.0                  |
| Brewton Experimental Field            | 80.0               | 15.0                  |
| Coosa Co. Experimental Forest         | 160.0              | 160.0                 |
| Chilton Area Horticultural Substation | 161.0              | 5.5                   |
| E.V. Smith Center                     | 3,200.0            | 1,101.0               |
| Fayette Co. Experimental Forest       | 1,332.0            | 1,332.0               |
| Gulf Coast Substation                 | 720.0              | 258.8                 |
| Lower Coastal Plain Substation        | 2,700.0            | 1,291.0               |
| Main Station                          | 1,000.0            | 369.0                 |
| Monroeville Experimental Field        | 80.0               | 6.3                   |
| N. Alabama Horticultural Substation   | 160.0              | 41.5                  |
| North Auburn Unit                     | 3,150.0            | 1,716.0               |
| Piedmont Substation                   | 1,409.0            | 878.5                 |
| Plant Breeding Unit                   | 670.0              | 225.0                 |
| Prattville Experimental Field         | 80.0               | 2.0                   |
| Sand Mountain Substation              | 536.0              | 61.5                  |
| Tennessee Valley Substation           | 760.0              | 31.9                  |
| Turnipseed Ikenberry Place            | 1,028.0            | 846.0                 |
| Upper Coastal Plain Substation        | 735.0              | 132.0                 |
| Wiregrass Substation                  | 640.0              | 13.5                  |
| TOTAL                                 | <u>20,195.0</u>    | <u>9,000.8</u>        |

**Table 2.** Size class distribution of commercial forest acreage on the Alabama Agricultural Experiment Station.

| <u>Size Class</u> | <u>DBH</u> | <u>Acres</u>   | <u>% of Total Commercial Acres</u> |
|-------------------|------------|----------------|------------------------------------|
| Regeneration      | 0"- 1.5"   | 876.3          | 12%                                |
| Small Trees       | 1.6"- 4.5" | 890.1          | 12%                                |
| Small Poles       | 4.6"- 7.5" | 744.0          | 10%                                |
| Large Poles       | 7.6"-10.5" | 1,279.6        | 18%                                |
| Sawtimber         | 10.5" +    | 3,434.6        | 48%                                |
| TOTAL             |            | <u>7,224.6</u> | <u>100%</u>                        |

## The Experiment Station Forest

### **Introduction:**

The Alabama Agricultural Experiment Station was established by the Alabama Legislature in 1883 in order to "conduct careful experiments ...in... scientific agriculture." The Station began with the purchase of 226 acres located near the Auburn Campus. Early on, the directors recognized the need for research lands located on soil types not available on the Auburn campus and substations began to be established in 1927. The Alabama Agricultural Experiment Station now consists of a system of twenty-three substations, experimental forests and experimental fields established in all of the major soil regions in the State. Many of these stations contain significant forested acreage.

Forestry has always been an important part of research work in the Agricultural Experiment Station. It began in 1927 with research in pine seedling production and studies in planting methods on the Main Station at the Auburn Campus. Over the years considerable work has been accomplished on a number of the substations involving pine spacing, species trials and methods of converting low grade hardwoods to pine. In the 1960's and 70's the Forestry Genetics Program utilized a great deal of Station land for seed source testing, progeny testing and to establish clone banks for selected superior trees.

Recent use of the Experiment Station's forest land includes outplantings from nursery research, regeneration and release studies, herbicide testing, environmental studies of silvicultural techniques and evaluation of new harvesting technology. The Station lands have been particularly important for pilot studies and research which would be difficult to place on industrial forest land.

**Current Condition:**

Of the 20,000 or so acres within the Alabama Agricultural Experiment Station about 9,000 acres are forested. This acreage includes all woodland present on lands controlled by the Experiment Station. During the planning inventory, timber stands were separated into broad classifications: "noncommercial", "marginal", and "commercially operable". The Experiment Station Forest is located primarily on land not suitable for agricultural plots. As a result, the topography is generally rugged and often contains areas which are severely eroded or extremely steep. Sensitive areas should not be included in general forest operations in order to protect sites from further damage. Timber stands located on these sites were classified as "noncommercial". The Experiment Station as a whole contains about 550 acres of such land.

Stands of timber were classified as "marginal" for a wide variety of reasons. Much of this acreage consists of stands which are small, separated from the main forest and are being utilized for pasture shade. All active research areas and stands which have characteristics said to make them of interest to the station staff in the future are included in this classification. Some of the marginal acreage is located on the main campus where aesthetics, possible use of the site for campus building, etc. are important considerations. The marginal classification was used in any situation where special conditions have to be taken into account before any forest management work is undertaken. There are 1,050 acres of the Experiment Station Forest classified as marginal.

The "commercial" classification was used not to indicate the purpose of management, but simply to indicate that ordinary commercially used harvesting methods and treatments are applicable. There are about 7,200 acres of the Experiment Station Forest classified as commercial.

While a 9,000 acre experimental forest is small, compared to forests available to many universities, it does contain some acreage in each of the major forest habitat regions of the State. Sites present are correspondingly diverse with site index (base age 50 years) ranging from a low of about 50ft. on the deep sands of the Autauga County Forest to over 120 ft. on the bottomland soils of the Plant Breeding Unit. A wide variety of species groups typical of their respective regions are represented. There are stands of natural and planted longleaf, slash, loblolly and shortleaf pines, bottomland hardwoods typical of the south, cove hardwoods, cypress and tupelo sloughs, and stands of upland oaks.

The same diversity of size classes, however, is not present. There is still a preponderance of overmature stands in which no treatment of any kind has been accomplished since the 1930's when the land was acquired by the Experiment Station. Another major class consists of stands which were cut over and abandoned. The problem is particularly noticeable in the hardwood stands. Hardwoods, if grown under open conditions, tend to spread out and an individual tree can occupy a large area. Because of this many of the older hardwood stands are occupied primarily by very large culls, often referred to as "wolf trees". The understory is either absent or the stocking is made up of younger trees which have very poor form. Stands like this may be interesting aesthetically, but have little potential for forestry research and do not supply the diversity needed for good wildlife habitat.

The pine stands are not as poor in quality, but there is a preponderance of larger size classes and they are generally understocked. Many of the pine stands are over sixty years old. Southern pine beetles have caused considerable mortality in these stands over the past few years and such loss can be expected to continue.

**Table 3.** Total volume on commercial forest acreage on the Alabama Agricultural Experiment Station.

| Unit                  | Pine Sawtimber<br>(Board feet*) | Hdwd Sawtimber<br>(Board feet*) | Pine Cdw. (Cords) | Hdwd Cdw. (Cords) |
|-----------------------|---------------------------------|---------------------------------|-------------------|-------------------|
| Autauga Exp. Forest   | 1,596,155                       | 14,775                          | 1,687             | 74                |
| Barbour Exp. Forest   | 461,117                         | 3,415                           | 750               | 72                |
| Blackbelt Substa.     | 0                               | 204,050                         | 0                 | 254               |
| Brewton Exp. Fld.     | 0                               | 0                               | 0                 | 0                 |
| Coosa Exp. Forest     | 5,940                           | 28,100                          | 0                 | 165               |
| Chilton Hort. Substa. | 0                               | 0                               | 0                 | 0                 |
| E.V. Smith Center     | 383,515                         | 2,089,350                       | 844               | 16,510            |
| Fayette Exp. Forest   | 2,589,834                       | 441,657                         | 8,546             | 3,229             |
| Gulf Coast Substa.    | 378,186                         | 4,681                           | 217               | 186               |
| Lower Coastal Substa. | 3,408,838                       | 974,222                         | 4,868             | 3,022             |
| Main Station          | 226,562                         | 77,040                          | 1,265             | 543               |
| Monroeville Exp. Fld. | 0                               | 0                               | 0                 | 0                 |
| N. Ala. Hort. Substa. | 27,870                          | 58,590                          | 95                | 175               |
| N. Auburn Unit        | 1,686,920                       | 659,852                         | 5,185             | 4,408             |
| Piedmont Substa.      | 2,377,925                       | 1,436,950                       | 2,044             | 3,172             |
| Plant Breeding Unit   | 0                               | 44,460                          | 0                 | 50                |
| Prattville Exp. Fld.  | 0                               | 0                               | 0                 | 0                 |
| Sand Mountain Substa. | 0                               | 55,540                          | 0                 | 285               |
| Tenn. Valley Substa.  | 0                               | 0                               | 0                 | 0                 |
| Turnipseed Ikenberry  | 1,070,231                       | 1,923,695                       | 567               | 4,115             |
| Upper Coastal Substa. | 217,510                         | 8,750                           | 291               | 112               |
| Wiregrass Substa.     | 0                               | 0                               | 0                 | 0                 |
| <b>TOTAL</b>          | <b>14,430,603</b>               | <b>8,025,127</b>                | <b>26,392</b>     | <b>36,372</b>     |

\* Board foot volumes for both pine and hardwood sawtimber are in Scribner Scale.

\*\* Volume estimates are based on a cruise made primarily for silvicultural purposes.

The past five years of management have concentrated on regeneration of mature pine stands. A total of 878 acres are now in regeneration. As a result, the current size class distribution, Table 2, shows considerable improvement. However, the total acreage in young timber is still small and it is concentrated on a few of the Experiment Station's units. It will take several five year cycles to solve this problem.

Because of the age of much of the Experiment Station's timber, merchantable volume is high in spite of the fact that much of the forest is understocked. The forest land on the Experiment Station contains an estimated 14,430 thousand board feet (MBF) of pine sawtimber, 8,025 MBF of hardwood sawtimber as well as a considerable quantity of cordwood. This represents a valuable resource and the revenue from scheduled harvests should be more than sufficient to fund regeneration and other treatment programs needed to enhance the research potential of the woodlands.

The Agricultural Experiment Station Forest contains a number of areas of great beauty and a number of timber types and conditions which are rare on private land. It also has a diversity of topography and soils. The Station Forest provides an area for research that, in spite of the increased use over the past few years, is still not used to its potential. Below is a brief description of each of the Experiment Station Units.

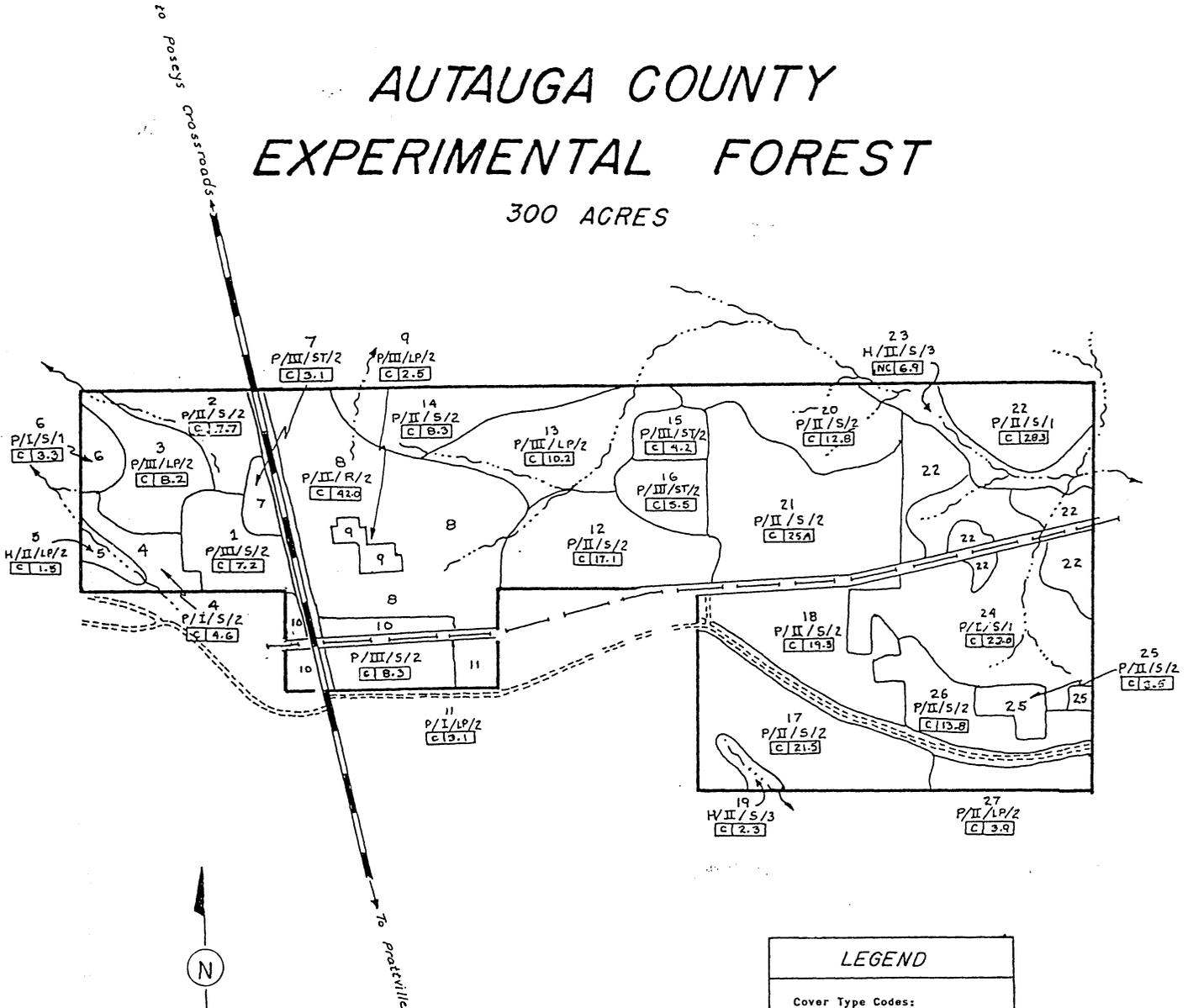
**The Autauga County Experimental Forest:**

The Autauga County Experimental Forest consists of 300 acres located in the southeast corner of Autauga county about 8 miles northeast of Prattville along county route 57, Figure 1. The entire unit is forested and, although there are a few steep slopes and some extremely poor sites, all is classified as commercially operable.

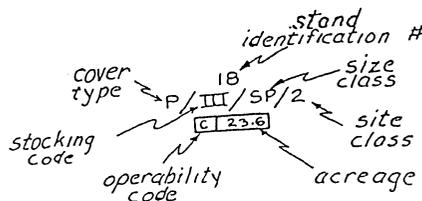
Figure 1. Stand map of the Autauga County Experiment Forest.

# AUTAUGA COUNTY EXPERIMENTAL FOREST

300 ACRES



## Notation



| LEGEND                            |                     |
|-----------------------------------|---------------------|
| <b>Cover Type Codes:</b>          |                     |
| P                                 | Pine                |
| H                                 | Hardwood            |
| BH                                | Bottomland Hardwood |
| PH                                | Pine-Hardwood       |
| C                                 | Cedar               |
| K                                 | Kudzu               |
| <b>Stocking Codes:</b>            |                     |
| I                                 | Poor Stocking       |
| II                                | Fair Stocking       |
| III                               | Heavy Stocking      |
| <b>Size Class Codes:</b>          |                     |
| R                                 | Regeneration        |
| ST                                | Small Trees         |
| SP                                | Small Poles         |
| LP                                | Large Poles         |
| S                                 | Sawtimber           |
| <b>Site Classification Codes:</b> |                     |
| 1                                 | Poor                |
| 2                                 | Average             |
| 3                                 | Good                |
| <b>Operability Codes:</b>         |                     |
| C                                 | Commercial          |
| MC                                | Marginal            |
| NC                                | Non-commercial      |

The unit is located on "sand hills" within the Middle Coastal Plain Province. The principle soils on the unit are Troup loamy sands. These soils are infertile and droughty with surface sands varying from two to eight feet in depth. Most of the unit consists of gently rolling hills with gradual changes in slope and broad drainageways.

The Autauga Forest was donated by Autauga County in 1941 for the purpose of establishing an experimental forest. Early work on the unit concentrated on development of methods to rehabilitate cutover stands of scrub oak and worn out fields to productive forest. This included attempts to develop local markets for charcoal, fire wood and fence posts. Following this work the forest was heavily used for research on spacing, planting methods and seed sources for all the southern pines and later for outplantings from the forest genetics program.

Most of these plantings were established in the 1940's and 1950's. With the exceptions of a recent harvest cut and a small progeny test, all are now approaching a sawtimber size class. The drainageways not used for plot work have developed a mixture of loblolly and longleaf sawtimber with variable stocking. A few of the wetter drains support a band of hardwood sawtimber consisting primarily of sweetgum, yellow poplar and sweetbay magnolia.

Recent management efforts are aimed at improvement of the size class distribution and providing more uniform conditions within the stands of timber for research use. This work began in 1994 with a harvest of 44 acres. The cut was made up primarily of a number of abandoned research plots and will provide an area for herbicide testing in longleaf pine regeneration.

Even with recent cutting, the Autauga Forest has a size class distribution heavily skewed toward the larger size classes. At present, 70% of the unit is in sawtimber, 10% in large poles, 5% in small trees and 15% in regeneration. Total volume on the unit is estimated at 1,596 MBF pine sawtimber, 14.8 MBF hardwood sawtimber, 1,687 cords of pine and 74 cords of hardwood pulpwood.

**The Barbour County Experimental Forest:**

The Barbour County Experimental Forest consists of 178 acres located in the west central portion of Barbour County about one mile northeast of Clayton along Poorhouse Road, Figure 2. The unit is entirely forested, but 32 acres are classified as marginal leaving 146 acres in commercial forest.

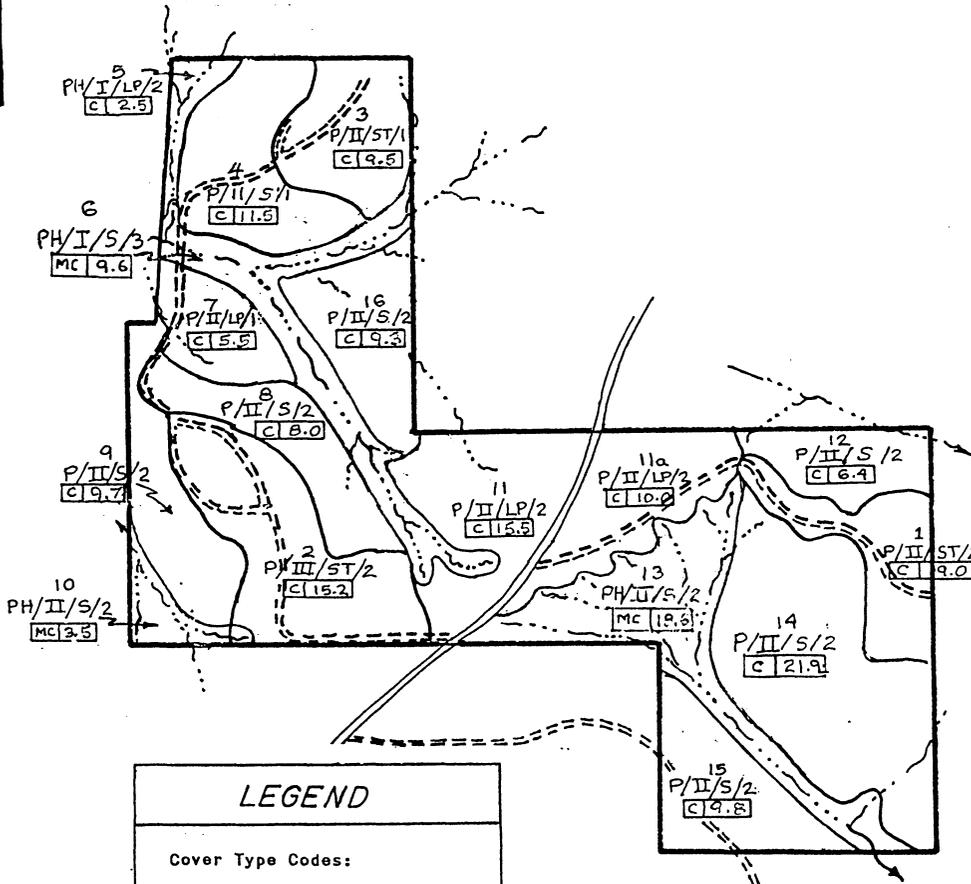
The unit is located in the Lower Clay Hills Region of Alabama with soils derived from unconsolidated marine deposits. The soils are highly erodible Greenville and Ruston sandy loams. Attempts at farming the land resulted in severe sheet and gully erosion and several of the gullies are still active in spite of the fact that they have now been forested for over fifty years. The gullies are typical of red clay hills often dropping thirty feet straight down in the upper reaches of the drainages.

Originally part of the Barbour County "Poor Farm" the Barbour County Forest was donated to the Agricultural Experiment Station in 1940 for use as an experiment forest. The forest was used in early research work on establishment of southern yellow pines. Spacing studies of longleaf, loblolly and slash pines were planted in the abandoned agricultural fields. An ash spacing study was also established in the one wide bottom on the unit. These stands were later used for pruning studies, studies of the management of stands at various stocking levels and studies of the effect

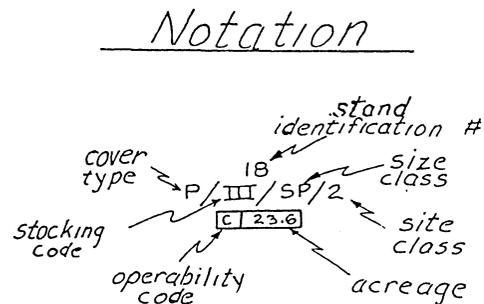
Figure 2. Stand map of the Barbour County Experiment Forest.

# BARBOUR COUNTY EXPERIMENTAL FOREST

178 ACRES



| LEGEND                            |                     |
|-----------------------------------|---------------------|
| <b>Cover Type Codes:</b>          |                     |
| P                                 | Pine                |
| H                                 | Hardwood            |
| BH                                | Bottomland Hardwood |
| PH                                | Pine-Hardwood       |
| C                                 | Cedar               |
| K                                 | Kudzu               |
| <b>Stocking Codes:</b>            |                     |
| I                                 | Poor Stocking       |
| II                                | Fair Stocking       |
| III                               | Heavy Stocking      |
| <b>Size Class Codes:</b>          |                     |
| R                                 | Regeneration        |
| ST                                | Small Trees         |
| SP                                | Small Poles         |
| LP                                | Large Poles         |
| S                                 | Sawtimber           |
| <b>Site Classification Codes:</b> |                     |
| 1                                 | Poor                |
| 2                                 | Average             |
| 3                                 | Good                |
| <b>Operability Codes:</b>         |                     |
| C                                 | Commercial          |
| MC                                | Marginal            |
| NC                                | Non-commercial      |



of prescribed burning. The only recent research on the unit has consisted of sampling of individual trees for the development of weight and volume tables and for development of site index curves.

In 1975 the unit was selectively marked for harvest in a manner which was little better than "high grading". The harvest left much of the timber understocked. The trees which were left were generally suppressed and of poor quality. The worst areas, about 33 acres in three separate stands, were clearcut and regenerated to loblolly pine in 1979.

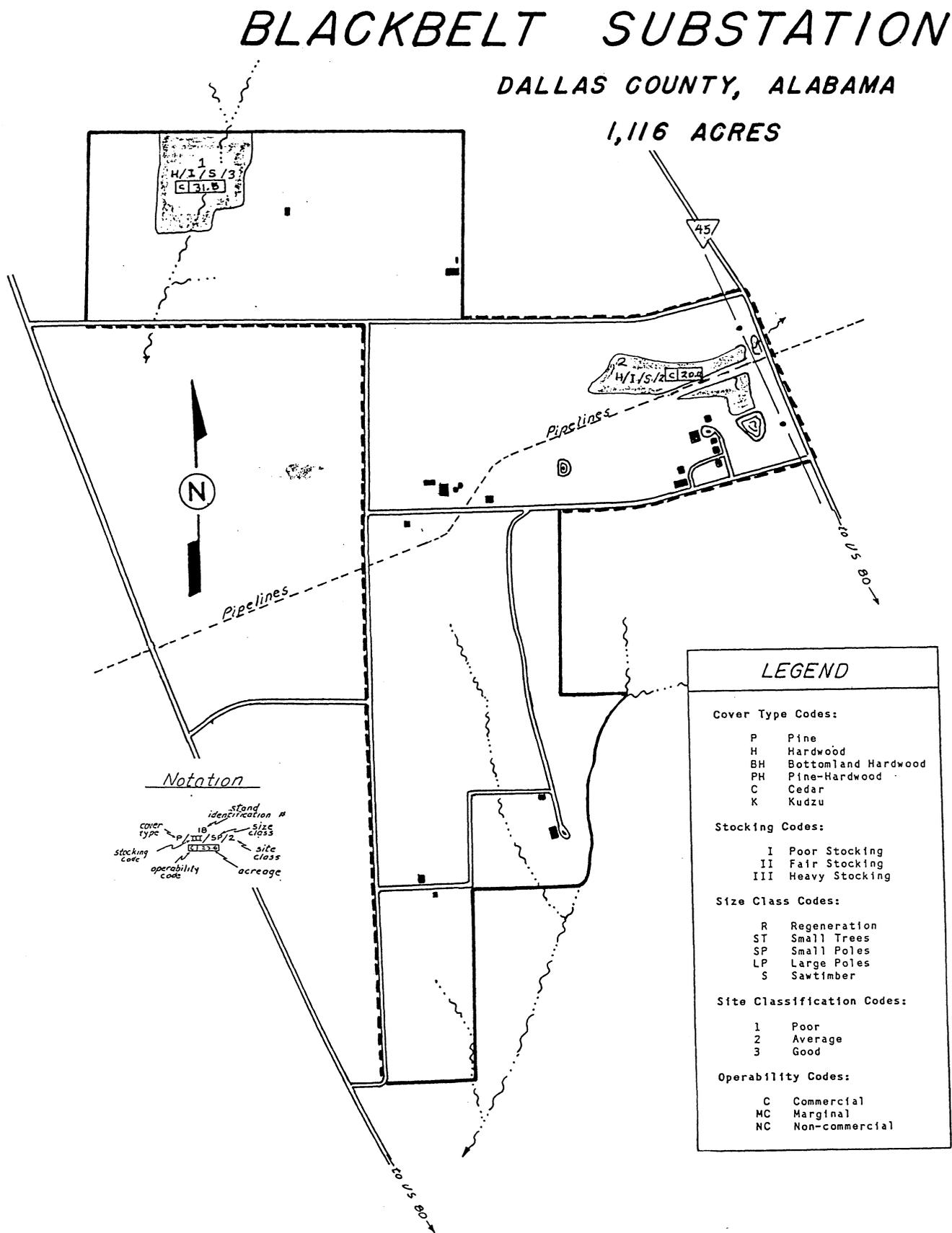
Currently the rolling ridge tops and the slopes of the Barbour Forest are in pine cover types. Stands of slash, loblolly, and longleaf pine are all present, often mixed in small patches. Most of these stands are in a sawtimber size class although stocking often consists of several size classes. The stands clearcut in 1979 are doing well and are occupied by dense stands of small trees. The steeper slopes and drainages are occupied by a mix of poorly stocked loblolly pine, shortleaf pine and hardwood sawtimber.

The unit is 73% sawtimber, 4% large pole, and 23% small trees. Total volume on the unit is estimated at 461 MBF of pine sawtimber, 3.4 MBF of hardwood sawtimber plus 750 cords of pine and 72 cords of hardwood pulpwood.

#### **The Blackbelt Substation:**

The Blackbelt Substation is located along US Route 80 about one mile north of Marion Junction in Dallas County, Figure 3. The substation is administered through a superintendent, J.L. Holliman and an assistant Jim Harris. The Blackbelt substation contains 1,116 acres most of which is in pasture or cropland. Only 52 acres are in woodland.

Figure 3. Stand map of the Blackbelt Substation.



The substation is in the Blackbelt Region of the Hilly Coastal Plain Province. The most characteristic soils in the region are formed from marine sediments of calcareous chalk. The station soils are largely Sumpter silty clay or Viaden clay. The first bottoms of drainages consist of Leeper silty clay with Houston clay often occurring on the side slopes. None of these soils are important forest soils. What woodland is present is located on Houston or Viaden soils which have a shallow layer of acid soil over the alkaline subsoil or on Leeper soils which are formed from local alluvium.

The forest on the Blackbelt Substation consists of lowland hardwoods which commonly occur in the broad drainages of the region. The area in forest is small, but is of interest because the timber type present is rare elsewhere on the Experiment Station. Species present include sweetgum, water oak, southern red oak, cherrybark oak, white oak, sycamore, hackberry, elm and poplar. The soils are heavy, are prone to flooding and the creek bottoms are infested with beaver, making management difficult.

The woodland has been managed by periodic patch cutting, the last cut being made in 1989. Response to cutting has not been good, in part because of grazing and in part because of the presence of trash species. What regeneration has developed is primarily sugarberry, chinaberry, willow, and osage orange. If some reasonable regeneration does not develop in the next five years, a change in approach will be required. It is likely that most of the wooded area on the station will be converted to wooded pasture as a part of the next five year plan.

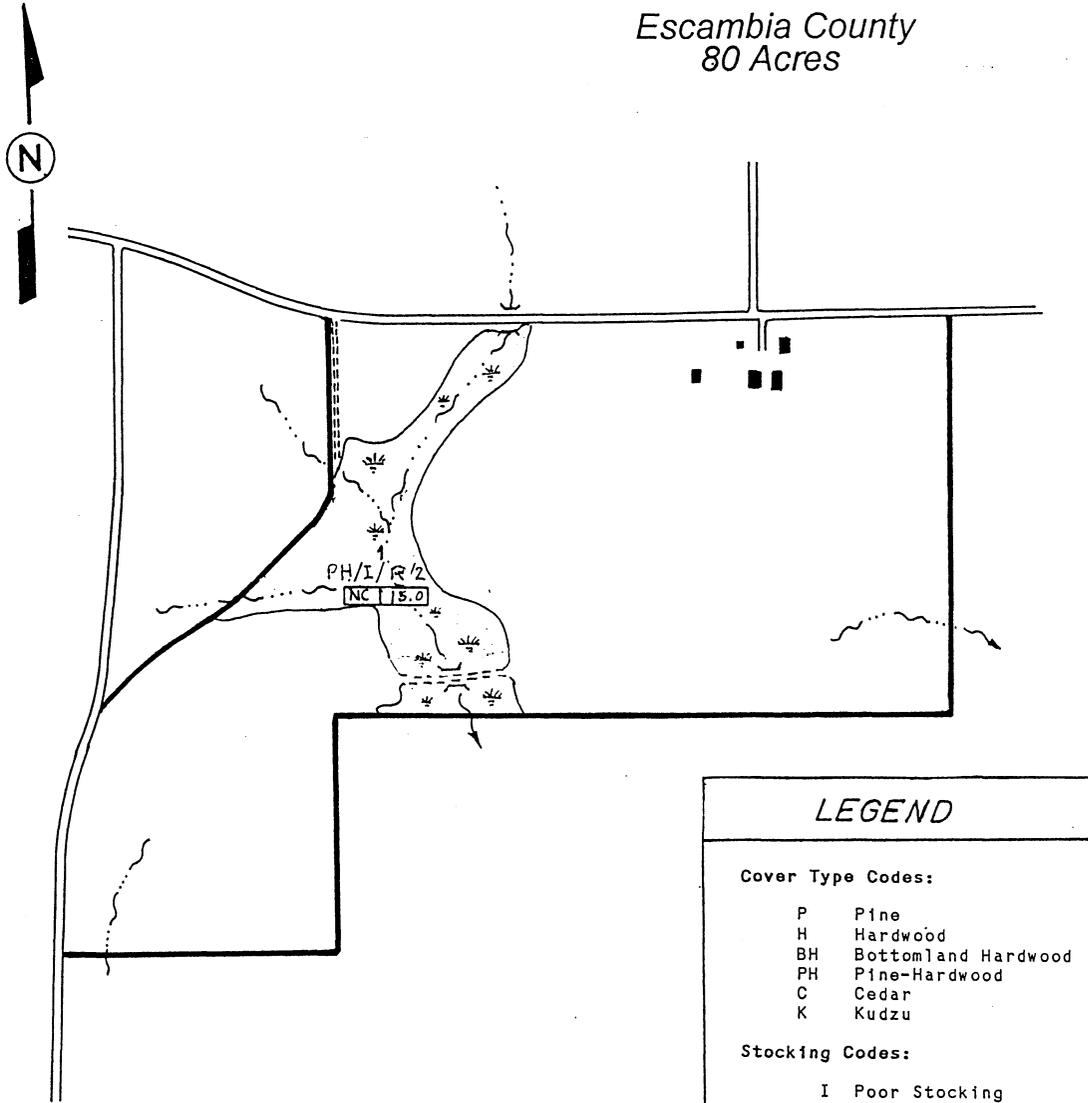
#### **The Brewton and Monroeville Experimental Fields:**

The Brewton and the Monroeville Experimental Fields are both small units, each contains about 80 acres, and have been under one

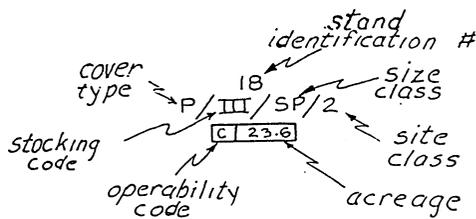
Figure 4. Stand Map of the Brewton Experimental Field.

# BREWTON EXPERIMENTAL FIELD

Escambia County  
80 Acres



## Notation



## LEGEND

### Cover Type Codes:

P Pine  
H Hardwood  
BH Bottomland Hardwood  
PH Pine-Hardwood  
C Cedar  
K Kudzu

### Stocking Codes:

I Poor Stocking  
II Fair Stocking  
III Heavy Stocking

### Size Class Codes:

R Regeneration  
ST Small Trees  
SP Small Poles  
LP Large Poles  
S Sawtimber

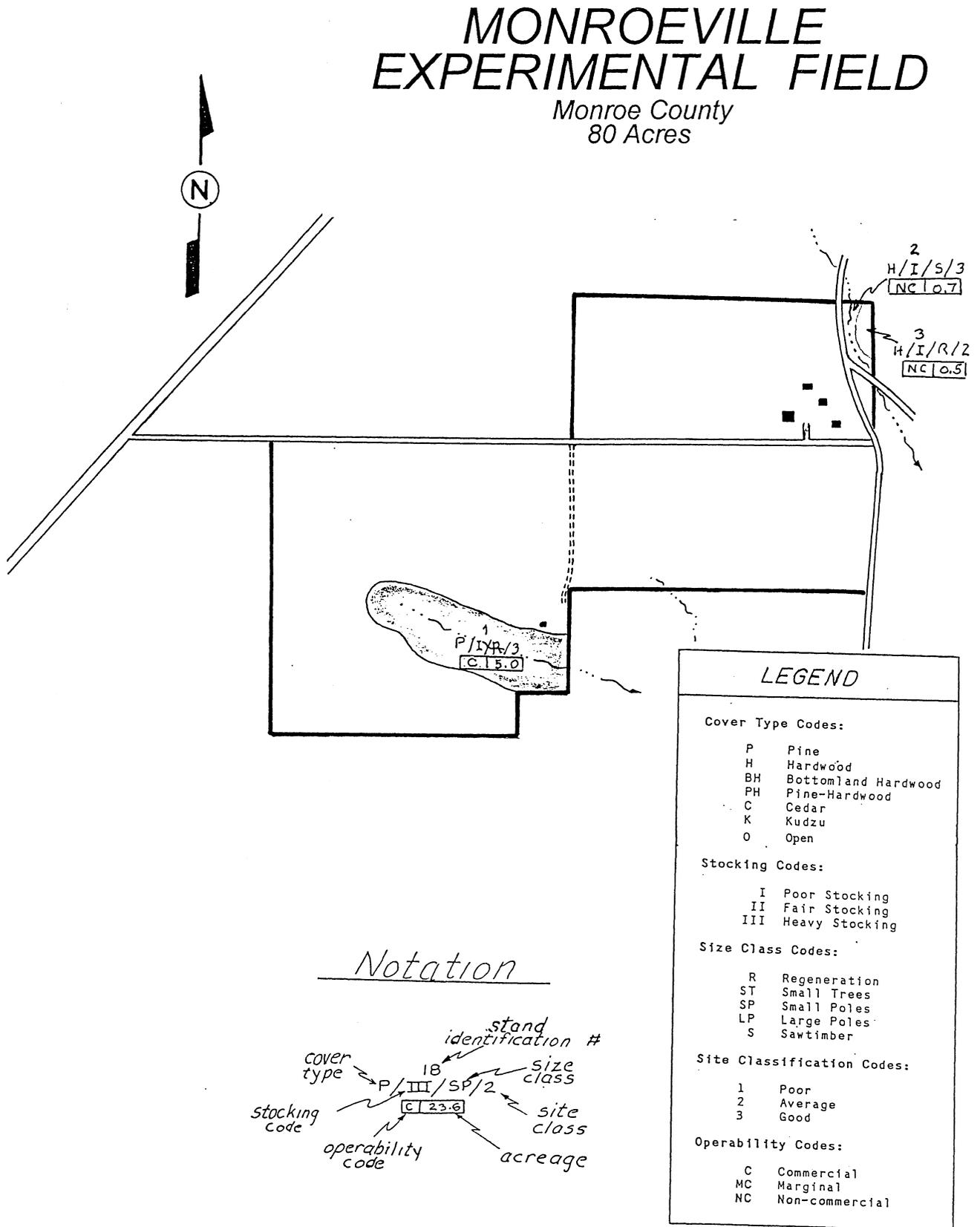
### Site Classification Codes:

1 Poor  
2 Average  
3 Good

### Operability Codes:

C Commercial  
MC Marginal  
NC Non-commercial

Figure 5. Stand map of the Monroeville Experimental Field.



Superintendent, Randy Akridge, for a number of years. The Brewton Field is located north of Brewton along U.S. Highway 31 in Escambia County, Figure 4. The Monroeville Field is located south of Monroeville along State Highway 21, Figure 5.

Both of these stations are located in the Middle Coastal Plain Province. The Brewton Field is located on Kalmia fine sandy loam and the Monroeville Field is located on Magnolia fine sandy loam. Both substations are fairly level and are almost entirely cleared for agriculture.

Both experimental fields were established in 1927 on land donated by Escambia and Monroe Counties. Early research work concentrated on fertilization and management of cotton and corn. Emphasis remains on cotton and corn, but research has been expanded to include variety testing and research with forages and small grains. The only forestry research at the Brewton and Monroeville Fields has been a block planting of Virginia pine to test seed sources for Christmas trees.

About 15 acres of woodland is located at Brewton and 7 acres at the Monroeville Field. These stands are located in small drainages and management is aimed primarily toward aesthetics.

#### **Chilton Area Horticultural Substation:**

The Chilton Area Horticultural Substation consists of 161 acres located on Chilton County Route 29 just south of the town of Thorsby and two miles east of U.S. Route 31, Figure 6. The Unit is administered through a superintendent, Jim Pitts and an assistant superintendent, Kenneth Short.

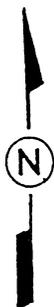
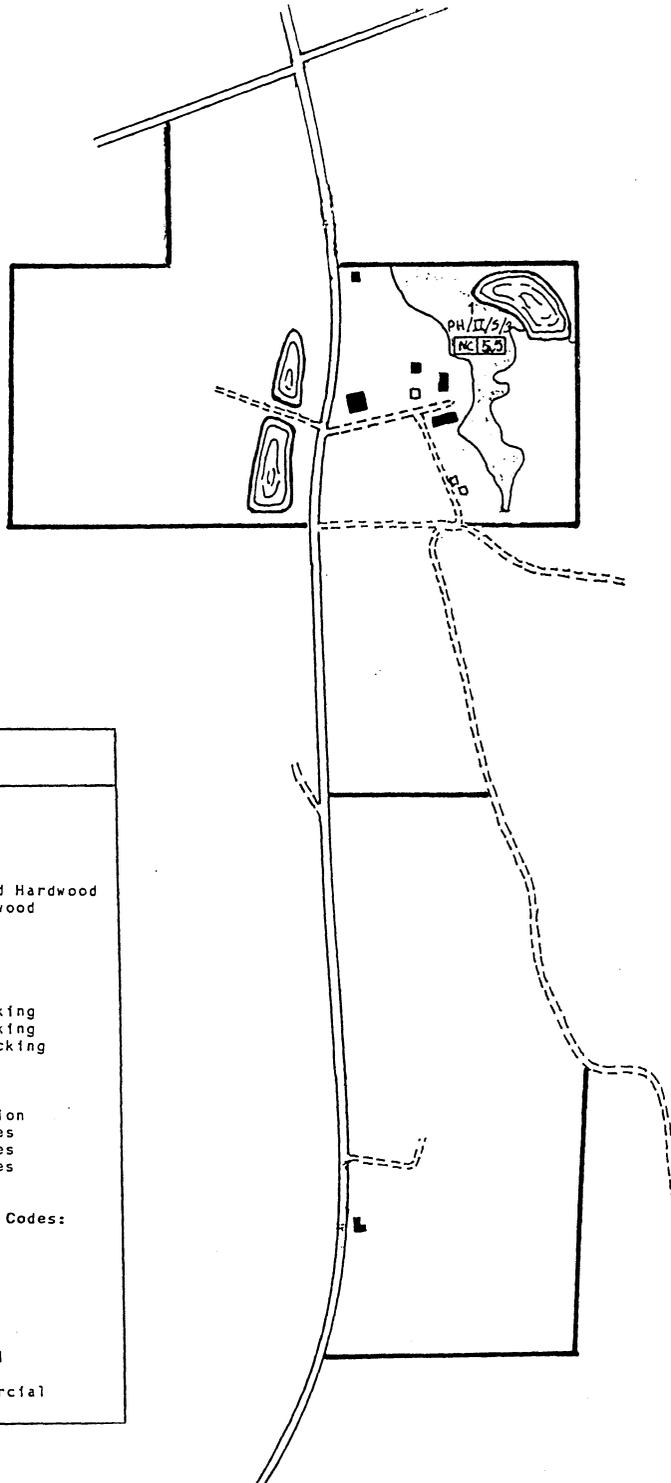
Figure 6. Stand map of the Chilton Area Horticultural Substation.

# CHILTON AREA HORTICULTURAL SUBSTATION

CHILTON COUNTY, ALABAMA 161 ACRES

Notation

stand identification #  
 cover type P, III, SP, 2  
 size class C | 23.6  
 site class  
 stocking code  
 operability code  
 acreage



| LEGEND                            |                     |
|-----------------------------------|---------------------|
| <b>Cover Type Codes:</b>          |                     |
| P                                 | Pine                |
| H                                 | Hardwood            |
| BH                                | Bottomland Hardwood |
| PH                                | Pine-Hardwood       |
| C                                 | Cedar               |
| K                                 | Kudzu               |
| <b>Stocking Codes:</b>            |                     |
| I                                 | Poor Stocking       |
| II                                | Fair Stocking       |
| III                               | Heavy Stocking      |
| <b>Size Class Codes:</b>          |                     |
| R                                 | Regeneration        |
| ST                                | Small Trees         |
| SP                                | Small Poles         |
| LP                                | Large Poles         |
| S                                 | Sawtimber           |
| <b>Site Classification Codes:</b> |                     |
| 1                                 | Poor                |
| 2                                 | Average             |
| 3                                 | Good                |
| <b>Operability Codes:</b>         |                     |
| C                                 | Commercial          |
| MC                                | Marginal            |
| NC                                | Non-commercial      |

The substation is located within the Border Terraces of the Hilly Coastal Plain Province on gently rolling topography. The hilltops and gentle side slopes on the station are occupied by Ruston fine sandy loam or Saffell gravelly sandy loam. These soils are excellent for use in orchard fruits and most of the station is in research orchards or plots for cultivation of berries and vegetables.

The Chilton Area Substation was established in 1948 to provide research to serve the needs of the truck crop region around Clanton. Research work on the station has always concentrated on production requirements and variety testing of Peaches, plums, pears, other fruits, melons, berries and sweetpotatoes.

The only woodland on the station consists of a small stand of mixed hardwood and pine located on a narrow strip of eroded Luverne fine sandy loam soil. The woodland occupies about five acres around a pond and farm buildings.

#### **The Coosa County Experimental Forest:**

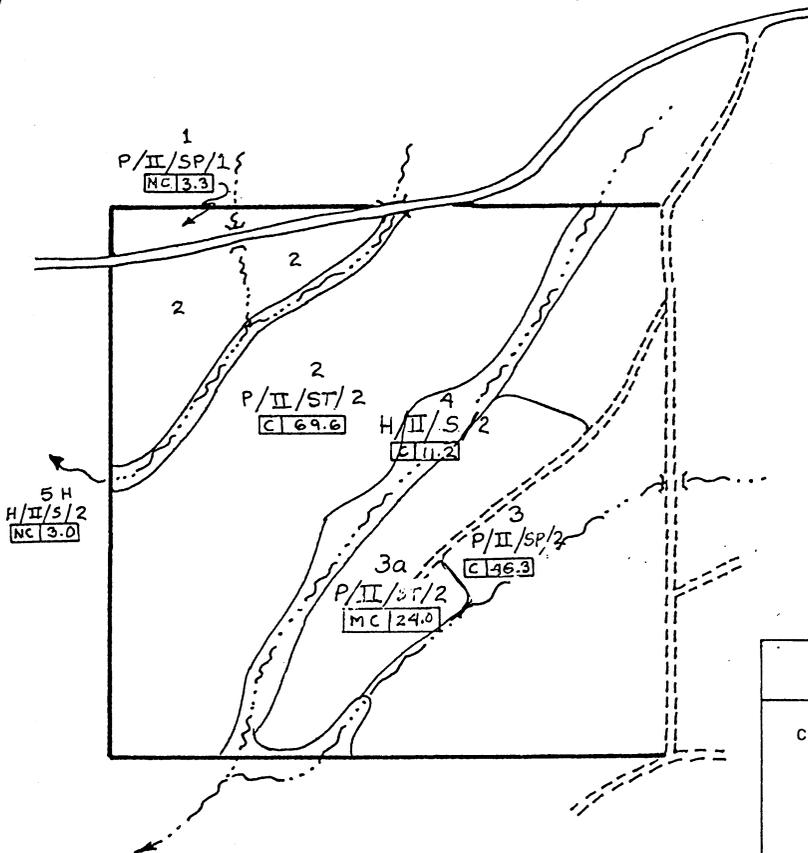
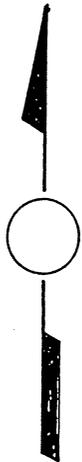
The Coosa County Experimental Forest consists of a 160 acre block of land located in southeast Coosa County about one-half mile east of County Route 259 eight miles south of Alexander City, Figure 7. All of the land except that associated with the main drainages is classified as commercially operable.

The unit is located in the Granite Hills portion of the Piedmont Plateau and the primary soil type is Appling sandy loam. Outcrops of granite occur in several places and the lower hillsides, which were probably never cleared for agriculture, are littered with piles of stones

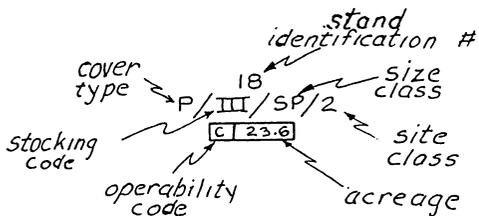
Figure 7. Stand map of the Coosa County Experimental Forest.

# COOSA COUNTY EXPERIMENTAL FOREST

160 ACRES



## Notation



## LEGEND

### Cover Type Codes:

- P Pine
- H Hardwood
- BH Bottomland Hardwood
- PH Pine-Hardwood
- C Cedar
- K Kudzu
- O Open

### Stocking Codes:

- I Poor Stocking
- II Fair Stocking
- III Heavy Stocking

### Size Class Codes:

- R Regeneration
- ST Small Trees
- SP Small Poles
- LP Large Poles
- S Sawtimber

### Site Classification Codes:

- 1 Poor
- 2 Average
- 3 Good

### Operability Codes:

- C Commercial
- MC Marginal
- NC Non-commercial

carried from long abandoned fields. Erosion has not been severe and the topsoil remains in place over much of the unit.

The Coosa County Experiment Forest was acquired as a gift from Mr. John Newnan in 1940. For the next 30 years the Coosa unit was one of the more actively used units for forestry plot work. Research included a number of studies of littleleaf disease in shortleaf pine, management of old field pine, and spacing and seed source studies of shortleaf and loblolly pine.

By 1980 the unit was a hodgepodge of abandoned research plots, cut over stands and areas ravaged by disease and southern pine beetles. The decision was made to regenerate the unit in two stages. The southeast half was harvested in 1985, treated with Arsenal herbicide and hand planted to loblolly pine. A study on the efficacy of the treatment was installed within the planted area. The northwestern half of the unit was harvested in 1987 and was regenerated to loblolly pine in 1989.

With the exception of buffer strips of hardwoods along the major drainages and a small stand of pine on the north side of the access road, the Coosa Experiment Forest is in young pine. At present 89% of the commercially operable area is in small trees, 2% in small poles and 9% is in sawtimber. Total volume on the tract is inconsequential, 6 MBF of pine sawtimber and 28 MBF in hardwood sawtimber plus about 35 cords of pine and 165 cords of hardwood pulpwood.

#### **The E.V. Smith Center:**

The E.V. Smith Center, located along Interstate 85 near Milstead, Figure 8, was the culmination of a long search to replace land lost from expansion of the Main Campus at Auburn. The Center was purchased in 1975

# E.V. SMITH CENTER

## MACON COUNTY

### 3200 ACRES

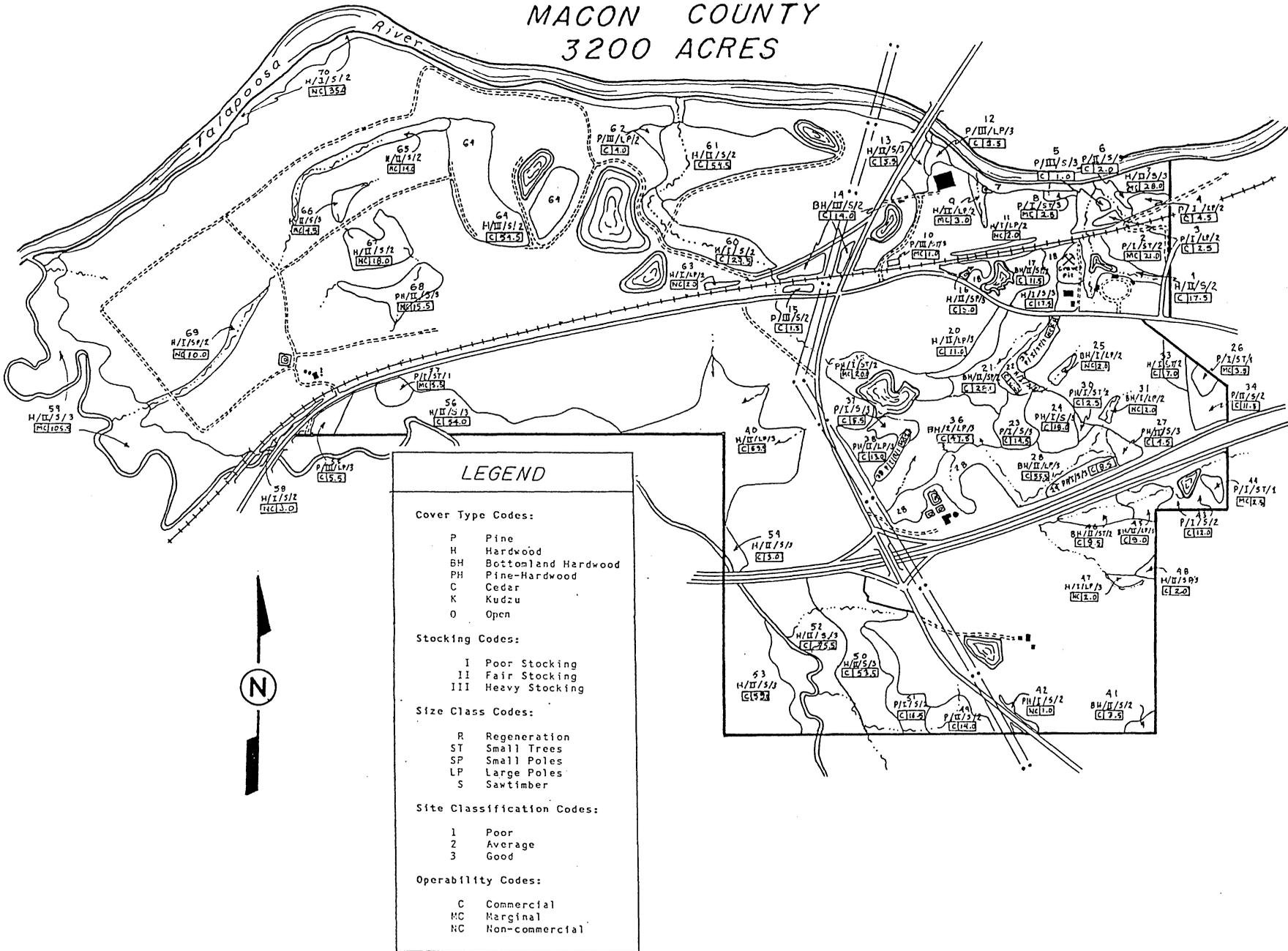


Figure 8. Stand map of the E.V. Smith Center.

and dedicated in 1978. The Center consists of a 3,200 acre block of land located in the flood plain of the Tallapoosa River, which borders the unit on the north, and Calebee Creek, which borders much of the unit to the west. Primary access to the unit is provided by Interstate 85, State Highway 229, and Macon County Route 30. A new interchange on Interstate 85 at the E.V. Smith Center places the unit within a half hour drive of the Auburn Campus. The E.V. Smith Center is administered through a station director, Dr. James Bannon with an assistant in each of the major research areas of Agronomy, Beef Cattle, Dairy, Field Crops, and Horticulture.

The Center is located within the Upper Loam Hills Region of the Hilly Coastal Plain Province. The soils, however, are all developed from alluvial parent material washed from the Piedmont. The most common soils on the station are in the Congaree, Chewacla, Wehadkee group. These soils have a silt loam topsoil with a heavy clay subsoil and tend to be poorly drained. Most of the Congaree and Chewacla soils have been cleared and drained for use in pasture and crops. The wetter portions of Congaree soils and most of the Wehadkee soils remain in woodland. There are a number of swampy areas and sloughs on the station. These are occupied by Ronoke silt loam or simply listed in the soil survey as swamp. Some of the higher elevations on the unit are occupied by Norfolk sandy loam or Independence loamy sand. The Independence soil has a gravelly subsoil and the unit is dotted with abandoned gravel pits.

Almost one third of the E.V. Smith Center is in woodland. About 110 acres are in pine or pine hardwood cover types and 990 acres are in hardwood. Just prior to purchase by the University most of the station was cut over. This, plus mining for sand and gravel, borrow pits for clay, attempts at clearing, and recent construction of roads and railways has left much of the timber in sorry condition. Nevertheless, the woodland on

the E.V. Smith center contains some interesting timber types and unique ecological areas. There are also a few sizable areas of young hardwood timber in good silvicultural condition.

The poorly drained Congaree and Chewacla soils around Calebee Creek and other major drainages generally support poorly stocked sawtimber and large pole hardwood stands of oak, hickory and miscellaneous hardwoods. These sites are wet only during part of the year and at one time contained a significant pine component. The pine was cut out sometime during the 1960's leaving the stands somewhat understocked. Species commonly present include water oak, willow oak, white oak, hickory, elm, hackberry, sweetgum, yellow poplar, and sycamore.

Swampy areas are occupied by stands of swamp tupelo, often in almost pure stands, but also mixed with maple, southern magnolia, and sweetbay magnolia. At the edges of the wet areas these stands become mixed with water and willow oak, sweetgum and yellow poplar. There are stands of this nature in small pole, large pole and in sawtimber size classes and all are well stocked except where the woodland borders open water.

The E.V. Smith Center contains a number of sloughs left by the Tallapoosa river. Most of these are wet during only a portion of the year and are occupied by stands of swamp tupelo as described above. One large slough, however, stays wet during most of the year and contains a true swampland mix of bald cypress and swamp tupelo sawtimber in a dense stand.

The upland areas on the station contain the poorest timber. The hardwood in these areas has been highgraded and most sites now in upland hardwood should eventually be converted to pine or pine hardwood. The pine stands have all been cut over leaving suppressed poles and culls to occupy

the site. There are only a few acres of decent pine timber. In addition, it is the upland areas which contain the numerous gravel, sand and borrow pits, as well as abandoned road and railroad beds tending to leave the woodland dissected into small stands.

Although cutting has left a lot of the timber in poor condition, the size class distribution is heavily skewed toward the larger size classes. About 88% of the commercial forest land on the center is in large pole or sawtimber size classes; 7% is in small poletimber; less than 5% of the area is in trees below five inches in diameter. Total volume on the unit is estimated at 383 MBF of pine sawtimber, 2,089 MBF of hardwood sawtimber plus 844 cords of pine and 16,510 cords of hardwood pulpwood.

#### **The Fayette County Experiment Forest:**

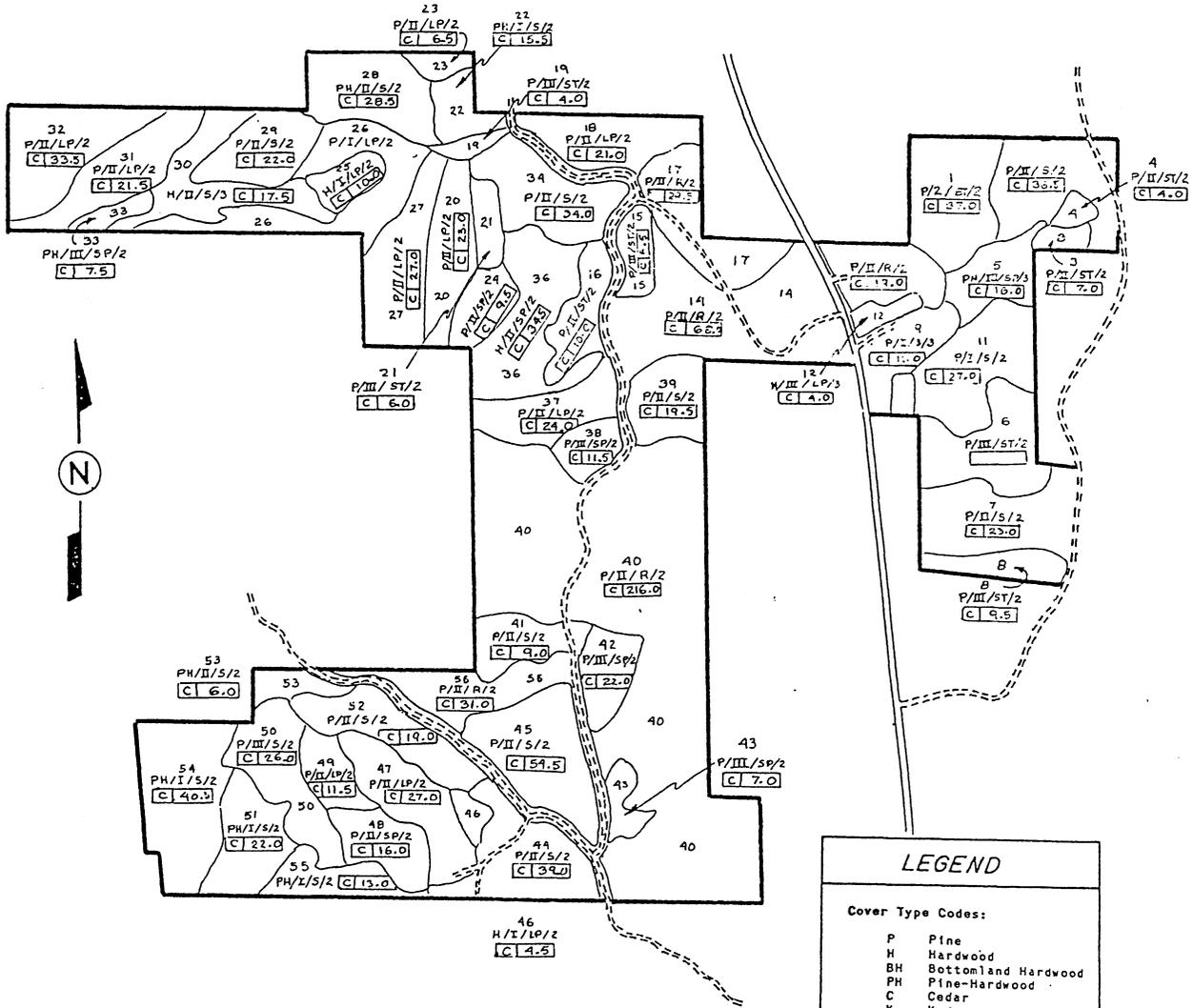
The Fayette County Experiment Forest is made up of 1,331 acres located in the north central part of Fayette County about halfway between the towns of Winfield and Fayette along U.S. Route 43, Figure 9. There are no on site personnel. Timberland Services Inc., located in Fayette, has been retained to assist in management needs. The entire unit is forested and almost all is classified as commercially operable.

The Fayette Forest is located in fairly rugged topography in the Transition Loam Hills portion of the Upper Coastal Plain Province. The soils are primarily Ruston, Cuthbert, or Shubuta fine sandy loams. There are small areas of Ora soils on the uplands and the soils in major drainages are Bibb, Tuka, or Mantachie sandy loams all of which developed from local alluvium. These soils are well drained and about average in productivity.

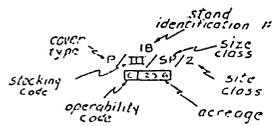
Figure 9. Stand map of the Fayette County Experimental Forest.

# FAYETTE EXPERIMENTAL FOREST

Fayette County  
1332 Acres



Notation



| LEGEND                            |                     |
|-----------------------------------|---------------------|
| <b>Cover Type Codes:</b>          |                     |
| P                                 | Pine                |
| H                                 | Hardwood            |
| BH                                | Bottomland Hardwood |
| PH                                | Pine-Hardwood       |
| C                                 | Cedar               |
| K                                 | Kudzu               |
| <b>Stocking Codes:</b>            |                     |
| I                                 | Poor Stocking       |
| II                                | Fair Stocking       |
| III                               | Heavy Stocking      |
| <b>Size Class Codes:</b>          |                     |
| R                                 | Regeneration        |
| ST                                | Small Trees         |
| SP                                | Small Poles         |
| LP                                | Large Poles         |
| S                                 | Sawtimber           |
| <b>Site Classification Codes:</b> |                     |
| 1                                 | Poor                |
| 2                                 | Average             |
| 3                                 | Good                |
| <b>Operability Codes:</b>         |                     |
| C                                 | Commercial          |
| MC                                | Marginal            |
| NC                                | Non-commercial      |

The Fayette Experimental Forest was established with a purchase of 910 acres in 1944 and an additional purchase of 421 acres in 1946. The unit was operated as a substation devoted to forest research from 1944 until 1975. Research on the forest concentrated on the conversion of low value, cut over hardwood to pine and growth response of pine to control of competing hardwoods. This work resulted in conversion of about 60% of the forest acreage to pine. The conversions have taken place over the years and the stands which were created are small, variable in density and composition, but most are vigorous and well stocked. These stands are now from 20-45 years old.

The death of the station superintendent in 1975 precipitated a reevaluation of the management of the Fayette Forest. Because of the distance from campus and the addition of facilities at the Dixon Center the decision was made to cease operations as a separate substation. Research use has dropped off, but the area has been used to develop weight and volume tables for the region and several of the old plots have proved valuable for additional research.

Efforts to reduce the quantity of overmature timber and to establish uniform stands of younger timber began in 1985. Harvesting has concentrated in stands of overmature pine or in low quality stands of upland hardwood. To date almost 500 acres have been harvested and regenerated. Only about 25% of the forest is still occupied by the remnants of the original pine hardwood forest that was on the unit at the time of acquisition. These stands are interesting, but are all overmature and have considerable stocking in low value hardwood and cull trees.

The recent cutting and regeneration has established a reasonable size class distribution on the Fayette Forest. About 27% of the forest is in

regeneration, 9% in small trees, 28% in poletimber and 35% in sawtimber. However, the sawtimber is almost all overmature and will need to be regenerated sooner than would otherwise be desirable. Total volume on the Fayette Forest is estimated at 2,589 MBF of pine sawtimber, 441 MBF of hardwood sawtimber plus 8,500 cords of pine and 3,200 cords of hardwood pulpwood.

**The Gulf Coast Substation:**

The Gulf Coast Substation consists of a 720 acre block of land located just east of Fairhope along State Highway 104, Figure 10. The substation is administered through a Superintendent, Emmett Carden and an Assistant Superintendent, Ronnie McDaniels. The station includes 260 acres of forest land. Over 60 acres, however, is woodland now used for pasture shade or in drainage stands infested with Kudzu, leaving about 195 acres classified as commercially operable.

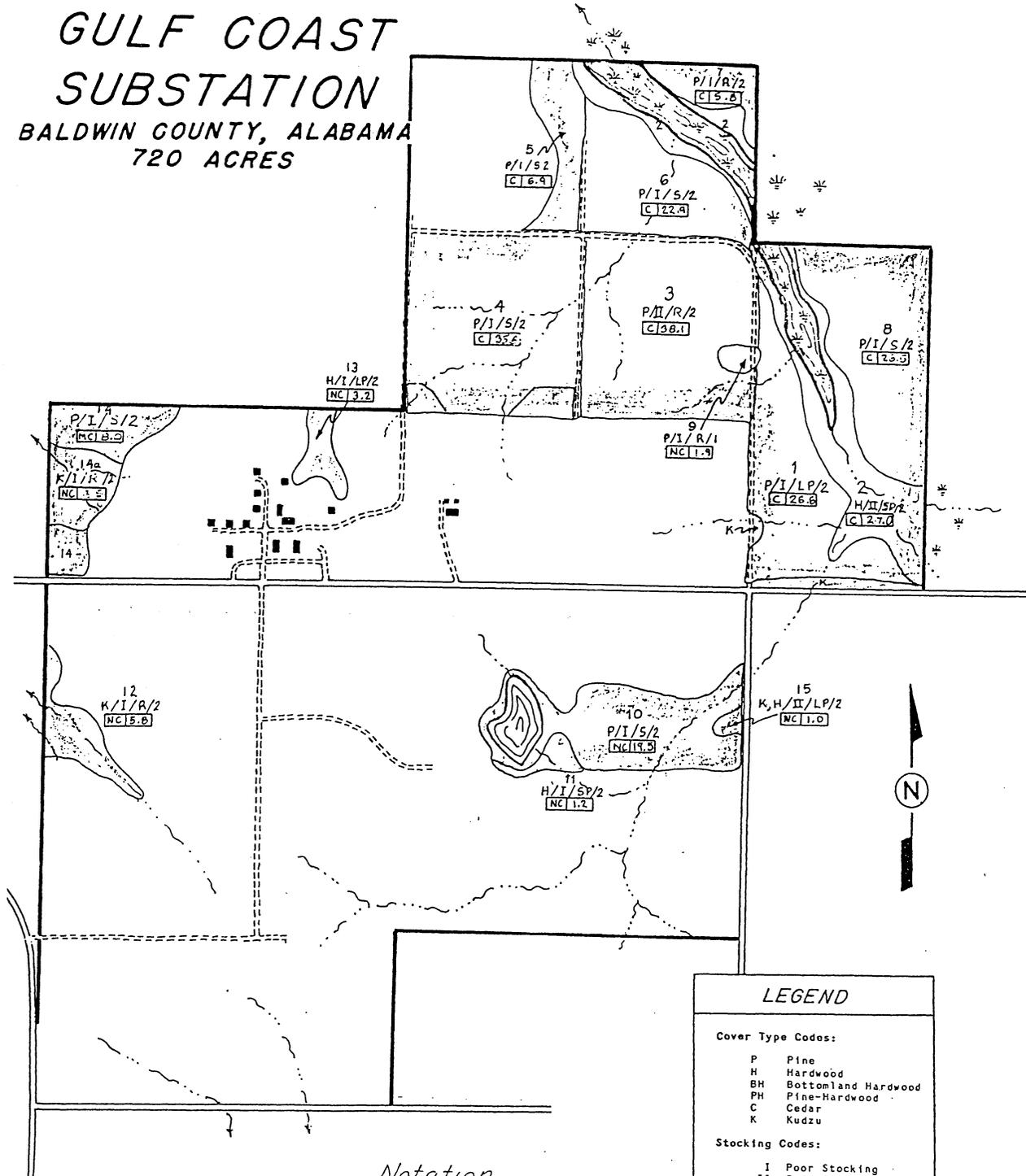
Located in the Southern Loam Hills Region of the Middle Coastal Plain Province, characteristic soils on the station are loamy sand overlying marine clay. The upland soils on the station are in the Eustis, Troup, Riverview and Orangeburg series, all of which are deep fine sandy loams. The major drainage bottoms are occupied by wet muck soils in the Dorovan-Ponzer-Bib complex.

The station was established by legislative act in 1927 and began operation in 1930 conducting research on local crops, primarily truck crops and satsumo oranges. Research on the station has changed along with changes in agriculture in the area and emphasis on the station now includes beef cattle production, pecans, soybeans, corn, forages and small grains.

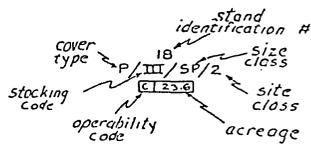
Figure 10. Stand map of the Gulf Coast Substation.

# GULF COAST SUBSTATION

BALDWIN COUNTY, ALABAMA  
720 ACRES



### Notation



### LEGEND

**Cover Type Codes:**

- P Pine
- H Hardwood
- BH Bottomland Hardwood
- PH Pine-Hardwood
- C Cedar
- K Kudzu

**Stocking Codes:**

- I Poor Stocking
- II Fair Stocking
- III Heavy Stocking

**Size Class Codes:**

- R Regeneration
- ST Small Trees
- SP Small Poles
- LP Large Poles
- S Sawtimber

**Site Classification Codes:**

- 1 Poor
- 2 Average
- 3 Good

**Operability Codes:**

- C Commercial
- MC Marginal
- NC Non-commercial

The forest on the Gulf Coast Substation was established through planting of spacing studies of longleaf pine and growth comparison studies of longleaf, slash and loblolly pines all established in the 1940's. Damage from Hurricane Fredrick in 1979 and subsequent salvage cutting decimated these stands leaving them poorly stocked with formerly suppressed sawtimber and poletimber.

Recent management efforts have concentrated on harvest of these stands and regeneration to longleaf pine. This work began in 1991 with a clearcut of 38 acres and a shelterwood cut of 36 acres. The 38 acre clearcut was planted in 1993 and again in 1994 to insure a reasonable stocking. The shelterwood cut has not yet produced adequate regeneration.

With the exception of the recent cutting the Station's woodland consists of stands of mature sawtimber left from the original 1940' plantings. Depending on the amount of hurricane damage the stocking varies from fair to very poor. The understory in these stands is typical of coastal plain pine stands and is quite dense.

The only significant hardwood on the station occurs in a band bordering swampy areas in the major drainage. It is composed of remnants of a hardwood stand damaged by beaver activity and patches of regeneration developing after wind damage. The swampy area was created by beaver activity which now seems to have stabilized in a narrow swamp with numerous small pools running the length of the major drains.

Recent cutting yields a size class distribution of 20% regeneration, 3% small trees, 14% small poletimber, 14% large poletimber and 49% sawtimber. Total volume on the station is estimated at 378 MBF of pine sawtimber plus about 400 cords of pine and 200 cords of hardwood sawtimber.

### **The Lower Coastal Plain Substation:**

The Lower Coastal Plain Substation is located on 2,700 acres in the center of Wilcox County two miles north of Camden, Figure 11a and 11b. Primary access to the Station is via State Highway 28. The station is administered through a superintendent, Joe Little and an assistant, Paul Rose. The substation contains 1,300 acres of timberland. Except for a few areas of forest used for pasture shade, a few stands on steep and highly erodible land, and stands on low flooded areas near Dannley Reservoir (a total of 201 acres), the forest land on the Lower Coastal Plain Substation is classified as commercially operable.

The station includes gently rolling uplands and extends through highly dissected hills to include a wide river bottom on the Alabama River. The river was flooded around 1965 to create Dannley Reservoir. The soils on the station vary from deep sandy loams of the Red Bay, Orangeburg, and Ruston series on the upper slopes to areas of Susquehanna clay on the gently rolling lower slopes. The river bottom is made up of silt loam soils with heavy subsoil in the Ochlockonee and Wickham series.

The Lower Coastal Substation was established in 1949 on land donated by Wilcox County. The major cash crops in the region at that time were livestock and timber. Early research concentrated on the use of forages and grain crops in growing and finishing cattle and on forest management. Beef Cattle production remains an important part of research on the unit. The station now includes a large swine production installation and also conducts research on cotton, corn and small grains.

Early forestry work on the station involved methods of direct seeding and planting in cutover timber and eroded agricultural areas along with

# LOWER COASTAL PLAIN SUBSTATION WILCOX COUNTY, ALABAMA 2,700 ACRES

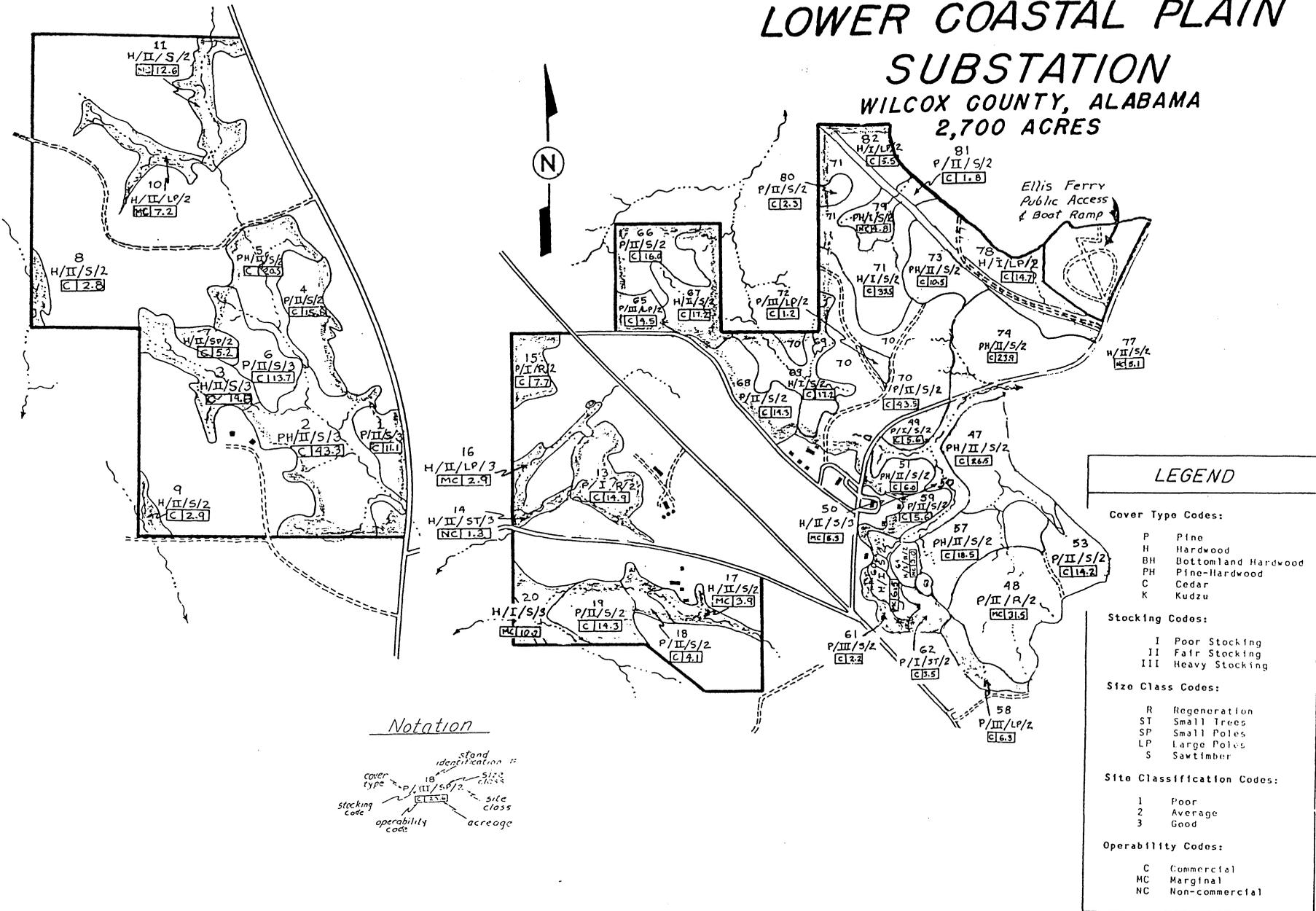
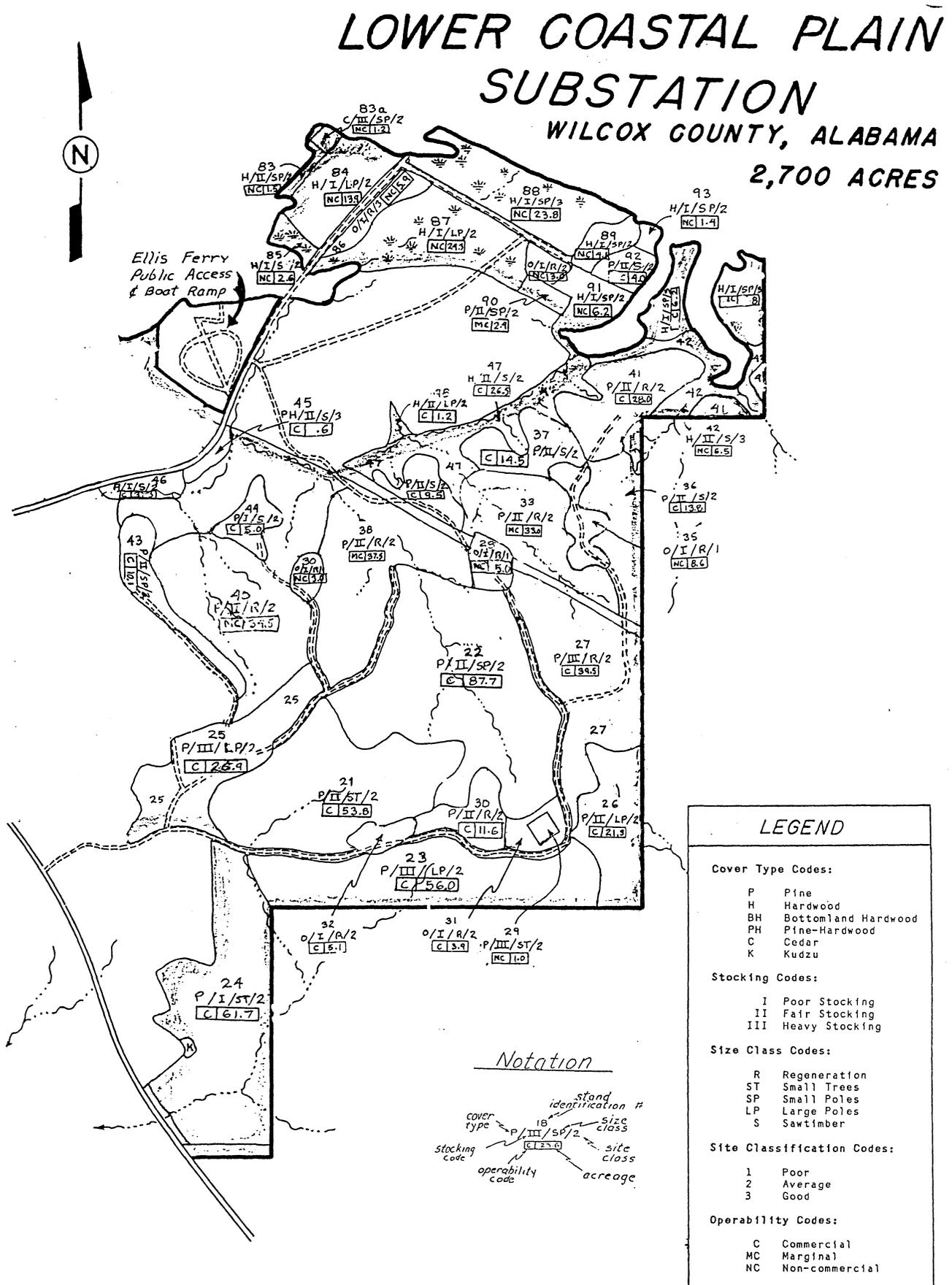


Figure 11a. Stand map of the west portion of the Lower Coastal Plain Substation.

Figure 11b. Stand map of the east portion of the Lower Coastal Plain Substation.



some research of silvics of several species. Early research also included a rather infamous study comparing the pulping yield of bamboo cultivars with tree species. In the 1950's a number of progeny tests were established on the unit for the forest genetics program. More recently the size of the forested area on the substation provided an opportunity to conduct watershed studies which are now in the process of establishment.

The timberland on the Lower Coastal plain Substation is located largely on land too highly dissected to provide good pasture. The flat uplands, knolls and narrow ridges are occupied by adequately stocked loblolly and shortleaf pine sawtimber stands. These stands extend down the slopes generally mixing with spruce pine and hardwoods.

The hardwood timber in the hilly area of the station is located on the lower slopes and in drainage ways. In most cases it is composed of poorly stocked large sawtimber which developed from culls and suppressed trees left after cutting in the 1940's. On poor sites this timber is made up of water oak, white oak and post oak. On better sites it is composed of very large red oaks, yellow poplar, spruce pine and evergreen magnolia. In many cases the large trees have spread out creating a park like stand with little understory at all.

The forested area on the river bottom consists of research plots abandoned when Dannley Reservoir was flooded. Plots of sycamore, yellow poplar, cottonwood, Arizona cypress, loblolly pine, green ash and cultivars of bamboo border the reservoir mixed with maple, willow, and water oak which have invaded the open areas. The area is periodically flooded and has an extremely high beaver population which is causing severe damage.

Some cutting has taken place on the station over the years, but it has been insufficient to maintain a reasonable size class distribution. Since 1960 about 375 acres of pine plantation has been established. About 25 acres are between 25 and 35 years of age, about 60 acres are about 20 years of age and 87 acres are 15 years old. An additional 113 acres were regenerated by natural methods about ten years ago. About 90 acres were harvested and regenerated in the past five years. These stands vary, but most are adequately stocked and developing satisfactorily.

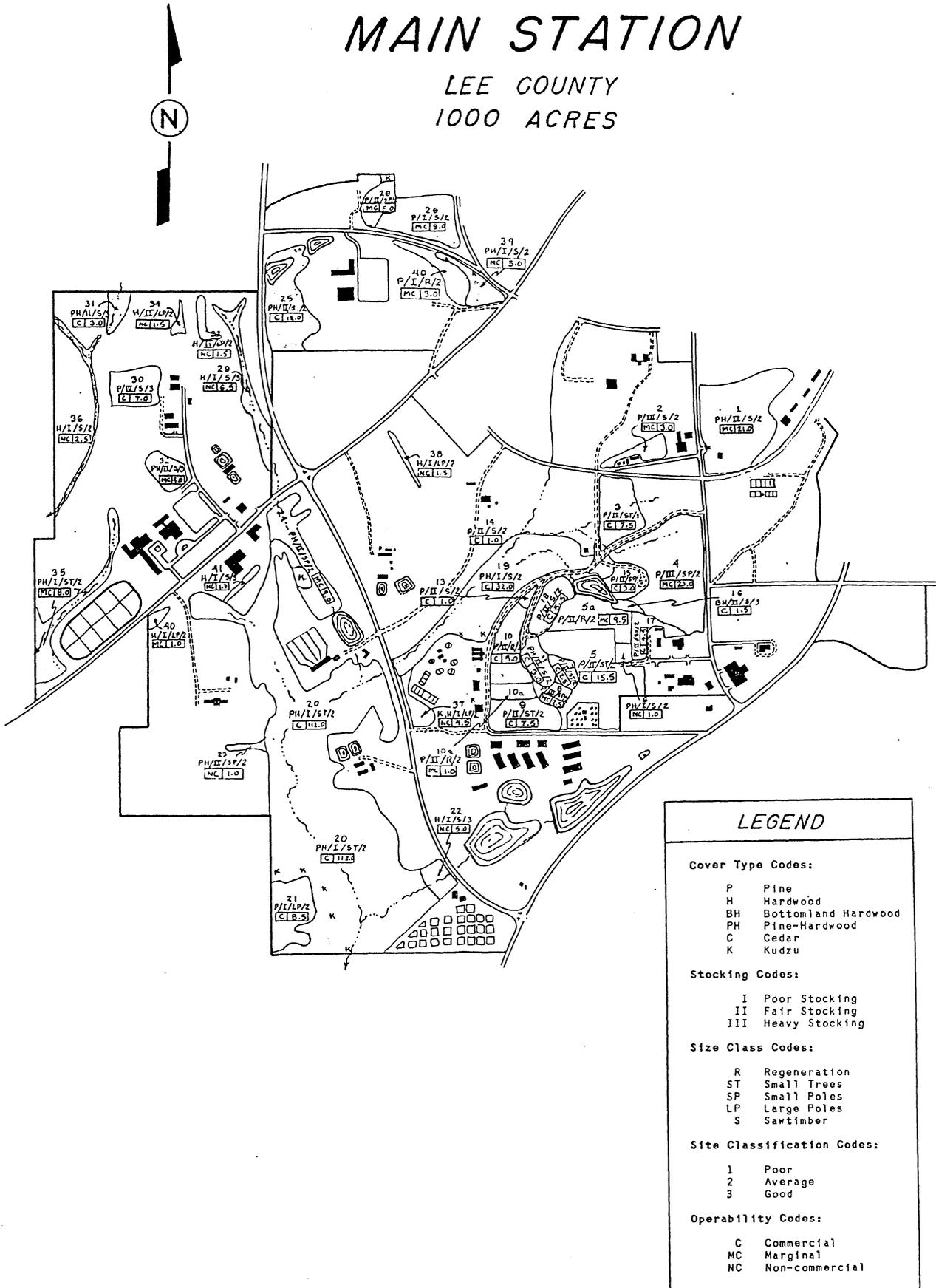
As a result of the general lack of harvest, the size class distribution on the station is heavily skewed toward sawtimber. About 53% of the timberland at Camden is in sawtimber, 12% is in small trees, 10% is in small poles, 14% is in large poles and 11% is in regeneration. An additional 100 acres is scheduled to be harvested and regenerated as a part of a watershed research study.

The forest on the Lower Coastal Plain Substation is generally well stocked and, even with recent cutting, contains a large volume of sawtimber. Much of the timber, pine and hardwood, is in excess of sixty years of age. Total volume on the station is estimated at 3,409 MBF of pine sawtimber, 974 MBF of hardwood sawtimber plus 4,868 cords of pine and 3,022 cords of hardwood pulpwood.

#### **The Main Station:**

Located on the south side of the Auburn Campus, Figure 12, the Main Station contains a little less than 1,000 acres and houses the field research facilities for Poultry Science, Swine Production, the Bull Testing Unit, Horticulture Greenhouses, Wood Products Laboratory, U.S. Forest Service Andrew's Laboratory and the offices and shops of the Department of Research Operations.

Figure 12. Stand map of the Main Station.



The Main Station lands are located on the boundary between the Piedmont and Coastal Plain Provinces. The soils are generally more characteristic of the Coastal Plain, but often they overlay Piedmont formations or are mixed with Piedmont soils. The broad hill tops, most of which have been cleared for crops or pasture are classified as Marvin loamy sand. The steeper slopes are primarily Pacolet sandy loam. The Pacolet classification is particularly variable and includes patches of Cecil, Gwinnett, Marvin, Taccoa, and Cartecay soils. The floodplains along the major creeks within the unit are occupied by Kinston silt loam or Taccoa sandy loam.

The Agricultural Experiment Station lands at the Main Station began with a farm of thirty one acres purchased in 1893 and eventually grew to a total of about 2,100 acres. This campus site has been used for much of the field research done in Agronomy, Horticulture, Poultry Science and Swine Production as well as the early research in Forestry. Encroachment on the agricultural lands by an expanding main campus has always been a problem, but has increased tremendously in the last few decades with construction of the new athletic complex, fraternities, intramural fields, and the new veterinary complex. This encroachment was the driving force behind the development of the E.V. Smith Center. The main campus is still expanding and much of this area is subject to be developed with short notice.

A total of 368 acres of woodland is located within the Main Station. The majority of this is located in the "Forestry Plots", 130 acres adjacent to the Forest Products and Forest Service Laboratories, and a 100 acre block of woodland located in a wide drainage west of the swine unit and bull testing facility. The remainder is scattered in small stands around the Station, much of it in drainages, low wet spots, or around buildings.

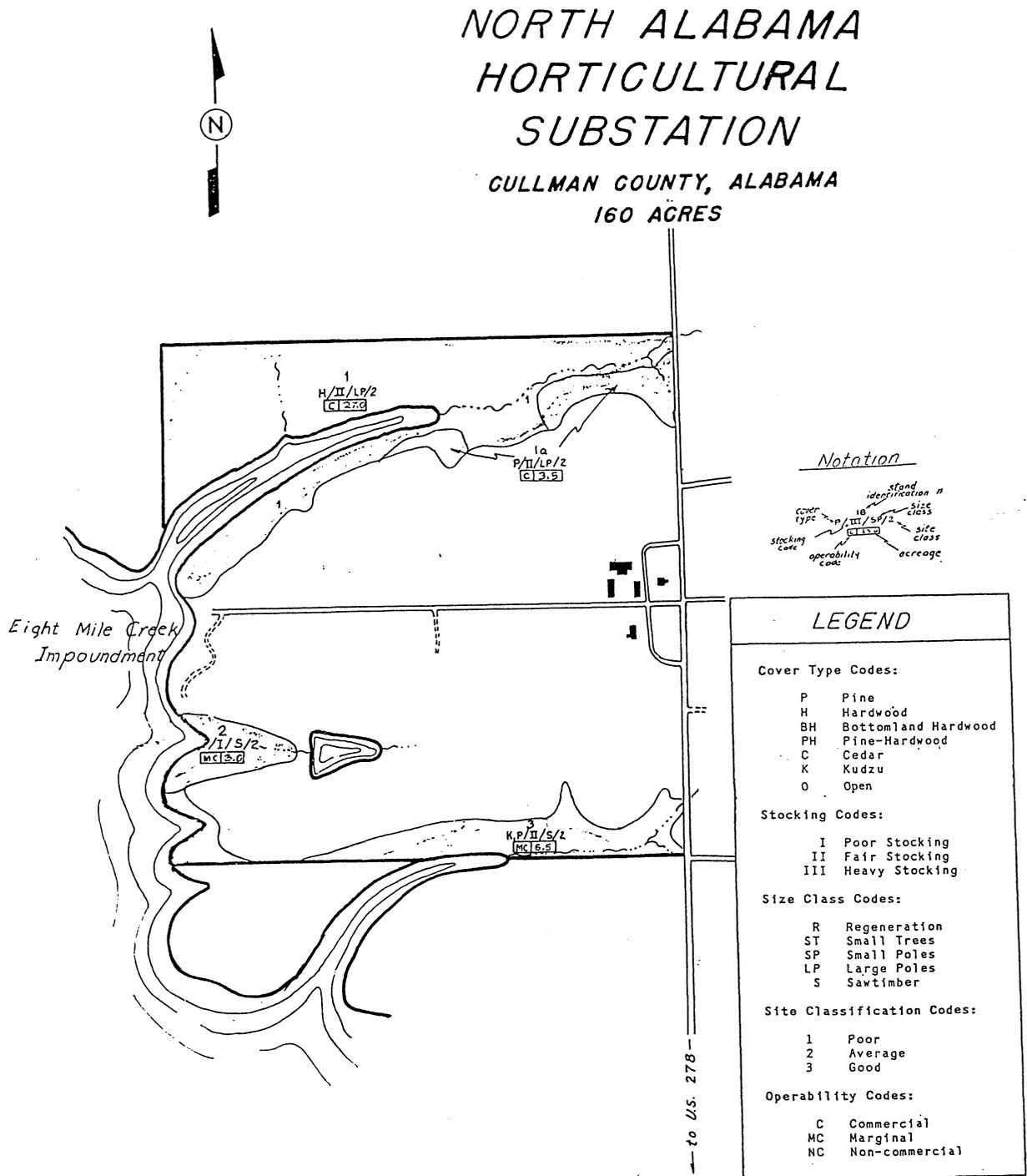
The vast majority of the woodland on the Main Station was cut over in 1975 following damage from Hurricane Eloise. With the exception of the Forestry Plots none of the harvested stands were regenerated. In the Plots a total of 84 acres have been regenerated by various methods since 1981. These stands range in size from regeneration to small pole in size and are all adequately stocked. Although there are a few acres of well stocked sawtimber, the remainder of the woodland on the Main Station consists of scattered pines and hardwood culls with an understory of small tree hardwood and pine. Stocking of desirable species is extremely low. Privet and Kudzu are problems in many of these stands making a bad situation worse.

The Main Station is one of the few stations with a significant portion of the woodland in intermediate size classes. Current size class distribution is 3% in regeneration, 53% in small trees, 17% in small poles, 3% in large poles and 24% in sawtimber. Total Volume on the Unit is estimated at 226 MBF of pine sawtimber, 77 MBF of hardwood sawtimber, plus 1,265 cords of pine and 543 cords of hardwood pulpwood.

#### **The North Alabama Horticultural Substation:**

The North Alabama Horticultural Substation consists of 160 acres located just east of Cullman along U.S. Route 278 in the center of Cullman County, Figure 13. The station is administered through a superintendent Marlin Hollingsworth. The unit is located within the Sandstone Plateau Region of the Cumberland Mountain Province. The Hartselle soil which occupies most of the substation is typical of the region and is derived from sandstone mixed with shale. Topography is rolling, but the soil is only moderately erosive and almost 100 acres of the unit is in cultivation.

Figure 13. Stand map of the North Alabama Horticultural Substation.



The North Alabama Horticultural Substation was established in 1947 to serve a growing truck crop industry north of Birmingham. The land was donated by Cullman County and research work began in 1949 on specialty crops and fruits grown in the region. Research emphasis remains on apples, peaches, plums, potatoes and vegetables.

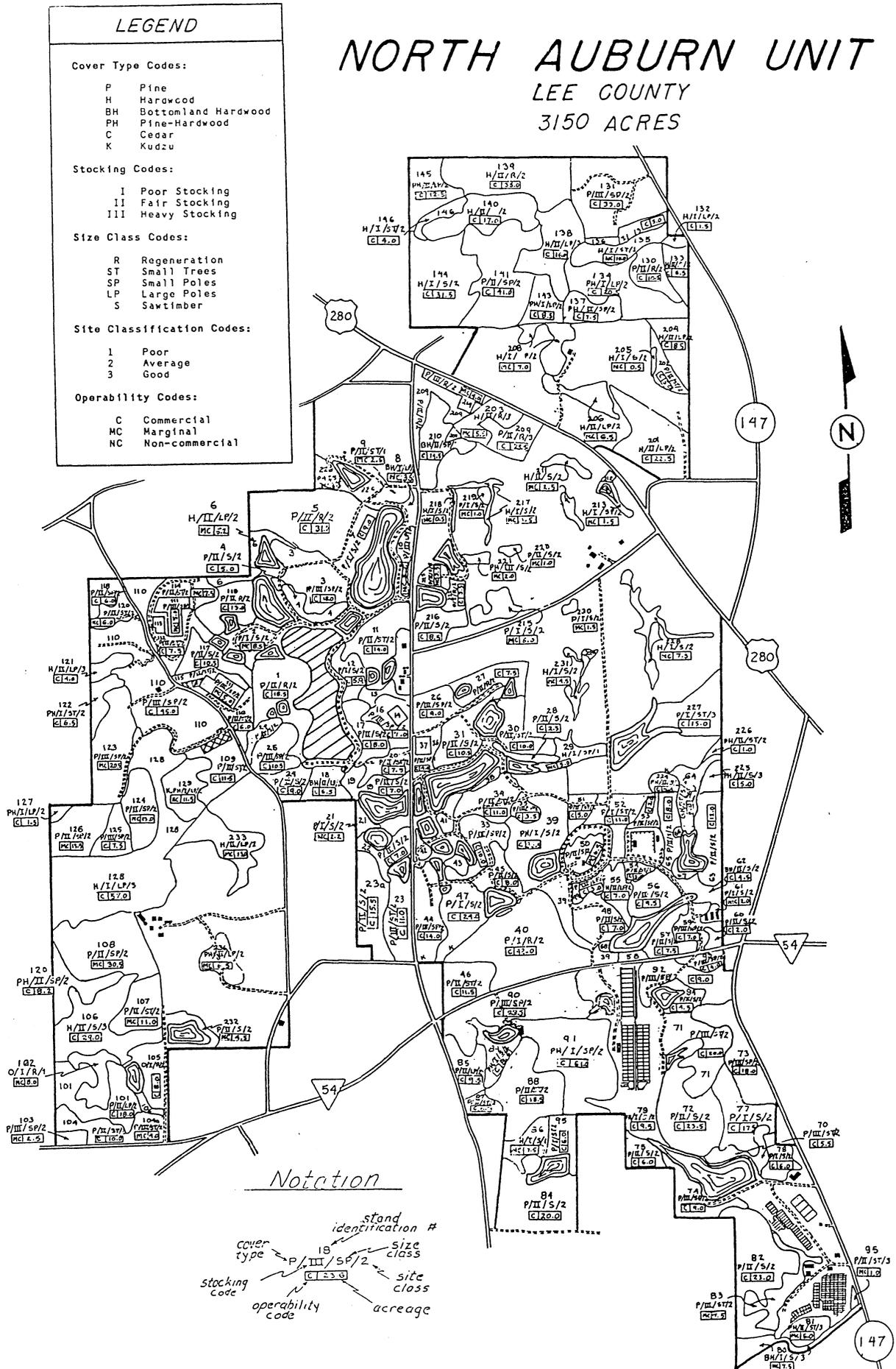
A little over 40 acres on the station is in woodland. Of this, about 2 acres are in Kudzu and 9 acres in pine stands classified as marginal because of their location along steep drainages. About 30 acres of the station are occupied by a fair stand of upland hardwoods. This stand was commercially clearcut about twenty years ago and as a result contains numerous cull trees. The stand, however, is generally well stocked and is now in a large pole size class. All of the timbered land on the station borders an impoundment of eight mile creek. This lake supplies drinking water for the town of Cullman as well as parts of Cullman County. Any use of the timber will require careful consideration.

All of the forested acreage classified as commercially operable on the station is in a large pole size class. Total volume on the station is estimated at 27 MBF of pine sawtimber, 58 MBF of hardwood sawtimber, plus an additional 147 cords of pine and 175 cords of hardwood pulpwood.

#### **North Auburn Unit:**

The North Auburn Unit consists of about 3,150 acres and contains 1,716 acres of forest land. The Unit is located just west of Alabama Highway 147 (North College Street) about two miles north of the Auburn City Limits, Figure 14. Primary access to the Unit is provided by U.S. Route 280, State Route 147, Lee County Routes 72, 23 and several other county maintained roads.

Figure 14. Stand map of the North Auburn Unit.



Because of its proximity to the campus the history of the North Auburn Unit is somewhat confused. The unit is made up of properties purchased by the Experiment Station over a period covering fifty years. Over the years, significant research work has been conducted in dairy cattle, beef cattle and poultry production, forestry, wildlife, animal health and aquaculture. Purchase of the E.V. Smith Center in 1975 resulted in major shuffling of research units and most of the facilities located at North Auburn moved to the E.V. Smith Center or the Main Campus.

Portions of the North Auburn Unit are used for research projects within various schools. The largest area, 1,450 acres, is used for Fisheries research. About 700 acres are used Forestry research. About 980 acres are for Animal Health research and about 20 acres used for Wildlife research. Land assignments notwithstanding, the land located on the North Auburn Unit is available for use by any Experiment Station staff member as long as it does not interfere with the main use of an assigned area.

The North Auburn Unit is located within the Opelika Plateau Region of the Piedmont Province. The primary soils are Pacolet or Gwinnett sandy loams. Both of these soils are highly erosive with a sandy loam topsoil over a clay or sandy clay subsoil. In the 1920's the entire area had been cleared and devoted almost exclusively to the production of cotton. Severe erosion washed away all of the topsoil and much of the B horizon. In many cases what remains is the C horizon of heavy clay. Outcrops of granite and friable saprolitic parent material are common.

Although improving, much of the woodland on the North Auburn Unit is in poor shape. It is largely understocked, highly dissected into small stands, and has serious problems with Kudzu and multiflora rose. The Kudzu and rose were established in the 1940's in an attempt to control erosion

and then allowed to spread down fence rows and into pastures and woodlands. Timber harvests following Hurricane Eloise in 1975 depleted the growing stock below acceptable levels over most of the area. Construction work by the Fisheries Department, numerous research plantings, combined with a lack of funds for major regeneration efforts are responsible for the numerous small stands present.

Rehabilitation of the North Auburn Unit is proceeding at a slow, but steady pace. Fisheries has a policy of harvesting and regenerating about 20 acres of poorly stocked timber every few years and has always replanted borrow pits and other areas left open following pond construction. In addition, Fisheries has conducted Kudzu control on land assigned for its use which has been fairly successful. The School of Forestry has cleaned up and regenerated those areas which could be treated at low cost and has begun a control program on Kudzu which threatened to engulf large areas. A total of 500 acres of quality pine plantation and about 30 acres of mixed pine hardwood regeneration has been established by Forestry and Fisheries over the past 20 years.

The North Auburn Unit does contain some quality sawtimber, about 100 acres are well stocked with small sawtimber and large pole sized loblolly pine, and there is a small amount of excellent quality hardwoods. The majority of sawtimber stands, however, are occupied by understocked pine with basal area ranging from about 10 to 70 square feet per acre. On poor sites these stands have developed an understory of pine regeneration. On better sites the understory is occupied by suppressed hardwoods, sprouts, brush and vines.

Although the quality of some of the sawtimber stands is poor, the size class distribution is approaching ideal. Currently 10% of the commercial forest land is in regeneration, 22% in small trees, 23% in small poles, 25% in large poles and 30% in sawtimber. Total Volume on the unit is estimated at 1,686 MBF of pine sawtimber 659 MBF in hardwood sawtimber plus 5,185 cords of pine and 4,408 cords of hardwood pulpwood.

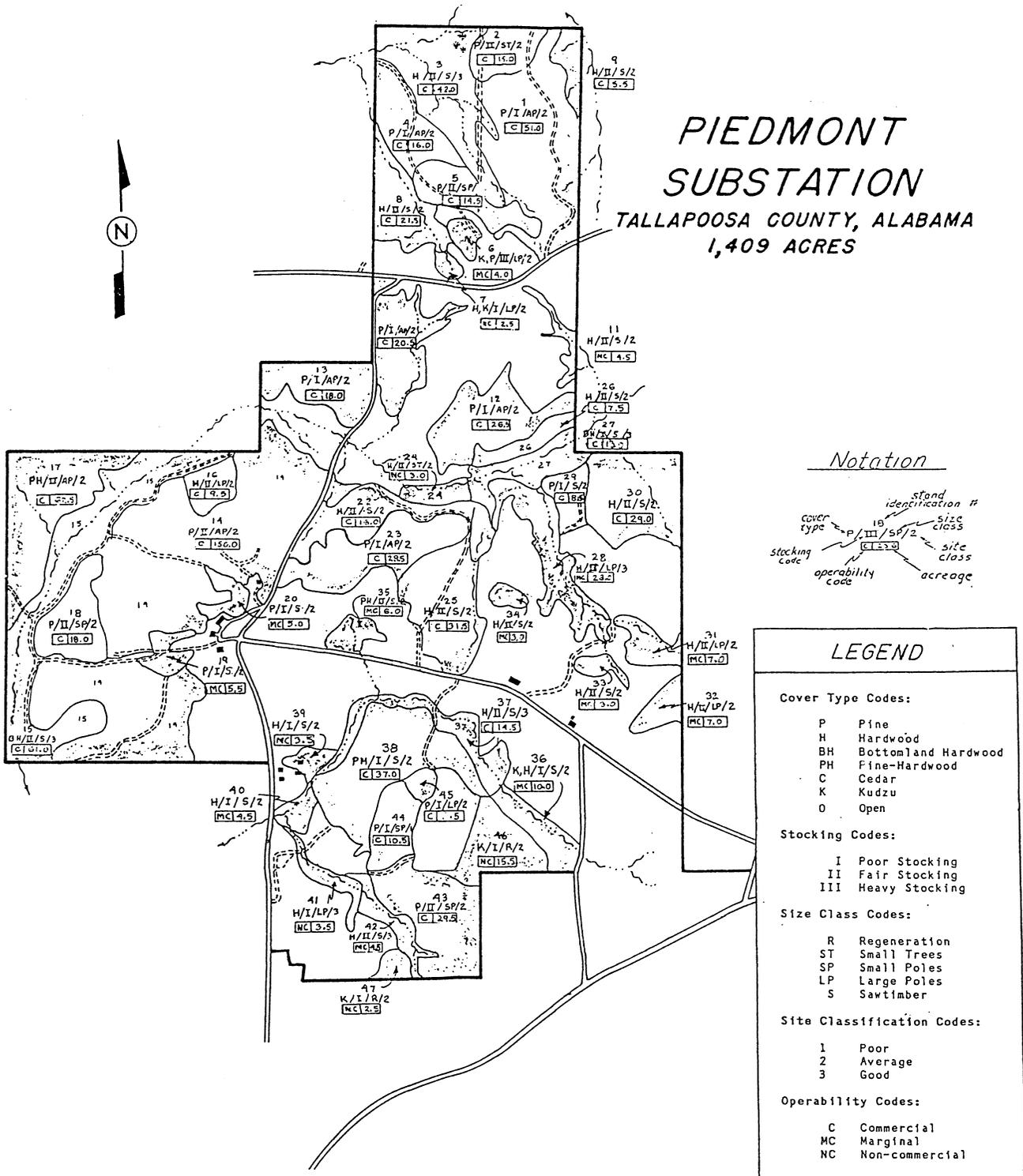
**The Piedmont Substation:**

The Piedmont Substation was established in 1943 on 1,409 acres located just north of Camp Hill in southeast Tallapoosa County, Figure 15. The station is administered through a superintendent, John Owen. The unit includes about 875 acres of timberland of which 750 acres is commercially operable.

The site for the station was chosen to be representative of the depleted soils of the Piedmont Province. The majority are eroded phases of Cecil or Pacolet sandy loam. A few of the wider stream bottoms have soils (Congaree or Chewacla) developed from local alluvium. The forest land is located on severely eroded areas or where the topography is too rugged for agriculture.

Early research on the station concentrated on improvement in the economic viability of regional farms along with rehabilitation of worn out soils. Integrated family farm units, concentrating on a diversity of livestock, were established and run until the mid 1950's and considerable effort was made to find forages which would hold the soil. The unit now conducts a wide variety of research on beef cattle and forages, apples, pecans and other fruits, shade trees and wildlife.

Figure 15. Stand map of the Piedmont Substation.



The woodland on the Piedmont Station was used for some of the initial forest management work (1945-1960) on planting of loblolly and slash pine to re-forest eroded fields and some work on conversion of poor quality upland hardwoods to pine. A considerable portion of the woodland on the station was established as a result of these research plots. Since that time the unit has not been heavily used for forest research. The station has participated in progeny testing for the forest genetics program and helped with research studying Kudzu control.

Recently a large study on the effects of prescribed burning regimes on selected wildlife species was conducted on the station. This work developed into an interest in management of the forest to increase potential for wildlife production with the goal of providing for research on the interaction of farm and forest practices with wildlife management. This will require modification of management plans for the Piedmont Substation in the following areas: 1. Patch cutting will be used to regenerate mature stands with patches ranging size from one to twelve acres in size. 2. Hardwood stands with high hard mast production will be held for long rotations. 3. Pine stands will be maintained with lower than ordinary basal area and prescribed burning used to encourage forage. 4. Treatment plans will be developed in conjunction with wildlife research personnel.

The forest on the Piedmont Substation presents a difficult management problem. The older pine stands have been degraded by southern pine beetles, wind damage and subsequent salvage cutting. About 330 acres are in stands characterized by an overstory of scattered mature pine with some additional stocking of pine and hardwood small poles and small trees in the understory. To regenerate these stands by patch cutting will require

holding some of this mature timber for another thirty years. The Piedmont Substation does have some acreage in young pine timber. About 51 acres were harvested and regenerated in 1975 and an additional 40 acres in 1979. These stands are reasonably well stocked and are doing well.

The unit still contains 275 acres of upland hardwoods. These stands are composed of oak and hickory mixed with sweetgum and yellow poplar. They occur in drains and on rocky slopes. The quality of the hardwood stands varies considerably, but there are a few excellent stands which serve as examples of the potential for hardwood management. The wider creek bottoms on the station are occupied by a variety of bottomland hardwoods. These include stands of bottomland oaks mixed with sweetgum and poplar, small stands of poplar and sweetgum, a small stand of swamp tupelo and stands of sweetbay.

At present, the size class distribution on the station is heavily skewed toward the larger size classes. About 85% of the forested area is in sawtimber with the remainder in large and small poles. Even with an interest in holding all stands with significant oak sawtimber component, regeneration is badly needed. Total volume on the station is estimated at 2,375 MBF of pine sawtimber, 1,450 MBF of hardwood sawtimber, plus 2,000 cords of pine and 3,000 cords of hardwood pulpwood.

#### **The Plant Breeding Unit:**

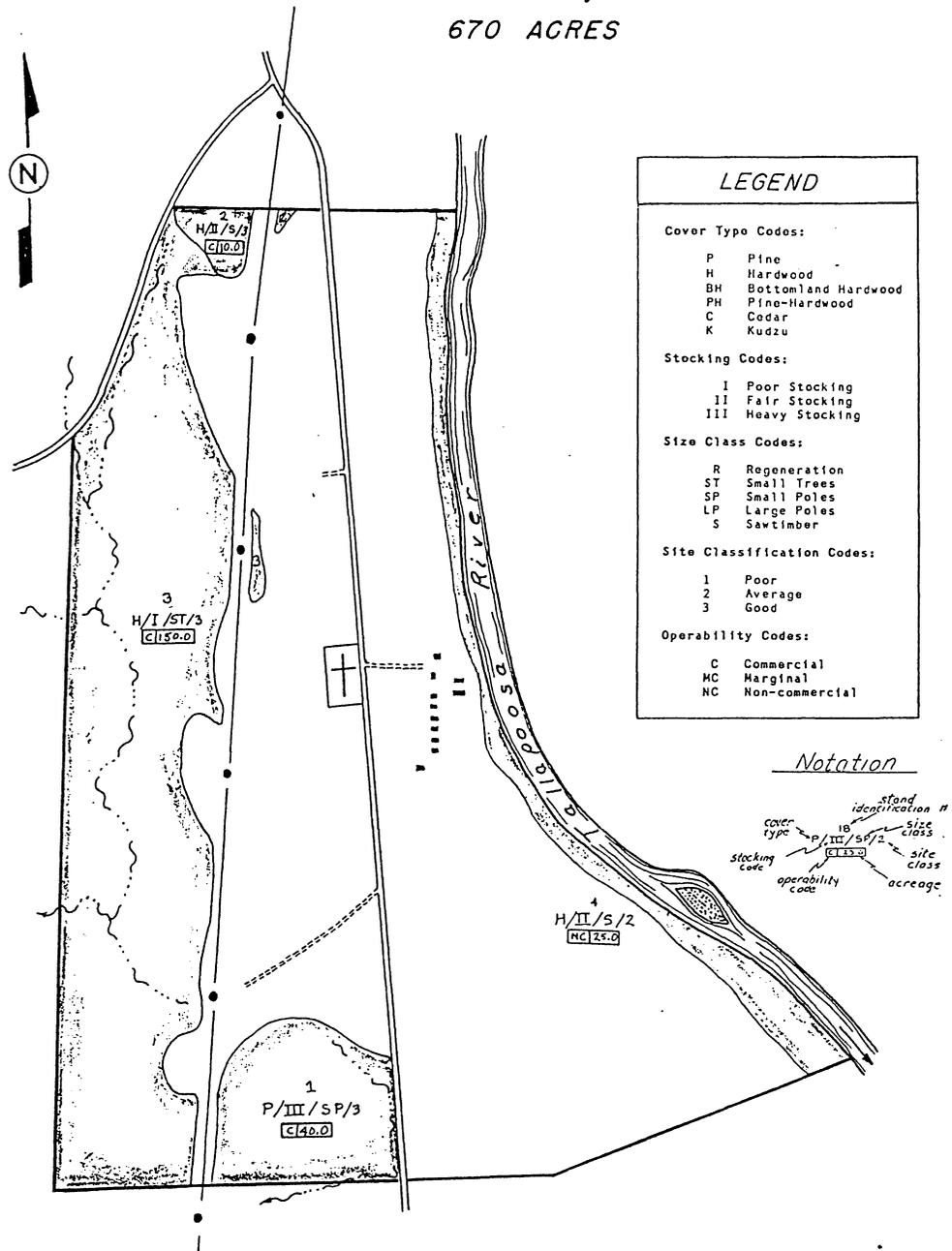
The Plant Breeding Unit consists of 640 acres located just south of Tallassee along County Route 229, Figure 16. For administrative purposes the unit has been combined with the E.V. Smith Center under a Director, Dr James Bannon. The on site superintendent is Stevan Nightengale. About 460 acres of the unit has been cleared for agriculture, leaving 225 acres in woodland 200 of which are classified as commercially operable.

Figure 16. Stand map of the Plant Breeding Unit.

# PLANT BREEDING UNIT

ELMORE COUNTY, ALABAMA

670 ACRES



The Plant Breeding Unit is within the flood plain of the Tallapoosa River and Wallahatchee Creek. The soils which are cleared are above normal flooding and consist of Kalmia loamy sand or Cahaba sandy loam. The woodland on the station is located in the first and second bottom of Wallahatchee Creek. The higher terraces are subject to occasional flooding. The soils here are in the Augusta or Wickham series. The first bottom is subject to flooding for as much as six months of the year. The soil here is Wehadkee silt loam.

The soils in the wooded area of the Plant Breeding Unit are extremely productive for timber. Those capable of supporting pine have a site index in excess of 120 ft. at age fifty. The wetter areas are capable of producing excellent quality bottomland hardwoods. However, such areas are very sensitive to poor management. Unfortunately the entire forest on the Plant Breeding Unit was subjected to a commercial clearcut in 1982. The result was a rise in the water table flooding not only the timberland, but portions of the cultivated land as well. Beavers have been attracted to the area, making matters worse. The majority of the wooded area and low lying areas of cultivated land now remain inundated from mid-January until mid-March except in dry years. Attempts at regenerating the cutover land were made in 1983, but were abandoned due to flooding after 40 acres were planted.

For management purposes the woodland of the Plant Breeding Unit can be divided into three basic types. About 40 acres of loblolly pine are located on the south end of the station. This stand is now 12 years of age, well stocked and in a small pole size class. About 150 acres of cut over hardwoods occupy the bottomland along Wallahatchee Creek. All of this area was harvested except a small remnant of the original stand on the

north edge. This land is now occupied by cull sawtimber (oaks, cypress, and spruce pine) and a dense stand of hardwood saplings. The remaining 25 acres of woodland consists of sawtimber sized hardwoods which form a protective fringe of trees along the banks of the Tallapoosa River.

The size class distribution on the unit reflects the past management. About 75% of the commercially operable woodland is in small trees, 20% in small poles and 5% in sawtimber. Merchantable volume is low, 55 MBF of hardwood sawtimber plus about 75 cords of hardwood pulpwood.

#### **The Prattville Experimental Field:**

The Prattville Experiment Field consists of 80 acres located on Autauga County Route 4 about four miles south of the city of Prattville and two miles west of U.S. Route 31, Figure 17. The unit is administered through a superintendent, Don More. The field is within the Upper Loam Hills of the Middle Coastal Plain Province and the topography is level. The soil on the unit is all classified as Greenville sandy loam.

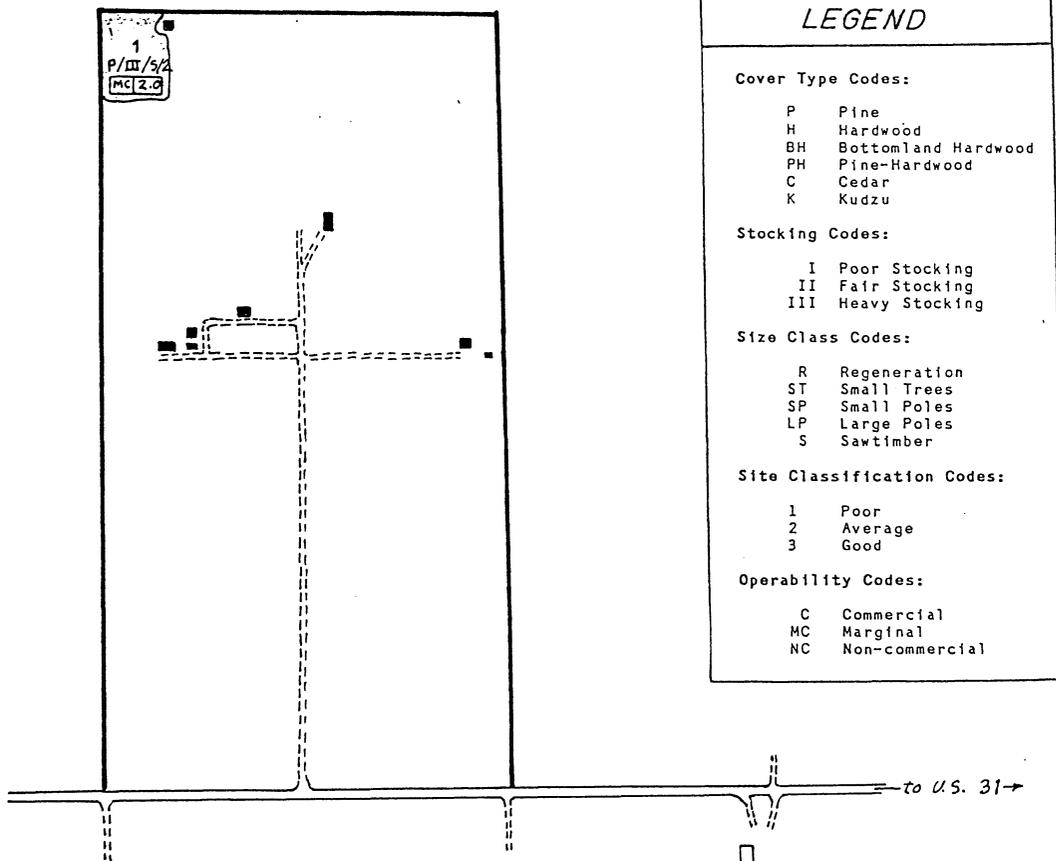
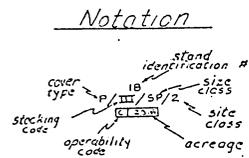
The Prattville field was established in 1929 on forty acres donated by Autauga County and an additional forty acres was purchased in 1937. Since its inception, research has concentrated on crop response to fertilization. This work continues along with variety testing on cotton, corn, summer forage crops, soybeans and grain sorghum.

The majority of the unit is in agronomic research plots with about 20 acres in open land. Three acres were planted in alternate rows of slash and loblolly pine in 1937. These trees are now large sawtimber and form an open park-like stand with mowed grass in the understory.

Figure 17. Stand map of the Prattville Experiment Field.

# PRATTVILLE EXPERIMENT FIELD

80 ACRES



### **The Sand Mountain Substation:**

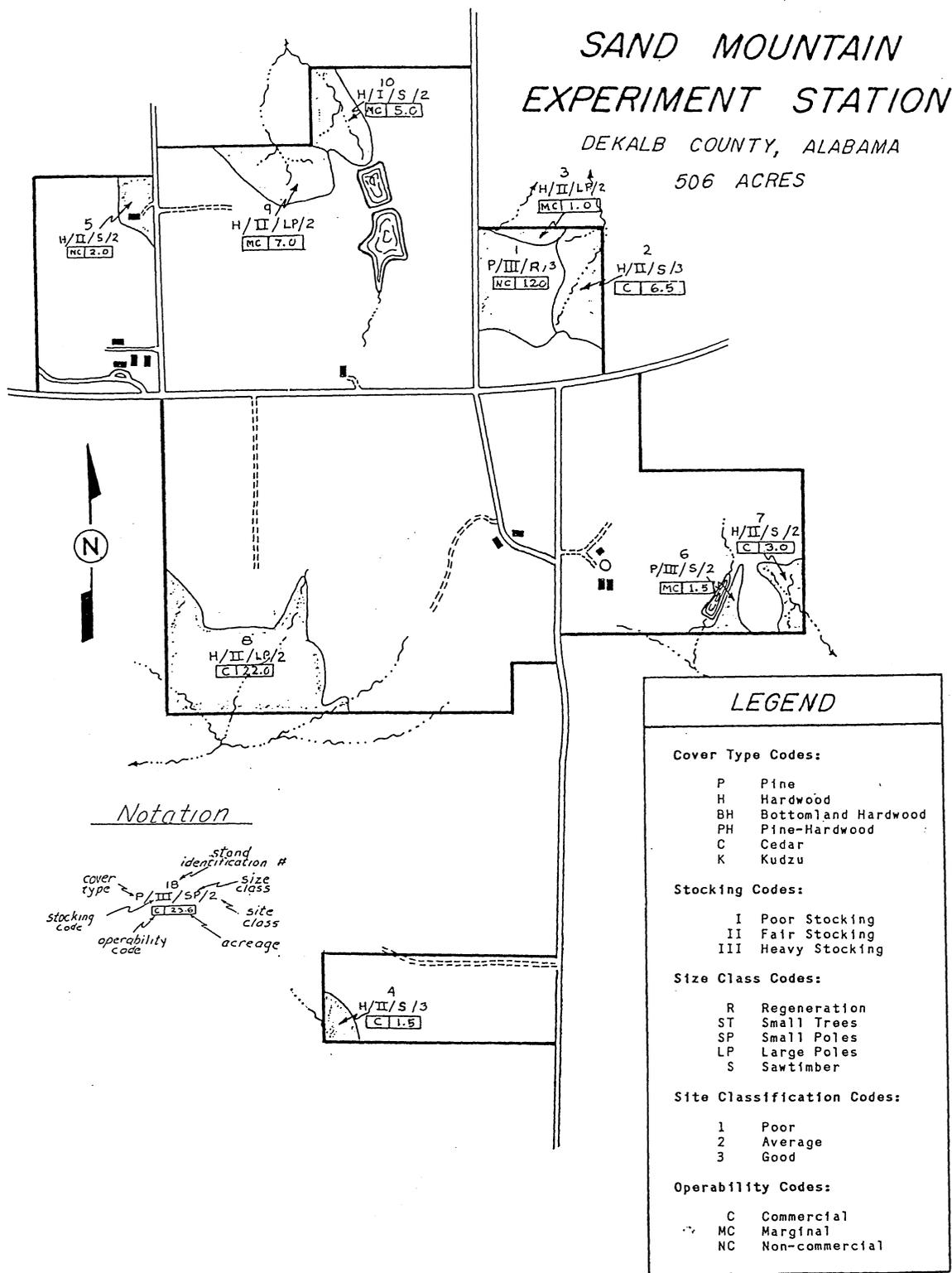
The Sand Mountain Substation is located in DeKalb County two miles east of Crossville along State Highway 68, Figure 18. The station is administered through a superintendent, John Eason and an assistant, Marvin Ruff. The station consists of 506 acres, almost all of which is in cropland or pasture. Only 61 acres are in woodland and much of this is located in small isolated drainages or used as pasture shade. A total of 30 acres is classified as commercially operable.

The unit is located on the tableland of Sand Mountain within the Sandstone Plateau Region and the topography is quite level. The primary soil type is Hartsell, a deep sandy loam well suited to agriculture. The woodland is located on shallow phases of the Hartsell soil or at the heads of small intermittent streams where the soils have poor internal drainage.

The Sand Mountain Substation is one of the five original substations established by act of legislature in 1927. It began operations in 1929 with the goal of improving the efficiency of farms in the Cumberland Plateau area. Research centered on integration of livestock production in a region heavily dependent on row cropping. This included research on beef and dairy cattle, swine, poultry, as well as pasture and forage crops. Much of this work continues today with emphasis on the station in beef cattle, swine and poultry in addition to research in soybeans, cotton, corn, forages and small grains.

Although the Sand Mountain Substation has very little timber, there are a few small stands of upland hardwoods. The station was commercially clearcut in 1972. Where cutting was heavy the stands responded well and are occupied by excellent stands of red oak, white oak, water oak, yellow

Figure 18. Stand map of the Sand Mountain Substation.



poplar and sweetgum on good sites and by black, water, post and chestnut oaks on poor sites. A number of the isolated stands in small drainages were not cut heavily and are now occupied by a scattered overstory of large pole or sawtimber sized trees of poor form with an understory of brush, honeysuckle and privet.

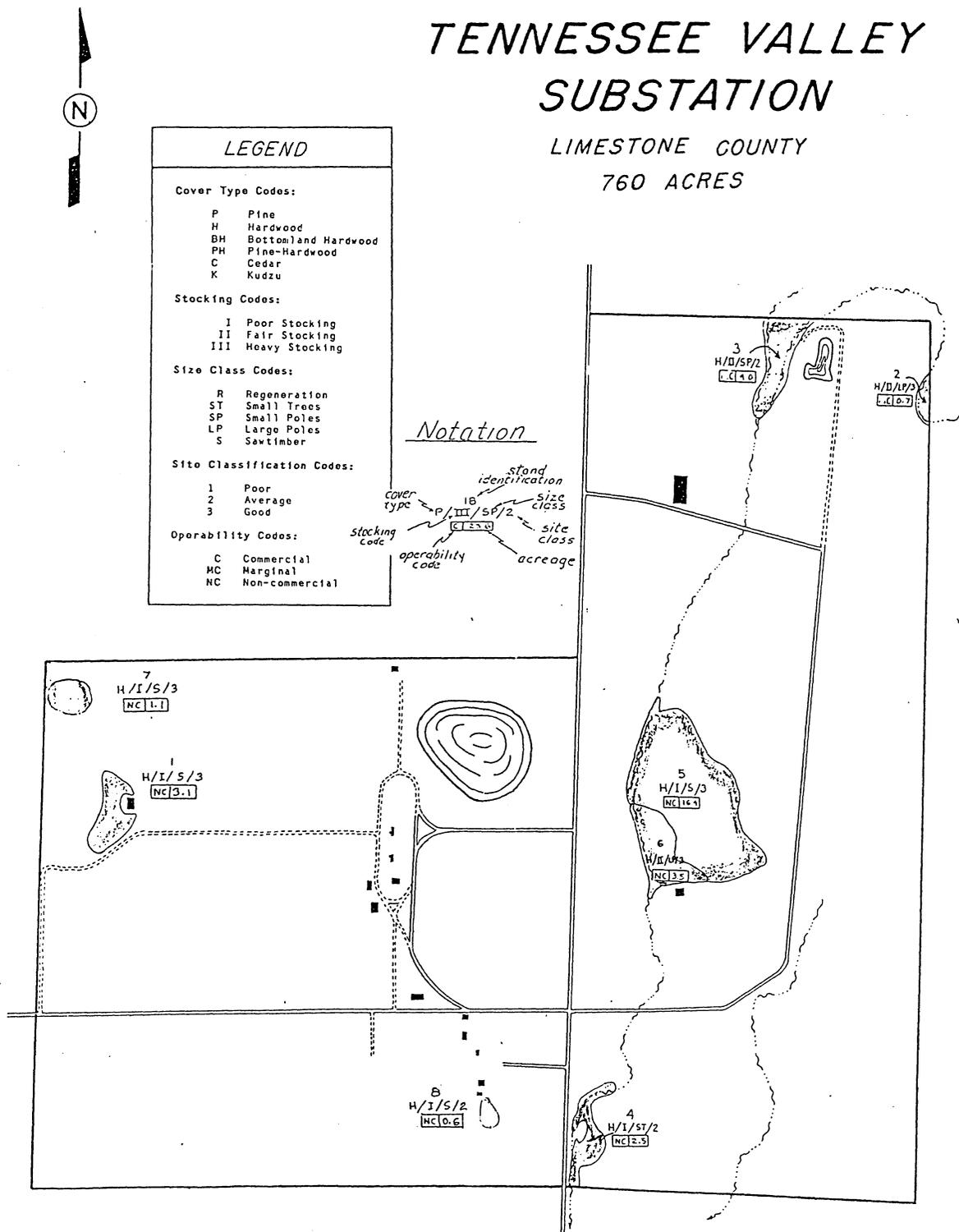
Because of the cutting in 1972 and lack of acreage there is little diversity of size classes. About 27% percent of the commercially operable timber is classified as sawtimber and 73% is classified as large poletimber. There are no other size classes present. Total volume on the station is estimated at 55 MBF of hardwood sawtimber plus 285 cords of hardwood pulpwood.

#### **Tennessee Valley Substation:**

The Tennessee Valley Substation is situated on 240 acres located along County Route 1 about one mile north of the town of Belle Mina in southeast Limestone County, Figure 19. The unit is administered by a superintendent, Dub Webster with two assistants, Ellis Burgess and Chet Norris. What little woodland is present is used for ornamental purposes around sheds or outdoor meeting areas, for pasture shade, or is inaccessible.

The station is located on the flood plain of the Tennessee River in the Limestone Valley Region and is characterized by deep limestone soils. The higher areas of the station have soils in the Decatur series with lower areas occupied by Lawrence, Oolterwak or Ennis silt loams. The topography is flat and almost all of the station is cleared for research on crops or for pasture.

Figure 19. Stand map of the Tennessee Valley Substation.



The Tennessee Valley Substation is one of the five original substations created by act of legislature in 1927. The unit began research work in 1929 to develop fertilization and crop rotation recommendations for cotton. Considerable early research was devoted to methods of diversification for farming in an area almost exclusively in cotton. This work continues today with research emphasis on cotton, soybeans, corn, improved pasture, forages, small grains and on the production of beef cattle.

About thirty acres on the station is in woodland, but none is classified as commercially operable. The most interesting stands consist of large bottomland oaks which have used for pasture shade or outdoor meeting areas. These stands have developed into park-like areas of widely spaced sawtimber, cherrybark oak, willow oak, water oak, white oak, sweetgum. black gum, pine and cedar, with grass underneath. The largest of these trees is a cherrybark oak with a diameter of 51". The remainder of the woods is located along creeks in inaccessible locations. These areas generally consist of scrub hardwoods including sugarberry, hickory, sweetgum and willow with an understory of privet, river cane and brush.

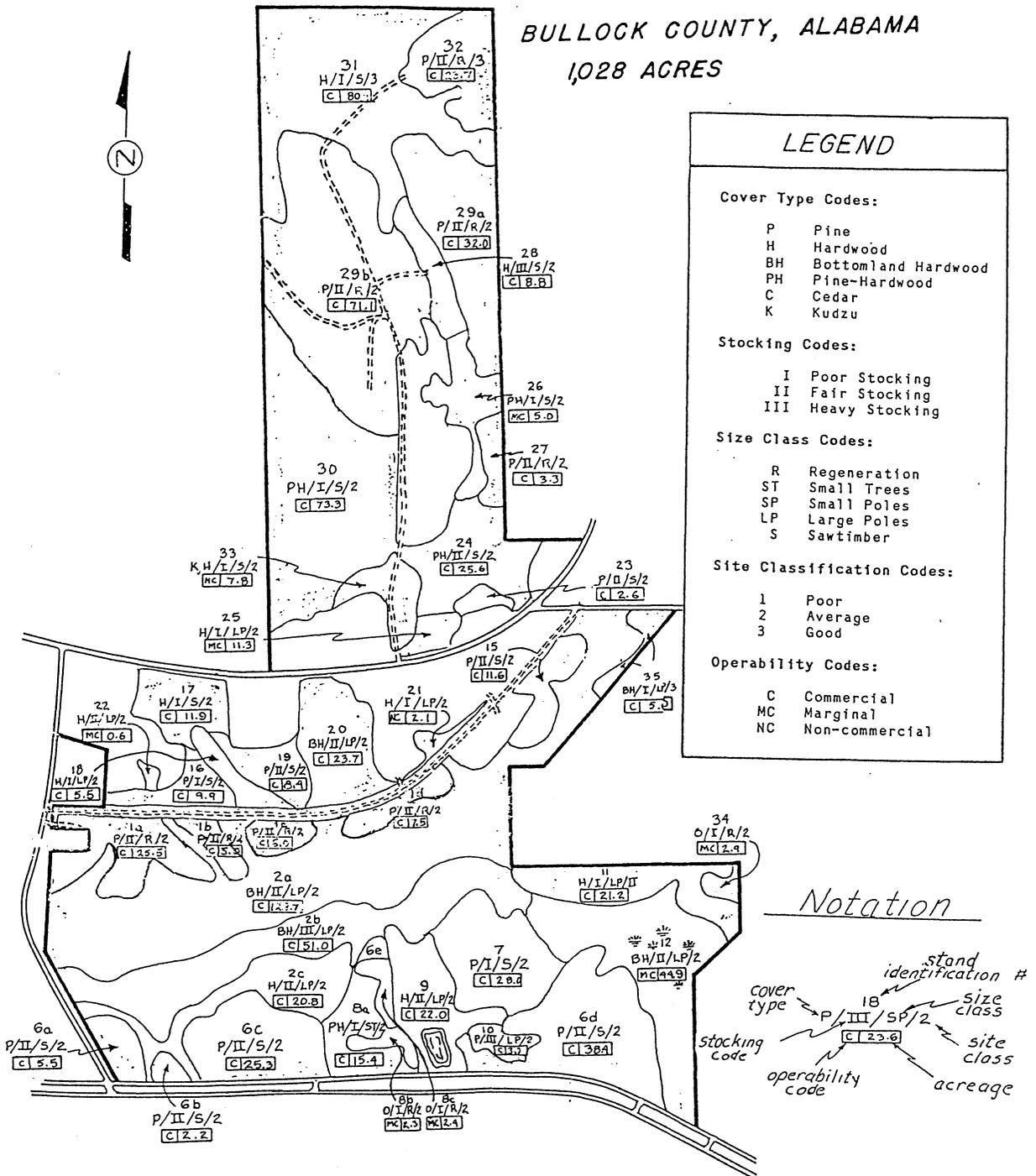
**The Turnipseed-Ikenberry Place:**

The Turnipseed-Ikenberry Place consists of 1,028 acres located on Peachburg Road about five miles east of Union Springs in the center of Bullock County, Figure 20. The unit has been combined with the E.V. Smith Center and is administered through a director, Dr. James Bannon. The on site superintendent is Jim Smith. The Turnipseed-Ikenberry Place contains 878 acres of forested land, most of which is classified as commercially operable.

Figure 20. Stand map of the Turnipseed-Ikenberry Place.

# THE TURNIPSEED - IKENBERRY PLACE

BULLOCK COUNTY, ALABAMA  
1,028 ACRES



The Turnipseed Ikenberry Place is located in the Lower Clay Hills Region of the Hilly Coastal Plain Province and is gently rolling with wide hill tops and broad drainageways. The soils in the region are developed from unconsolidated marine deposits high in clay, from claystone, or from soft marine shales. The typical soil on the station has a deep sandy loam topsoil over a sandy clay or clay subsoil. South of Peachburg road the hilltops and gentle side slopes are composed of Orangeburg or Norfolk fine sandy loam. The wide stream bottoms are occupied by Thompson fine sandy loam which developed from local alluvium. North of Peachburg Road both upland and lowland sites are occupied by Susquehanna fine sandy loam and patches of Susquehanna clay.

The Turnipseed-Ikenberry Place was obtained as a gift to the Alabama Agricultural Experiment Station in the mid 1960's. About 150 acres were cleared of forest which had encroached on abandoned pecan orchards. These orchards have since been used for a number of research projects dealing with the rehabilitation of neglected pecan trees and pecan research is still the primary emphasis on the station.

In the last few years the Turnipseed-Ikenberry Place has been used for a number of forestry research projects. Several outplantings of seedlings from various nursery studies occupy what little open area is available. In addition, a fairly large study of herbicide surfactants was installed in an area clearcut in 1992.

The forest on the unit was established through natural regeneration as agriculture was gradually abandoned. The upland portions of the substation seeded to pine and those which have not been harvested contain fairly high quality sawtimber aged between 40 and 50 years old. Mature pine sawtimber still occupies 135 acres. Severe infestations of Southern Pine beetles

resulted in a decision to harvest a large portion (130 acres) of the pine sawtimber north of peachburg road in 1992 and a smaller area (44 acres) south of peachburg road in 1994.

The lowland area south of Peachburg Road is occupied by bottomland hardwoods. Species present include sweetbay, evergreen magnolia, sweetgum, tupelo, and yellow poplar with the slightly drier areas in red and white oaks. The stands vary in size class and quality, but the area is generally well stocked and of good quality, at least for the species involved. Beaver are present throughout the drainage, but, because of the broad flat nature of the site, have not created ponds except in the side drainages.

The Hardwood areas north of Peachburg Road have obviously been highgraded, but still contain some interesting stands. About 9 acres is in pure pecan sawtimber. There is a stand of 80 acres on a broad flat bottom made up of a mixture of red and white oaks, tupelo, ash, pecan, yellow poplar and sweetgum. Size class in the area is quite variable and includes patches of large culls interspersed with small poles, patches of quality young sawtimber, and everything in between. About 75 acres of hillside was highgraded about 20 years ago. The area has developed into a mixed pine hardwood stand. Poor sites within the stand are occupied by poorly stocked pine sawtimber, better sites by quality young hardwood sawtimber. Medium quality sites are dominated by poor quality hardwood in poletimber sizes often with a sparse pine overstory.

The Turnipseed Ikenberry Place has an area of Kudzu which needs to be brought under control. Originally planted in a large gully to control erosion it has spread to occupy about 8 acres and threatens to dominate much more.

Recent cutting has begun the process of improving the size class distribution on the Station. Currently 38% of the timber is in sawtimber, 37% in small or large poles and 23% in regeneration. All of the intermediate size classes are in hardwood stands. Total volume on the Turnipseed-Ikenberry Place is estimated at 1,070 MBF of Pine Sawtimber, 1,923 MBF of Hardwood Sawtimber plus 567 cords of Pine and 4,115 cords of Hardwood pulpwood.

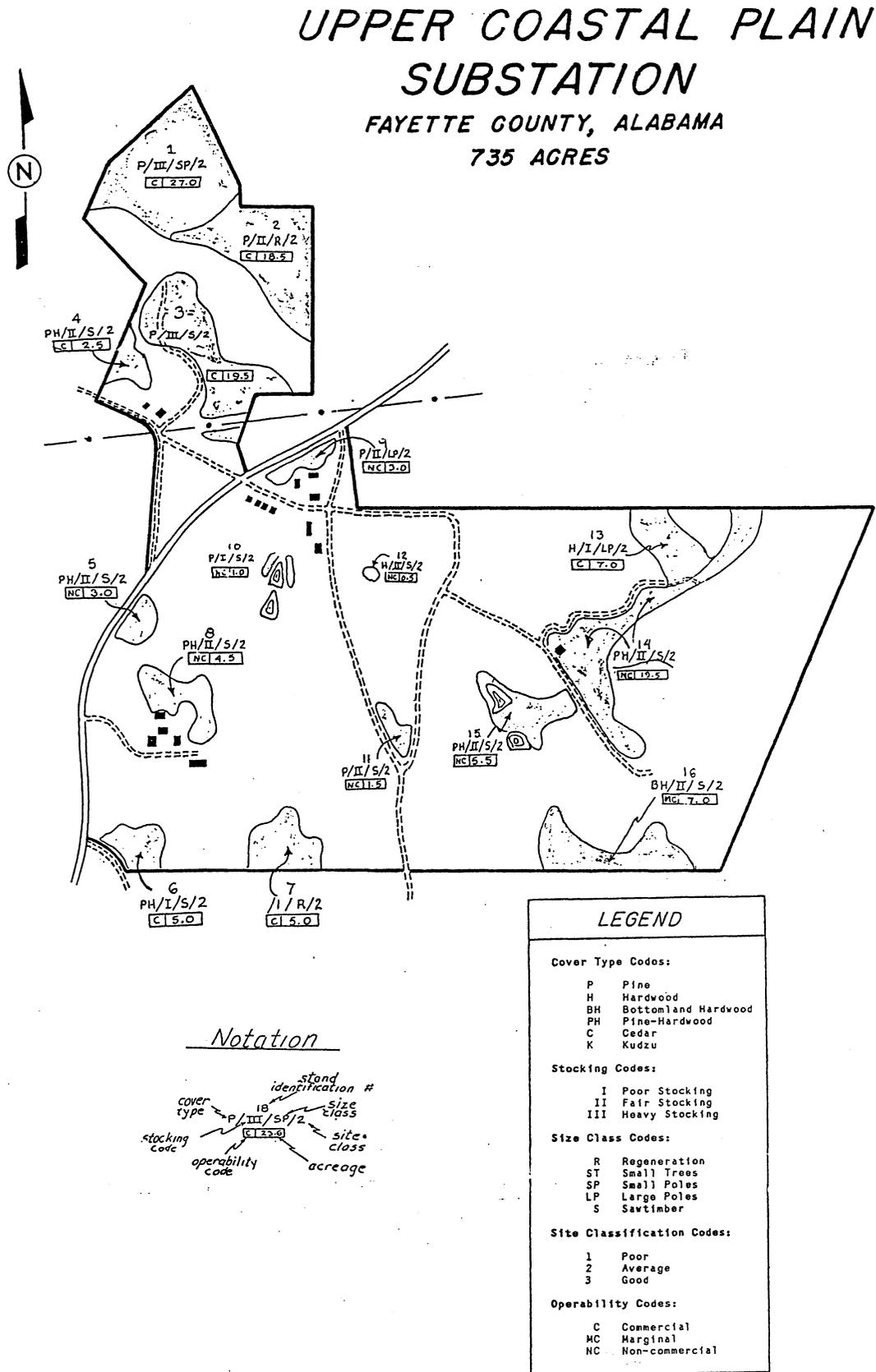
#### **The Upper Coastal Plain Substation:**

The Upper Coastal Plain Substation is located on 735 acres situated two miles southwest of Winfield along Wayside Road in the northern edge of Fayette County, Figure 21. The station includes 132 acres of woodland, but a considerable proportion is in small stands used for aesthetics, pasture shade or along drainages. About 80 acres is classified as commercially operable.

The station is located in the Transition Loam Hills Region of the Upper Coastal Plain Province and is characterized by coastal plain soils overlying sandstone, limestone, and shale deposits. The soils on the upland portion of the unit are either Ora fine sandy loam or are in the Ruston-Cuthbert-Shubuta soil complex. Bottomland soils on the station are Myatt silt loam.

The Upper Coastal Plain Substation was established by an act of the 1943 legislature. It began operations in 1945 on a 745 acre tract purchased by Fayette County and donated to the Experiment Station. Early research concentrated on crop improvement and agricultural diversity for local farms. In addition to work on variety tests and fertilization recommendations for crops, the unit was involved in developing local markets for livestock. By 1950 the station was involved in research on the

Figure 21. Stand map of the Upper Coastal Plain Substation.



production of beef cattle, dairy cattle, hogs, poultry and sheep. Much of this work has been phased out and the substation now concentrates on beef cattle production and research on corn, soybeans, forages and small grains.

The forest land on the station is located on hilly areas and was established through natural succession on land abandoned when the station was established. No management work was done on the station until 1979 when 27 acres were harvested and regenerated by shearing, burning and planting to pine. This stand is currently in small poles and well stocked. A total of 23 acres were cut in 1991 and regenerated by injection of cull hardwood, spot spraying with herbicide and planting to pine.

Mature pine still occupies about 20 acres of the unit. This timber is of high quality and stocking is satisfactory, but southern pine beetles periodically cause significant mortality. The station contains several small stands of hardwood sawtimber (water oak, post oak, white oak, sweetgum and hickory) mixed with scattered pines. Most of these are small and used for pasture shade. There is a small stand, 7 acres, of bottomland hardwoods (tupelo, sweetgum, poplar) located in swampland along the southern boundary.

The size class distribution for commercial woodland on unit is reasonable given the small total acreage. Sawtimber occupies 29%, large poles occupy 9%, Small poles occupy 33% and regeneration occupies 29%. Total volume on the unit is estimated at 217 MBF of pine sawtimber 8 MBF of hardwood sawtimber and 290 cords of pine and 110 cords of hardwood pulpwood.

### **The Wiregrass Substation:**

The Wiregrass Substation consists of 640 acres located in southwest Henry County along U.S. Highway 431 about a mile east of Headland, Figure 22. The unit is administered through a Superintendent, Henry Ivy and two Assistant Superintendents, Larry Wells and Brian Gamble. There is virtually no forest land on the station.

The Wiregrass Substation is located in the wiregrass plains in the Middle Coastal Plains Province. The soils are typical of the area and include Dothan, Orangeburg, Tifton and Wagram sandy loams. The topography is flat to rolling and almost all of the station is cleared for agricultural plots or for forage grains.

One of the five substations established by legislative act in 1927 the station was in operation by 1930. Early work involved fertilization, insect control and variety tests on cotton, corn and peanuts. This work continues along with cattle grazing studies of grasses and forage grains and research in swine production. Research use by forestry has been limited to plot work for the forest genetics program.

What little woodland is present on the Wiregrass Substation is used for pasture shade or is located in narrow drainages infested with Kudzu.

### **Management needs:**

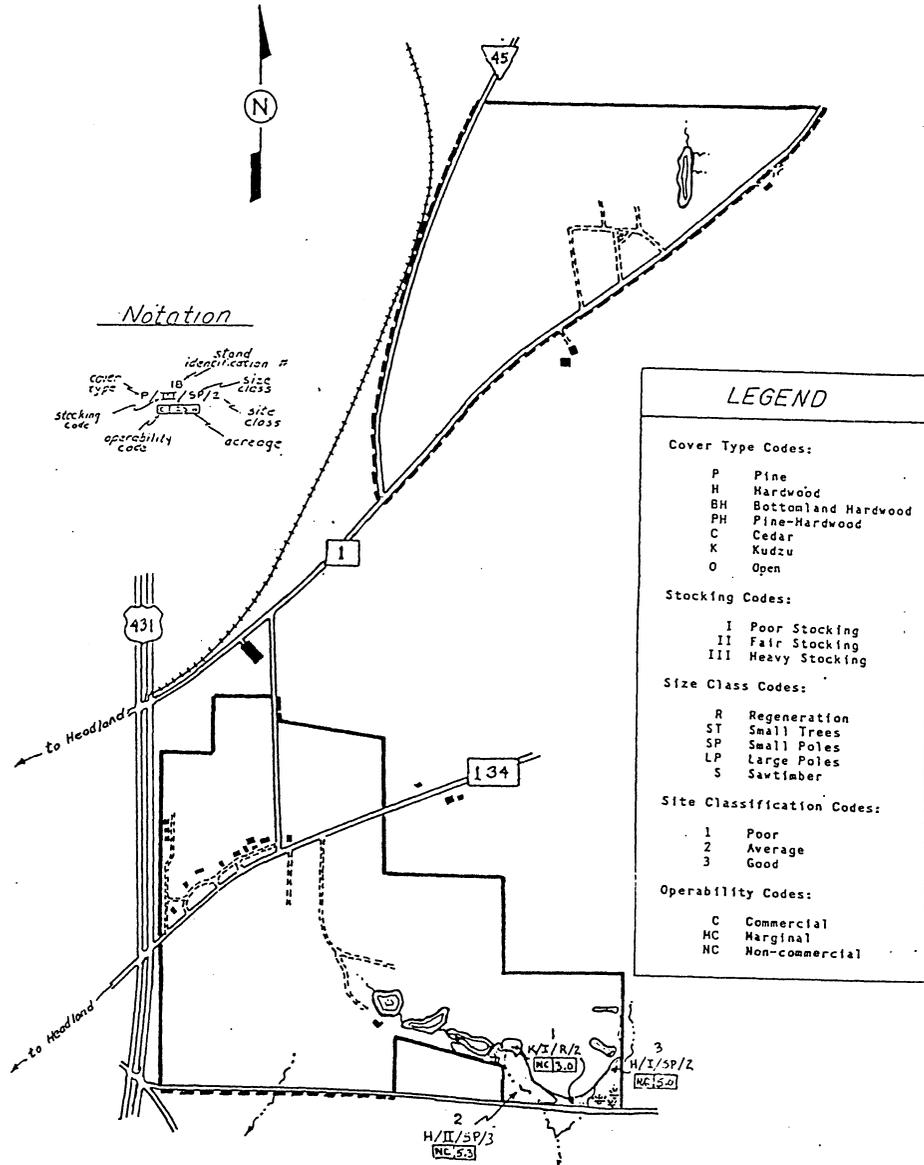
Until 1990, management of the Experiment Station's Forest was conducted on a unit by unit basis. Management of the woodland on each substation was the responsibility of the station superintendent or head of that particular unit. Generally no forestry expertise was available, coordination of expenses was difficult, and permission to sell timber

Figure 22. Stand map of the Wiregrass Substation.

# WIREGRASS SUBSTATION

## HENRY COUNTY

### 640 ACRES



difficult to obtain. Generally, timber harvesting was conducted only when funds were needed for a specific construction project. This tendency to use the forest as a "bank account" resulted in a forest made up of old timber and a number of embarrassing areas of unregenerated, cutover lands.

Beginning the process establishing diversity and dealing with the backlog of needed regeneration was the major thrust of management during the last five years. A total of 778 acres have been harvested and regenerated. In addition 98 acres of cutover land was cleaned up and planted or received treatments to improve stocking. Continuing this work remains the priority for vegetative management in this plan as well.

Access within the Experiment Station Forest would be satisfactory if it were a commercial forest, but for research purposes, is still inadequate. Field research requires efficient, all weather access and only a few substations have such access within their wooded areas. During the past management period access roads within sale areas were repaired and upgraded as a part of post sale treatments. A total of 13 miles of road were improved or stabilized and grassed. However, most of the forest roads remain poorly drained and in many cases have severe erosion problems. To develop an acceptable road system will require continued effort.

In a commercial forest the lack of open land would not be a problem. However, a good deal the experimental work in forestry utilizes open land and it is also extremely important for wildlife habitat. In general, the open land on the Experiment Station is under intensive use for agricultural work. Most of the open land available for use in forestry has been planted in research plots and allowed to grow into large timber. A few areas of inactive research were cleared in the last management period and the station staff has expressed a willingness to make fallow agricultural land

available for forestry plot work whenever possible, but within the Station Forest itself there are only 35 acres of open land. This problem will always be present and continued effort will be required to keep some open land available.

Kudzu has become a serious problem throughout the South and it is a pest on the experiment station as well. At the present time 70 acres are dominated by Kudzu and it is present on a great deal more. Kudzu control work was carried out on 175 acres during the past five years and the results are encouraging on those areas subjected to repeated treatments. Kudzu control will be a continuing part of management efforts.

Improvements in the method of administering the Experiment Station Forest have been a significant help in attacking these problems. An overall management plan with regularly scheduled harvests designed to achieve the goals of the plan, rather than to provide a specific amount of money, has started the process of providing a forest more suitable for research purposes. Administrative interest in forest management has resulted in increased use for forest research. The forestry staff appears reassured that their research will be protected and use of Experiment Station Land has fostered cooperative research efforts involving several disciplines.

Continued planning for regular harvests will continue to provide sufficient funds to finance other improvements. As over the past five years, revenues will be quite variable and care will need to be taken to provide an appropriate method of financing approved projects as well as annual maintenance. Improvements will not come quickly. The goal of developing a well managed research forest will require diligent effort.

## Management Objectives

### **Station Objectives:**

The mission of the Alabama Agricultural Experiment Station is to conduct applied and basic scientific research bearing on the establishment and maintenance of effective agricultural and forest industries, on development and improvement of home and rural life, and on advances in agriculture and forestry which contribute to the welfare of the people of Alabama and the Nation. In keeping with this goal, the objective of management on the Experiment Station Forest is to provide the type of forest required for basic and applied research. The Experiment Station Forest is not expected to be a demonstration forest and its function is not to maximize revenue. The primary use of the forest will be within the disciplines of Forestry and Wildlife, but the possibility of use by Agronomy, Entomology, Horticulture or any other discipline requiring forested land will be kept in mind.

For vegetative management the above objective dictates the development of a forest with a diversity of cover types and size classes. In addition, long rotation ages, a significant hardwood component and a variety of regeneration methods will be utilized in order to provide timber types not commonly available to researchers through cooperative agreement with industrial or other private landowners. The stands created in this process need to be large enough to supply uniform conditions within the stand so that treatment plots can be established with minimum variation.

The overall mission of Auburn University includes extension services and use of the forest for demonstration purposes should rarely conflict with research use. A well managed research forest will provide areas of interest for demonstration purposes and use of this type is to be

encouraged as long as it is compatible with research requirements. In general, a well managed research forest will automatically provide areas suitable for demonstration purposes. Often the research plots themselves are of primary interest. The silvicultural methods used to maintain the forest will also be of interest including those used to maintain stands normally not of commercial interest. The major management requirement for demonstration use will be prevention of damage to research installations. The need for demonstration areas increases close to the main campus and use of these lands will require careful monitoring.

The overall mission of Auburn University includes teaching and the Experiment Station's forest land located close to the main campus will continue to be in heavy demand for use in courses such as Forest Management, Ecology, Soils, Silviculture, Wildlife Management, Forest Protection, Entomology, Harvesting, and Mensuration. All of these courses require land within a half hours drive for laboratory exercises. Continuing education courses in forestry and wildlife also utilize these lands. The use of the Experiment Station Forest for teaching is to be encouraged as long as such use is compatible with research requirements. As before, a well managed research forest will automatically provide areas suitable for teaching purposes. Research plots and the silvicultural methods used to maintain the forest will be of interest and the major management requirement will be to prevent damage to research installations.

**Management Approach:**

The installation of and protection of research installations will take priority over all other management plans. Areas in active research will be treated only under the direction of the project leader. Harvest and treatment plans will be altered to accommodate new research. Project

leaders are expected to keep the forest manager and station supervisors informed of the location and the status of experimental plots located within the woodland on the Experiment Station.

The intention of vegetative management on the Experiment Station Forest is to aid in the research program by providing a forest which will meet the Experiment Station objectives. The needs of future research, however, are difficult to predict. Current trends in forestry would indicate continued interest in regeneration methods, physiology of young trees, and environmental impacts of forest practices, most of which require open land or seedling sized trees. There also appears to be a continuing interest in thinning techniques, which would require intermediate sized pine plantations. Work on harvesting equipment and harvesting effects requires mature timber. There is also some interest in work on silviculture of southern hardwoods and mixed pine hardwood stands.

Over the life of a stand of trees research interests may change drastically. To best provide for unpredictable needs, management will aim to develop healthy productive stands of timber illustrative of forest associations commonly present in Alabama, with a diversity of size classes. Diversity of habitat will help maintain a correspondingly diverse wildlife population. Even aged management of individual stands is needed over most of the Experiment Station in order to maintain uniform conditions for plot establishment. Although there will be numerous cases where this size limit will not be applicable, a minimum stand size of 20 acres will be used as a guide.

The only major area which will be managed by uneven aged methods is the Piedmont Substation. In response to a desire expressed by wildlife researchers, this unit will be managed by patch cutting. Patch cutting,

combined with work to increase acreage in upland oak, long rotations in stands with heavy mast production and frequent prescribed burning, should maximize diversity and quantity of wildlife on the unit.

To spread out the work load and insure a diversity of size classes throughout the state the Experiment Station Forest is divided into twenty compartments. Using a five year planning horizon four compartments will be scheduled to be inventoried and plans made for silvicultural treatment each year. As each compartment is inventoried other needs of the forest will be assessed and the work handled at the same time silvicultural treatments are conducted. Needs for boundary line maintenance, maintenance of openings, food plot establishment, access improvement and the like will automatically be included in work plans.

Compartment descriptions are given in Table 4. The compartments were put together in an attempt to establish compartments as possible with a forested acreage of about 600 acres. The scattered nature of the experiment station forest results in a majority of the compartments having woodland varying from 400 to 700 acres. Several of the substations have small acreage of forest land, but still should be treated as separate compartments and units with very small acreage in forest were all lumped together as one compartment regardless of location. The size of the compartments was kept in mind in the schedule for inventory and treatment to keep the total acreage treated each year about even.

A compartment approach will have to remain extremely flexible because of difficulties in designing compartments of the same size and management requirements. The Experiment Station units are scattered over the entire state and have forested acreage which range from 5 to 1,300 acres. Some of the units can be combined to form a working compartment, but for many

units this makes little sense. A number of compartments are small in size and the primary purpose of individual units varies considerably. Some of the units require very tight control over the activities on the forested land while others have no restrictions. The approach is still workable, but vegetative goals will have to be modified considerably where the needs of a particular unit require that forest management take a low priority.

#### **Compartment Goals:**

**Rotation Length:** The choice of rotation length is important because, together with the cutting cycle, it determines the size class distribution which will be aimed for in each compartment. Recommendations for the most profitable rotation lengths for southern pine range from 25 to 35 years; for southern hardwoods it is somewhat longer. The Experiment Station Forest, however, is not a commercial forest and a longer rotation length will be required to produce some of the forest types desired. For the initial phases of management a rotation length of fifty years will be used with both pine and hardwood stands. If this is found to be too long, it will be adjusted in subsequent plans.

**Size class distribution:** A fifty year rotation in combination with a five year cutting cycle will yield the following size class distribution: 10% of the forest should be in regeneration, 20% should be in small trees, 20% should be in small poletimber, 20% should be in large poletimber, and 30% should be in sawtimber sized trees. Definitions of sizes and the underlying assumptions of such a distribution are given in table 5.

Once the size class distribution is reached the cut is limited to 10% of the forest in each five year cycle. However, it is important to understand that, except in unusual circumstances, stands in intermediate

size classes can only come from growth of smaller trees. The advantage of using a size class distribution as a goal is its flexibility in moving the timber in a compartment toward a more balanced size class distribution. The goal for the compartment is a balance of size classes, not a specific number of acres harvested.

**Other compartment goals:** One of the advantages of compartment management is that it provides a systematic method for evaluating needs for work on problems of all types. It is flexible enough to include a number of other goals not related to the size class distribution.

Some stands of hardwood which fit under an all aged management system can be retained under such a system. The use of a size class distribution as a goal of management assumes even aged management and even aged management is applicable to the majority of the Experiment Station Forest. There are, however, some stands of hardwoods where uneven aged management will be an excellent management approach. To retain maximum diversity in the forest, some stands will be retained under such management. Such areas will be noted in compartment plans and the harvest recommendations within the compartment changed to fit this condition.

The Piedmont Substation will be managed by patch cutting. The harvests will be included in the regular compartment schedule. A good size class distribution will still be a goal on the station but will be maintained by careful assessment in each stand. A goal of high mast production will take precedence over size class distribution in hardwood stands on this unit.

Opportunities to increase open areas and forage for wildlife will be taken. The goal of 10% of the forest area in regeneration may provide

insufficient forage for good wildlife production. To increase forage an attempt will be made to keep an additional 5% of each compartment in open areas. These areas will include road edges, glades, as well as permanent openings. If properly maintained many of these open areas will be suitable for use in research plots.

A few stands of old growth timber should be retained within the Experiment Station Forest. Old growth has many meanings but, for the purposes of this plan, old growth is a stand of timber, either pine or hardwood, where at least 75% of the basal area is made up of trees in excess of fifty years of age. Not all compartments will have stands which can be maintained as old growth. If possible, stands making up 5% - 10% of each compartment will be considered as candidates for extended rotations. Such stands will be harvested when mortality begins to break up the continuity of the stand or when better stands are available.

Each compartment should maintain a diversity of cover types. A significant hardwood component should be kept as a part of the Experiment Station Forest. Bottomland hardwood stands are common on the Station Forest, but upland hardwoods are not. Special effort will be made to keep and maintain some stands of quality upland hardwoods. Special effort also needs to be made to develop and maintain some stands of mixed pine hardwood. Regeneration needs to be spread between hardwoods and pine so that diversity is maintained in all cover types.

Unique areas of interest will be maintained where possible. These may be areas where conditions provide for unusual plant associations or where conditions provide habitat for rare or endangered animals. Glades, bogs, wetlands, and stream sides which occur within each compartment will receive attention aimed at preserving their unique qualities.

**Table 4.** Compartment breakdown for the purposes of forest management on the Alabama Agricultural Experiment Station.

| <u>Compartment</u>                              | <u>Forested Acres</u> | <u>Compartment</u>                                                                                                                                                                                          | <u>Forested Acres</u> |
|-------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Autauga County<br>Experimental Forest           | 300                   | North Auburn Unit,<br>Area I                                                                                                                                                                                | 201                   |
| Barbour County<br>Experimental Forest           | 178                   | Piedmont Substation                                                                                                                                                                                         | 878                   |
| Blackbelt Substation                            | 52                    | Plant Breeding Unit                                                                                                                                                                                         | 225                   |
| Coosa County<br>Experimental Forest             | 160                   | Turnipseed Ikenberry<br>Place, Area I                                                                                                                                                                       | 410                   |
| E.V. Smith Center                               | 1,101                 | Turnipseed Ikenberry<br>Place, Area II                                                                                                                                                                      | 436                   |
| Fayette Co. Exp. Forest,<br>Area I              | 624                   | Upper Coastal Plain<br>Substation                                                                                                                                                                           | 132                   |
| Fayette Co. Exp. Forest,<br>Area II             | 708                   | Brewton Exp. Field<br>Chilton Area Substation<br>Monroeville Exp. Field<br>N. Ala. Hort. Substation<br>Sand Mountain Substation<br>Tenn. Valley Substation<br>Wiregrass Substation<br>Prattville Exp. Field | 177                   |
| Gulf Coast Substation                           | 258                   |                                                                                                                                                                                                             |                       |
| Lower Coastal Plain<br>Substation Compartment I | 718                   |                                                                                                                                                                                                             |                       |
| Lower Coastal Plain<br>Substation, Area II      | 573                   | North Auburn Unit,<br>Area II                                                                                                                                                                               | 700                   |
| Main Station                                    | 363                   | North Auburn Unit,<br>Area III                                                                                                                                                                              | 815                   |

**Table 5.** Ideal size class distribution and assumptions of average growth of timber on the Experiment Station Forest.

| Size class   | Age         | Average Diameter * | Percent of Compartment Forested Acreage ** |
|--------------|-------------|--------------------|--------------------------------------------|
| Regeneration | 0 - 5 yrs   | 0 - 1.5"           | 10%                                        |
| Small trees  | 5 - 15 yrs  | 1.6 - 4.5"         | 20%                                        |
| Small poles  | 15 - 25 yrs | 4.6 - 7.5"         | 20%                                        |
| Large poles  | 25 - 35 yrs | 7.6 - 10.5"        | 20%                                        |
| Sawtimber    | 35 - 50 yrs | 10.6 +             | 30%                                        |

\* Diameter used for classification is the average diameter of that group of trees which makes up the preponderance of the basal area within a stand.

\*\* This is the ideal percentage of the forest in this size class using a five year cutting cycle and an average rotation age of fifty years.

## Timber Sales 1995-2000

### **Introduction:**

This plan is intended to establish goals and a management approach for the forest land located on the Alabama Agricultural Experiment Station. The day to day management and cultural treatments will be specified in treatment plans which will be drawn for four compartments each year. Each of these treatment plans will contain a reinventory of the timberland on the unit, a type map, finalized sales and regeneration plans, and needed cultural treatments for the next five years.

Table 6 lists the expected dates for reinventory and treatment plan preparation for each of the compartments. The treatments planned for various compartments will depend in part on the time and resources available. In general, those compartments with sales scheduled as a part of research plans are listed for treatment first. In some cases no sales or treatment will be required. Although there will be exceptions, plans will usually call for harvests to be conducted in the year the treatment plan is written. Regeneration will be carried out within two years of harvest cuts. Other recommended treatments may be carried out at any time during the planning horizon of five years.

Alabama Act Number 473 section 239, "the State Bid Law", requires that all timber sales, with the exception of diseased timber or timber which needs to be cleared for construction, be approved by the University Board of Trustees or their designated representative. Current policy at Auburn University permits approval of timber sales by the University President if the total value is less than \$25,000. Sales over this amount are to be approved by the Board of Trustees.

**Table 6.** Scheduling of compartments of the Alabama Experiment Station Forest for treatment.

| <u>Year</u> | <u>Compartment</u>                       | <u>Forested Acreage</u> |
|-------------|------------------------------------------|-------------------------|
| 1995        | Blackbelt Substation                     | 52                      |
| 1995        | Fayette Co. Experimental Forest, Area II | 708                     |
| 1995        | Piedmont Substation                      | 878                     |
| 1995        | Turnipseed-Ikenberry Place, Area I       | 410                     |
|             |                                          | <u>2,048</u>            |
| 1996        | Barbour County Experimental Forest       | 178                     |
| 1996        | North Auburn Unit, Area I                | 201                     |
| 1996        | Plant Breeding Unit                      | 225                     |
| 1996        | Upper Coastal Plain Substation           | 132                     |
|             |                                          | <u>736</u>              |
| 1997        | Autauga County Experimental Forest       | 300                     |
| 1997        | Fayette Co. Experimental Forest, Area I  | 624                     |
| 1997        | Lower Coastal Plain Substation, Area I   | 718                     |
| 1997        | Main Station                             | 363                     |
|             |                                          | <u>2,005</u>            |
| 1998        | E.V. Smith Center                        | 1,101                   |
| 1998        | Gulf Coast Substation                    | 258                     |
| 1998        | North Auburn Unit, Area II               | 700                     |
| 1998        | Lower Coastal Plain Substation, Area II  | 573                     |
|             |                                          | <u>2,627</u>            |
| 1999        | Combined Units                           | 177                     |
| 1999        | Coosa County Experimental Forest         | 160                     |
| 1999        | North Auburn Unit, Area III              | 815                     |
| 1999        | Turnipseed-Ikenberry Place, Area II      | 436                     |
|             |                                          | <u>1,588</u>            |

In order to facilitate management and to ease the burden of approval, sales planned for the next five years are described below. Approval of the management plan will constitute approval by the Board of these sales. The majority of these sales will be conducted, but as a matter of policy, no sale will be carried out unless the resources are available for appropriate treatment of the harvested area. Sales not conducted within the five year planning horizon will reappear for approval in subsequent plans. No additional sales will be planned except for purposes of salvage, disease containment, or if required as a part of an approved research project. If required by law these sales will be submitted separately for approval.

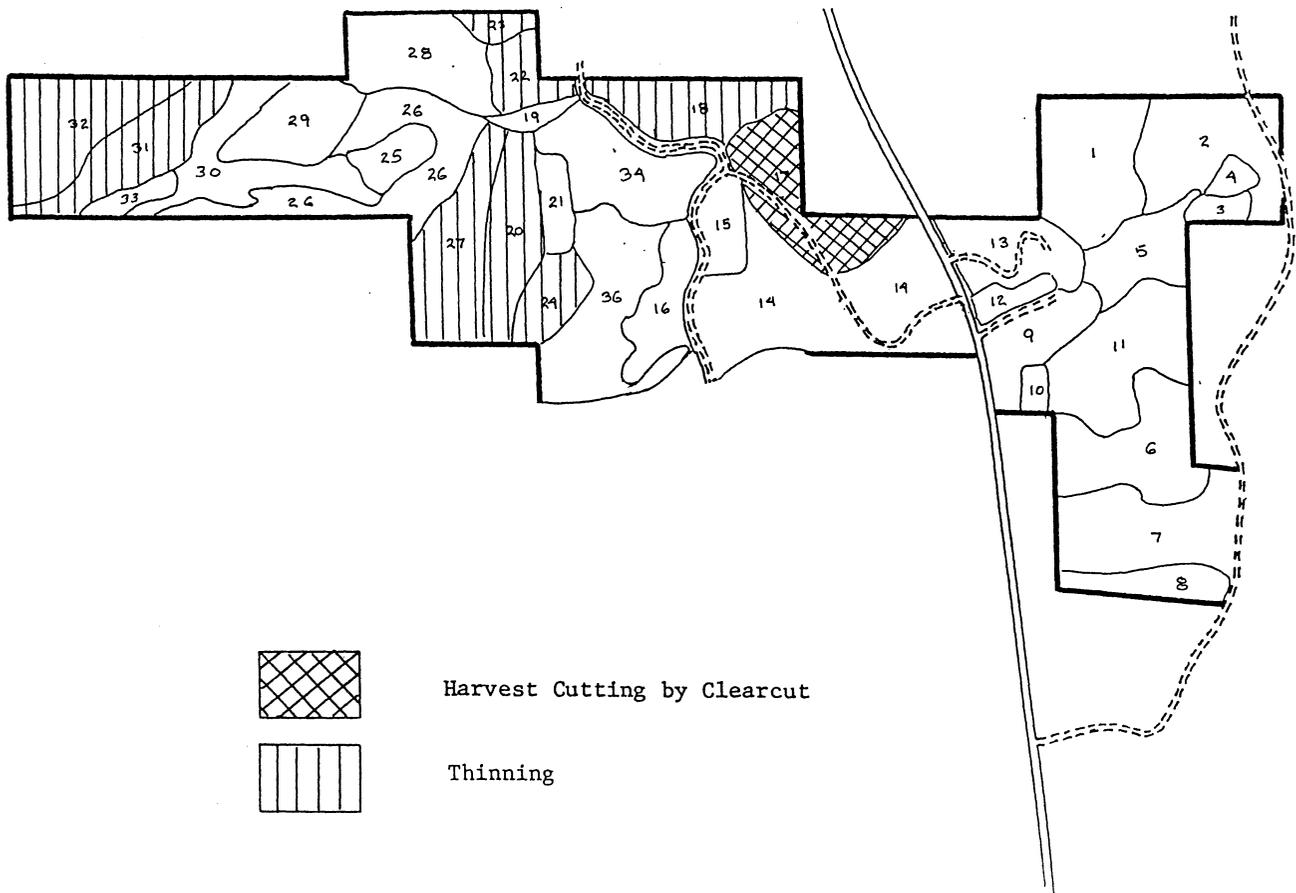
As a matter of policy, salvage sales may be conducted at the discretion of the substation or unit manager if the total value of the sale is \$5,000 or less. If the total value of salvage exceeds \$5,000 or if the sale is conducted under contract, permission must be granted by the Director of the Experiment Station. Salvage sales may be conducted for the following purposes: Salvage cutting for the control of southern pine beetle or other insect infestations; Salvage cutting for the removal of timber killed by fire or disease; Cutting to remove timber from construction sites including ponds, fence lines, drainage ditches, roads and buildings; Cutting as required for the establishment of research plots or installation of research equipment.

**Fayette Experiment Forest II:**

Harvest cutting and thinning are planned for Compartment II of the Fayette County Experiment Forest in 1995. For management purposes the Fayette Forest is divided into two compartments. Compartment II is basically the north half of the forest and contains 708 acres, Figure 23.

Figure 23. Timber sales planned for Area II of the Fayette County Experimental Forest.

AREA II  
FAYETTE EXPERIMENTAL FOREST  
FAYETTE COUNTY, ALABAMA



**Table 7.** Stumpage value and expected regeneration cost for recommended sale of timber on Area II of the Fayette Experimental Forest.

**Stumpage Value:**

|                    | <u>Volume</u>             | <u>Value</u>    |
|--------------------|---------------------------|-----------------|
| Pine Sawtimber     | 130.5 MBF @ \$150/MBF     | \$19,575        |
| Hardwood Sawtimber | 13.0 MBF @ \$ 60/MBF      | 780             |
| Pine Cordwood      | 1050.0 Cords @ \$ 15/Cord | 15,750          |
| Hardwood Cordwood  | 250.0 Cords @ \$ 4/Cord   | 1,250           |
| TOTAL              |                           | <u>\$37,355</u> |

**Regeneration Cost:**

|                          |                       | <u>Cost</u>     |
|--------------------------|-----------------------|-----------------|
| Site Preparation         | 29 acres @ \$300/acre | \$8,700         |
| Hand Planting            | 29 acres @ \$ 50/acre | 1,450           |
| *Loblolly Pine Seedlings | 21M @ \$ 00/M         | 0               |
| TOTAL                    |                       | <u>\$10,150</u> |

**Road Construction:**

|                          |                   | <u>Cost</u>    |
|--------------------------|-------------------|----------------|
| Grading & Drainage       | 2.5 mi @ \$900/mi | \$2,250        |
| Water Bar Construction   | 2.5 mi @ \$250/mi | 625            |
| Seed, Fertilizer & Mulch | 2.5 mi @ \$300/mi | 750            |
|                          |                   | <u>\$3,625</u> |

\* Seedlings are to be grown by Weyerhaeuser Inc. from seed collected on site at no direct cost.

The Fayette Forest has received several harvest cuts over the past decade and is now approaching a reasonable size class distribution. Currently 32% of the compartment forest is in sawtimber, 28% in large poles, 8% in small poles, 19% in small trees and 13% in regeneration. The only serious problem is the old age of the sawtimber which results in high mortality. Harvests will be designed to continue to provide diversity by cutting those stands most susceptible to loss from insects or disease. The thinning will take place in plantations of small and large pole timber to maintain vigor and help avoid losses to southern pine beetle.

The area chosen for harvest is located in the center of the compartment, Figure 31, and covers a total of 29 acres. The harvest planned is a part of a sale proposed for the last management period. This area was held in order to accommodate a research request. The contemplated project is being implemented and calls for cutting the timber this year. This area is occupied by a series of research plots established in 1960 to study various regeneration methods. The current research will repeat the regeneration methods of 1960 to study the effect of repetitive management on soil, herbaceous vegetation and tree growth.

An additional 150 acres of the compartment are scheduled for thinning. All of the proposed thinning will be in young pine plantations which are now excessively dense and susceptible to attack by southern pine beetles. The cut will remove weak, diseased and poorly formed pines and some of the encroaching hardwoods.

The harvesting and the thinning will probably be conducted separately to better facilitate research needs. Together the recommended sales will harvest an estimated 130.5 MBF of pine sawtimber, 13 MBF of hardwood sawtimber plus an additional 1,050 cords of pine and 250 cords of hardwood

pulpwood. The timber is of better than average quality, but prices in the area are lower than other regions of the State. The sales are expected to yield about \$37,000, Table 7.

Regeneration of the harvest cut will be under the direction of the research project leader. The site preparation methods used in the initial study, chopping, raking and piling, chemical injection, will be repeated. The area will be planted with pine seedlings grown from seed collected from the area. Buffer areas around the plots will be treated and planted to pine only if it can be done without risk of damage to research work. This treatment including planting, is expected to average about \$350 per acre. Total regeneration costs are estimated at about \$10,150, Table 7. The thinning will require no post sale work.

The road system in parts of this compartment have developed severe erosion problems. Stabilization of the road system should be a part of post sale treatment. Work will involve grading, establishing drainage and water bars followed by seeding to fescue. About 2.5 miles of woods road will be included at an estimated cost of \$3,600, Table 7.

**Piedmont Substation:**

Two timber sales are planned for the Piedmont Substation beginning in 1995. The first involves the removal of timber prior to conversion to pasture, Figure 24a. The second is the first step in developing an "all age" forest according to plans developed by wildlife research personnel, Figure 24b.

There is a need for additional forage production on the Piedmont Substation to accommodate research planned in beef cattle production. An

Figure 24a. Timber sales planned for the Piedmont Substation.

**PIEDMONT  
SUBSTATION**  
TALLAPOOSA COUNTY, ALABAMA  
1,409 ACRES

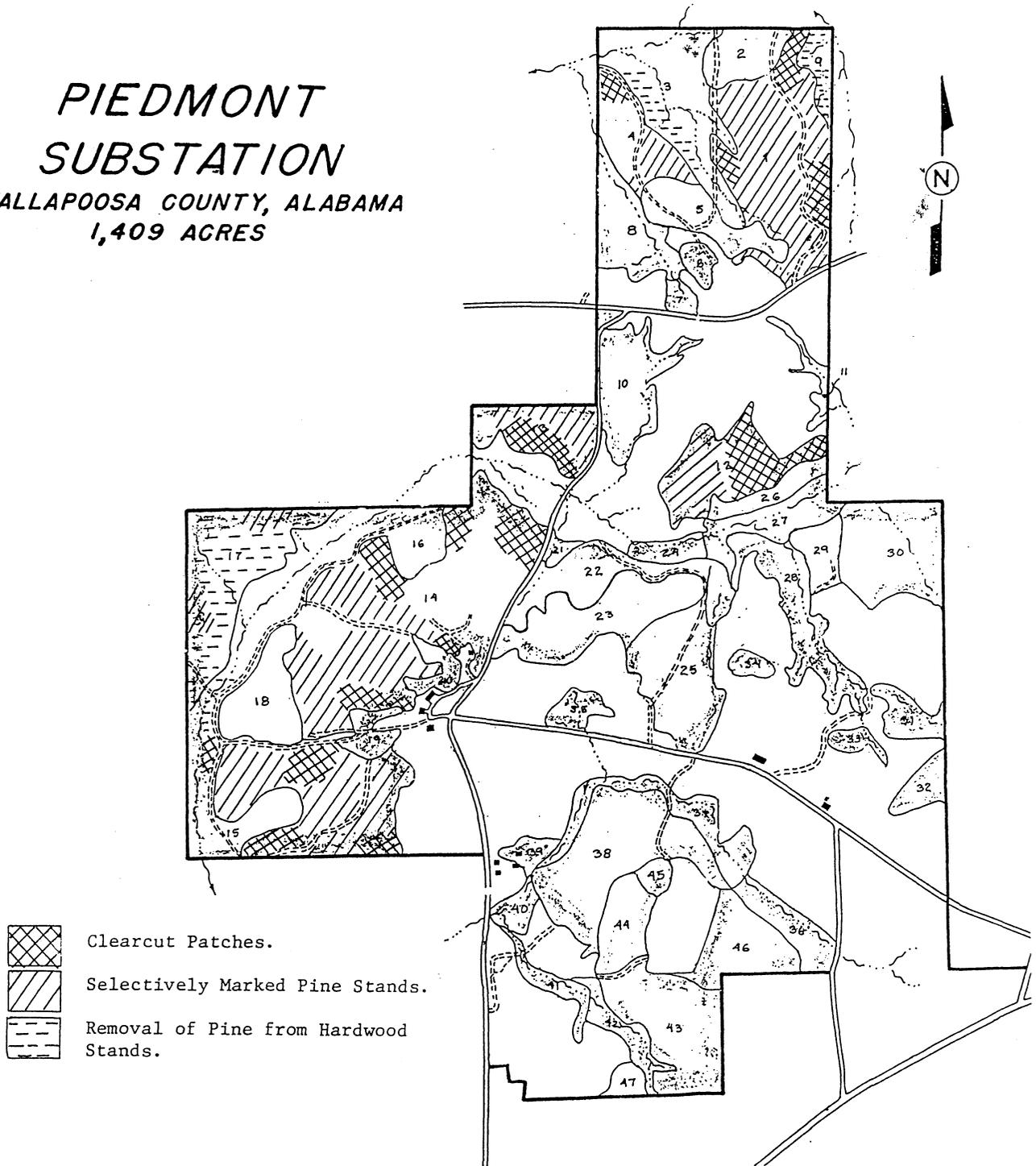
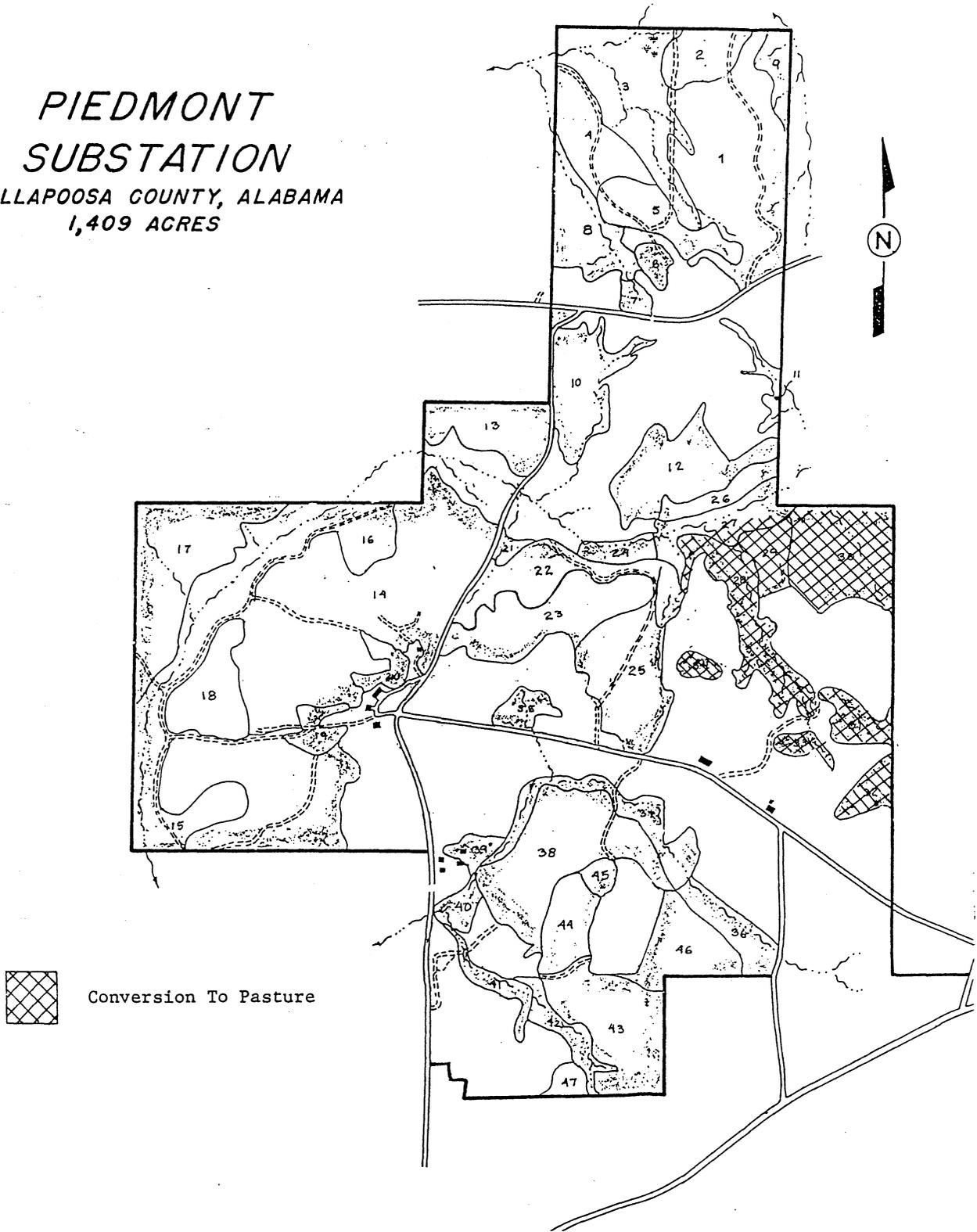


Figure 24b. Timber sales and pasture conversion planned for the Piedmont Substation.

**PIEDMONT  
SUBSTATION**  
TALLAPOOSA COUNTY, ALABAMA  
1,409 ACRES



**Table 8a** Stumpage value and expected regeneration cost for recommended patch cutting on the Piedmont Substation.

| <u>Stumpage Value:</u> |                       |              |
|------------------------|-----------------------|--------------|
|                        | <u>Volume</u>         | <u>Value</u> |
| Pine Sawtimber         | 608.5 MBF @ \$150/MBF | \$91,725     |
| Hardwood Sawtimber     | 53.5 MBF @ \$ 60/MBF  | 3,210        |
| Pine Cordwood          | 287 Cords @ \$15/Cord | 4,305        |
| Hardwood Cordwood      | 329 Cords @ \$ 5/Cord | 1,645        |
| TOTAL                  |                       | \$100,435    |

| <u>Regeneration Cost:</u> |                       |             |
|---------------------------|-----------------------|-------------|
|                           |                       | <u>Cost</u> |
| Herbicide Application     | 35 acres @ \$ 45/acre | \$1,575     |
| Chemical                  | 8.5 gals @ \$325/gal  | 2,762       |
| Clear Felling             | 6 acres @ \$100/acre  | 600         |
| Prescribed Burning        | 200 acres @ \$10/acre | 2,000       |
| Hand Planting             | 41 acres @ \$ 50/acre | 2,050       |
| Loblolly Pine Seedlings   | 26M @ \$ 35/M         | 910         |
| Oak Seedlings             | 2M @ \$ 60/M          | 120         |
| Herbicide Spot Treatment  | 2.5 acres @ 50/acre   | 125         |
| TOTAL                     |                       | \$10,142    |

**Table 8b.** Stumpage value and expected conversion cost for recommended timber sale and pasture conversion on the Piedmont Substation.

| <u>Stumpage Value:</u> |                       |              |
|------------------------|-----------------------|--------------|
|                        | <u>Volume</u>         | <u>Value</u> |
| Pine Sawtimber         | 85.5 MBF @ \$150/MBF  | \$12,825     |
| Hardwood Sawtimber     | 265.5 MBF @ \$ 60/MBF | 15,930       |
| Pine Cordwood          | 98 Cords @ \$15/Cord  | 1,470        |
| Hardwood Cordwood      | 983 Cords @ \$ 5/Cord | 4,915        |
| TOTAL                  |                       | \$35,140     |

| <u>Regeneration Cost:</u> |                       |             |
|---------------------------|-----------------------|-------------|
|                           |                       | <u>Cost</u> |
| Shear/Pile /Burn          | 60 acres @ \$225/acre | \$13,500    |
| Disk                      | 60 acres @ \$ 45/acre | 2,700       |
| Fertilizer & Lime         | 60 acres @ \$ 50/acre | 3,000       |
| Seeding to grass          | 60 acres @ \$ 35/acre | 2,000       |
| TOTAL                     |                       | \$21,200    |

area of about sixty acres has been chosen for pasture conversion on the east side of the station. As soon as preparations can be made the timber in this area will be offered for sale. The area contains an estimated 85.5 MBF of pine sawtimber, 265.5 MBF of hardwood sawtimber plus 98 cords of pine and 983 cords of hardwood pulpwood. The timber is of fair quality and is reasonably accessible. Prices in the area are low, but the sale should bring about \$35,000, Table 8a.

Post sale treatment will include shearing and piling, burning of windrows, followed by disking, fertilizer and seeding to grass. Rough estimates of this cost if done by contract are presented in Table 8a. At present, however, plans call for much of this work to be accomplished by station personnel

Plans also call for a sale to initiate management in most of the woodland by patch cutting. The initial sale will involve about two hundred acres (the north half of the station). Within this area patches varying from 1/4 acre to 10 acres in size will be clearcut for regeneration. The selected patches will be in spots where stocking is low and the remaining trees are mature. From 10% - 15% of the area will be in these patches. The remainder of the area will be marked for selective cutting to thin dense areas, remove diseased or poorly formed trees and to maintain a stand open enough to provide for forage production in the understory.

As planned, this sale will harvest an estimated 608 MBF of pine sawtimber, 53 MBF of hardwood sawtimber plus 287 cords of pine and 329 cords of hardwood pulpwood. The timber is of better than average quality but the Piedmont Substation is not accessible for winter logging and the area has lower than average prices. The sale is estimated to bring \$100,425, Table 8b.

Regeneration work in most of the patch cuts will involve herbicide application to control hardwoods, prescribed burning, and planting to pine. One of the patches, about 6 acres, will be clear felled with chain saws to provide for hardwood regeneration. In one small patch, about 2.5 acres, plans call for an attempt to establish bottomland oaks. This will require clear felling and herbicide treatment to control unwanted hardwoods and hand planting of oaks. Annual release work will be required until the oaks are well established. The selectively marked area will require periodic prescribed burning to control hardwoods and to maintain browse production. Table 8b shows expenses for this work for planning purposes. Much of this work will be accomplished internally, however, and will not show up in direct costs.

**Barbour County Experiment Forest:**

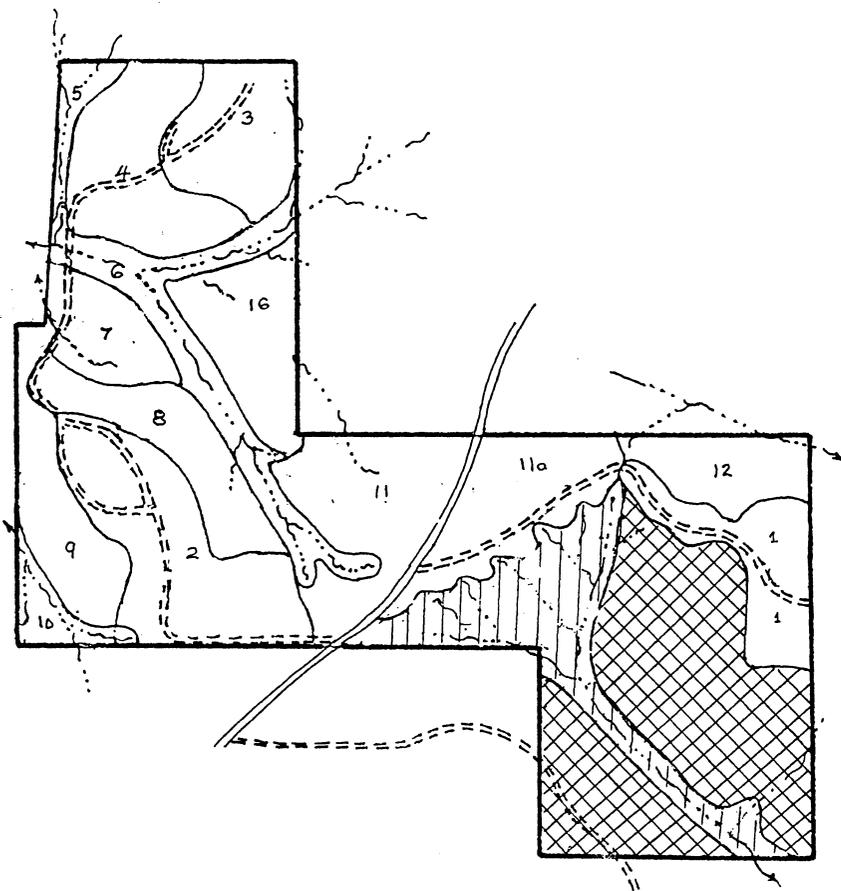
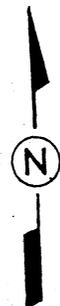
Harvest cutting is planned for the Barbour County Forest in 1996, Figure 25. The last harvest on the Barbour County Unit was conducted in 1980 on a total of 34 acres. The trees planted on the harvested area now average 4" in diameter and it is time to provide additional regeneration. The area chosen for harvest consists of poorly stocked pine sawtimber much of which is now overmature. Some of the area is mixed with poor quality hardwoods. A portion of the recommended cut was established as spacing studies of longleaf, slash and loblolly pines and studies of the effects of prescribed burning. No interest has been expressed in their maintenance. The remainder of the area is of natural origin.

As planned, the 1996 sale will clearcut about 32 acres. In addition, some large pines will be marked for removal from a wide "streamside management zone" left around a creek and an area replete with deep gullies. This area is deemed too sensitive for active management and the pines will

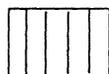
Figure 25. Timber sales planned for the Barbour County Experimental Forest.

# BARBOUR COUNTY EXPERIMENTAL FOREST

178 ACRES



Harvest Cutting by Clearcut



Individual Tree Selection

**Table 9.** Stumpage value and expected regeneration cost for recommended sale of timber on the Barbour County Experimental Forest.

**Stumpage Value:**

|                    | <u>Volume</u>            | <u>Value</u>    |
|--------------------|--------------------------|-----------------|
| Pine Sawtimber     | 150.0 MBF @ \$150/MBF    | \$22,500        |
| Hardwood Sawtimber | 12.0 MBF @ \$ 60/MBF     | 720             |
| Pine Cordwood      | 525.0 Cords @ \$ 15/Cord | 7,875           |
| Hardwood Cordwood  | 50.0 Cords @ \$ 5/Cord   | 250             |
| TOTAL              |                          | <u>\$31,345</u> |

**Regeneration Cost:**

|                              |                       | <u>Cost</u>     |
|------------------------------|-----------------------|-----------------|
| Aerial Herbicide Application | 32 acres @ \$ 40/acre | \$1,280         |
| Chemical                     | 8 gal @ \$325/gal     | 2,600           |
| Prescribed Burning           | 32 acres @ \$ 10/acre | 320             |
| Hand Planting                | 32 acres @ \$ 50/acre | 1,600           |
| Loblolly Pine Seedlings      | 24 M @ \$ 35/M        | 840             |
| Road Stabiliza ion           |                       | <u>7,500</u>    |
| TOTAL                        |                       | <u>\$14,100</u> |

be marked for removal where harvesting will do no damage to the site. Total volume is estimated at 150 MBF of pine sawtimber plus about 525 cords of pine pulpwood. There may be insufficient hardwood present to provide for its harvest. The sale area has poor access, cannot be logged in wet weather and the Barbour County unit is not in an active forestry area. As a result, the sale will bring a below average price. Total value for the sale is estimated at \$31,000, Table 9.

The harvested area will be reassessed following logging, but regeneration will probably consist of site preparation by late summer application of herbicide, prescribed burning followed by hand planting of loblolly pine. This method of regeneration is relatively inexpensive and is expected to cost \$175 per acre for a total of about \$6,500, Table 9.

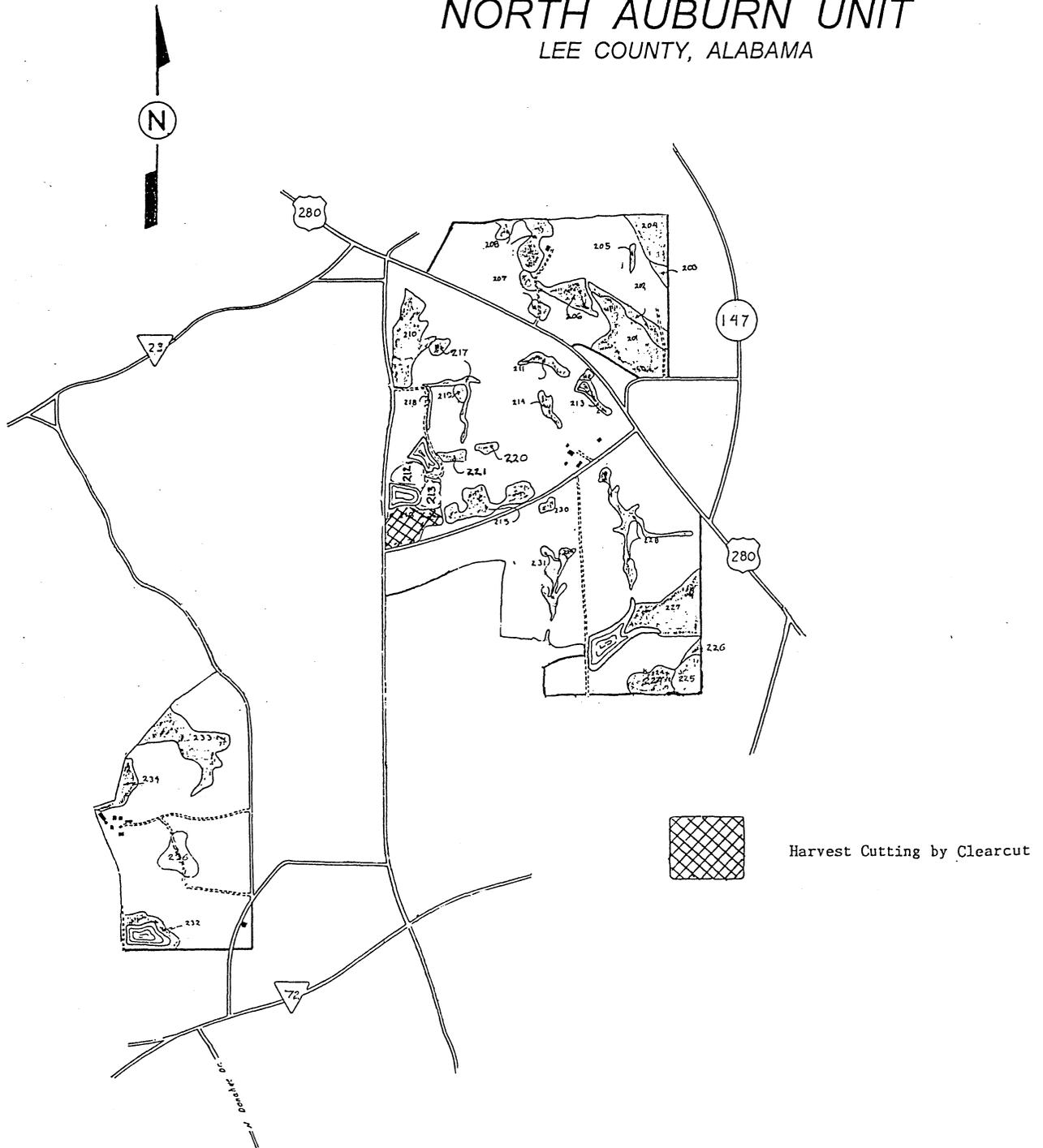
The access roads on the Barbour County Forest are in poor shape. The soils on the unit are highly erosive and these roads are washed out in several places. The road on the south side is particularly bad. As a part of the post sale treatment, these roads should be reworked. This will involve grading, providing proper cross drainage, fertilizer application and seeding to grass. About 200 feet of the road on the south side will require major earth work. If this work cannot be done internally it will cost about \$7,500.

#### **North Auburn Unit I:**

A sale is planned for Compartment I of the North Auburn Unit in 1996 to harvest a stand of overmature pine, Figure 26. For management purposes the North Auburn Unit is divided into three compartments. Compartment I consists of the land under the administrative control of the Research Operations Department. Much of the area is currently used by the Animal

Figure 26. Timber sales planned for the Area I of the North Auburn Unit.

AREA I  
NORTH AUBURN UNIT  
LEE COUNTY, ALABAMA



**Table 10.** Stumpage value and expected regeneration cost for recommended sale of timber on Area I of the North Auburn Unit.

| <u>Stumpage Value:</u> |                         |                 |
|------------------------|-------------------------|-----------------|
|                        | <u>Volume</u>           | <u>Value</u>    |
| Pine Sawtimber         | 41.5 MBF @ \$175/MBF    | \$7,262         |
| Hardwood Sawtimber     | 42.5 MBF @ \$ 60/MBF    | 2,550           |
| Pine Cordwood          | 54.5 Cords @ \$ 18/Cord | 981             |
| Hardwood Cordwood      | 17.5 Cords @ \$ 5/Cord  | 87              |
| TOTAL                  |                         | <u>\$10,880</u> |

| <u>Regeneration Cost:</u> |                       |                |
|---------------------------|-----------------------|----------------|
|                           |                       | <u>Cost</u>    |
| Drum Chopping             | 10 acres @ \$65/acre  | \$650          |
| Herbicide Application     | 10 acres @ \$45/acre  | 450            |
| Chemical                  | 3 gals @ \$325/gal    | 975            |
| Hand Planting             | 10 acres @ \$ 50/acre | 500            |
| Loblolly Pine Seedlings   | 7.5M @ \$ 35/M        | 262            |
| TOTAL                     |                       | <u>\$2,837</u> |

Health Department of the Veterinary School. The Compartment contains a total of 201 acres of woodland only 110 acres of which is considered commercially operable. The current size class distribution is 3% in regeneration, 30% in small trees, 13% in small Poles, 28% in large poles and 16% in sawtimber. It would be desirable to hold this stand, but it has suffered heavy mortality over the past five years and should be cut to avoid continued loss.

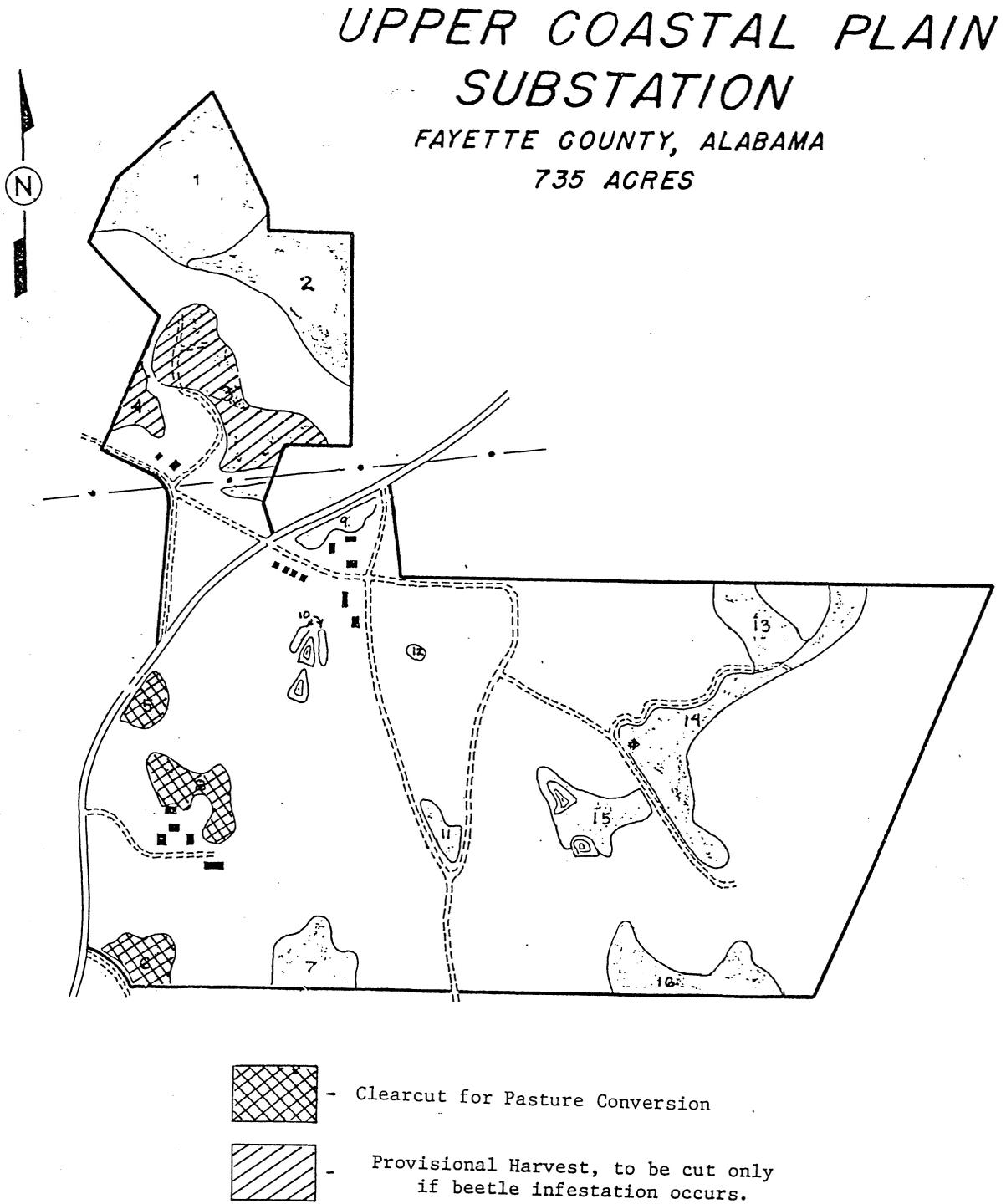
The planned harvest is located in the NW 1/4 of Section 36 and contains about 10 acres. The stand is made up of mostly mature pine sawtimber mixed with smaller hardwoods on the lower slopes. Total volume is estimated at 71.5 MBF of pine sawtimber, 12.5 MBF of hardwood sawtimber plus 54 cords of pine and 17 cords of hardwood pulpwood. The timber is of good quality and is easily accessible. The sale should bring about \$12,500, Table 10.

Plans call for cleaning up the adjacent fencerows as well as the harvested area. To improve its appearance the site may need to be drum chopped as well as treated with herbicide. The need for chopping will depend on the quantity of standing material left after logging. One edge of the stand is heavily infested with Kudzu and will need additional herbicide treatment to bring it under control. Following site preparation the area will be planted to loblolly pine. Total regeneration cost is estimated at \$2,839, Table 10.

#### **Upper Coastal Plain Substation:**

The Upper Coastal Plain Substation has only 130 acres of commercially operable forest land and, because of this, the size class distribution listed as a goal for compartments cannot be strictly applied without having

Figure 27. Timber sales planned for the Upper Coastal Plain Substation.



**Table 11.** Stumpage value and expected conversion cost for recommended sale of timber on the Upper Coastal Plain Substation.

**Stumpage Value:**

|                    | <u>Volume</u>           | <u>Value</u>   |
|--------------------|-------------------------|----------------|
| Pine Sawtimber     | 15.6 MBF @ \$125/MBF    | \$1,950        |
| Hardwood Sawtimber | 18.2 MBF @ \$ 60/MBF    | 1,092          |
| Pine Cordwood      | 45.0 Cords @ \$ 15/Cord | 810            |
| Hardwood Cordwood  | 195.0 Cords @ \$ 5/Cord | 975            |
| TOTAL              |                         | <u>\$4,827</u> |

**Conversion Cost:**

|                         |                       | <u>Cost</u>    |
|-------------------------|-----------------------|----------------|
| Shear-Rake-Pile         | 13 acres @ \$250/acre | \$3,250        |
| Prescribed Burning      | 13 acres @ \$ 10/acre | 130            |
| Chemical Tmt. of Hdwds. | 13 acres @ \$ 75/acre | 975            |
| TOTAL                   |                       | <u>\$4,355</u> |

cuts, one in 1979 and one in 1991. No major harvest is planned for the next five year period. Permission is requested, however, for a provisional sale and the sale of timber associated with conversion of a few acres to pasture, Figure 27.

A stand of mature pine sawtimber on the unit was thinned out in 1991 and, at present, appears healthy. This stand has had periodic infestations of southern pine beetles over the years. If further outbreaks occur the stand should be harvested without any delay. This sale will only be conducted if a serious infestation occurs.

The station has a number of small pockets of poor quality mixed hardwood and pine sawtimber which are infested with kudzu and privet. Three of these are scheduled to be cleaned up beginning in 1996. This work would begin with cutting all of the merchantable timber except selected trees. Harvest would be followed by treatment of the Kudzu and privet and conversion of most of the area to grass. Any area which cannot be reasonably maintained in pasture will be planted to pine for erosion control.

Cutting will involve about 13 acres. The merchantable volume in these areas is low, 15.5 MBF of pine sawtimber, 18.2 MBF of hardwood sawtimber plus about 45 cords of pine and 195 cords of hardwood pulpwood. An area with such low volume will be difficult to sell, but should produce enough revenue to cover costs of clearing and conversion to pasture. Revenue is estimated at \$4,800 and conversion costs at \$4,200, Table 11.

### **Autauga County Experiment Forest:**

Harvest cutting and an improvement cut are planned for the Autauga County Forest to continue the process of developing a reasonable size class distribution and maintain the health of the remaining timber, Figure 28. Even with the 1993 harvest of 42 acres the size class distribution of the forest is heavily skewed toward the larger size classes. Almost 80% of the timber is in large pole or sawtimber. A minimum of 10% of the area should be regenerated each five years. Periodic improvement cutting is needed to hold timber, which is already mature, until current regeneration grows into intermediate and larger size classes.

The area chosen for harvest in 1997 is currently in slash and loblolly pine sawtimber about 50 years old. Although no record can be found, it was probably established in the 1940's as a species comparison study. The timber is mature and suffering steady mortality from southern pine beetles. Research on regeneration of longleaf pine and its response to competition control is being established on the site clearcut in 1993. It is hoped that the harvest will provide area for expansion of this work.

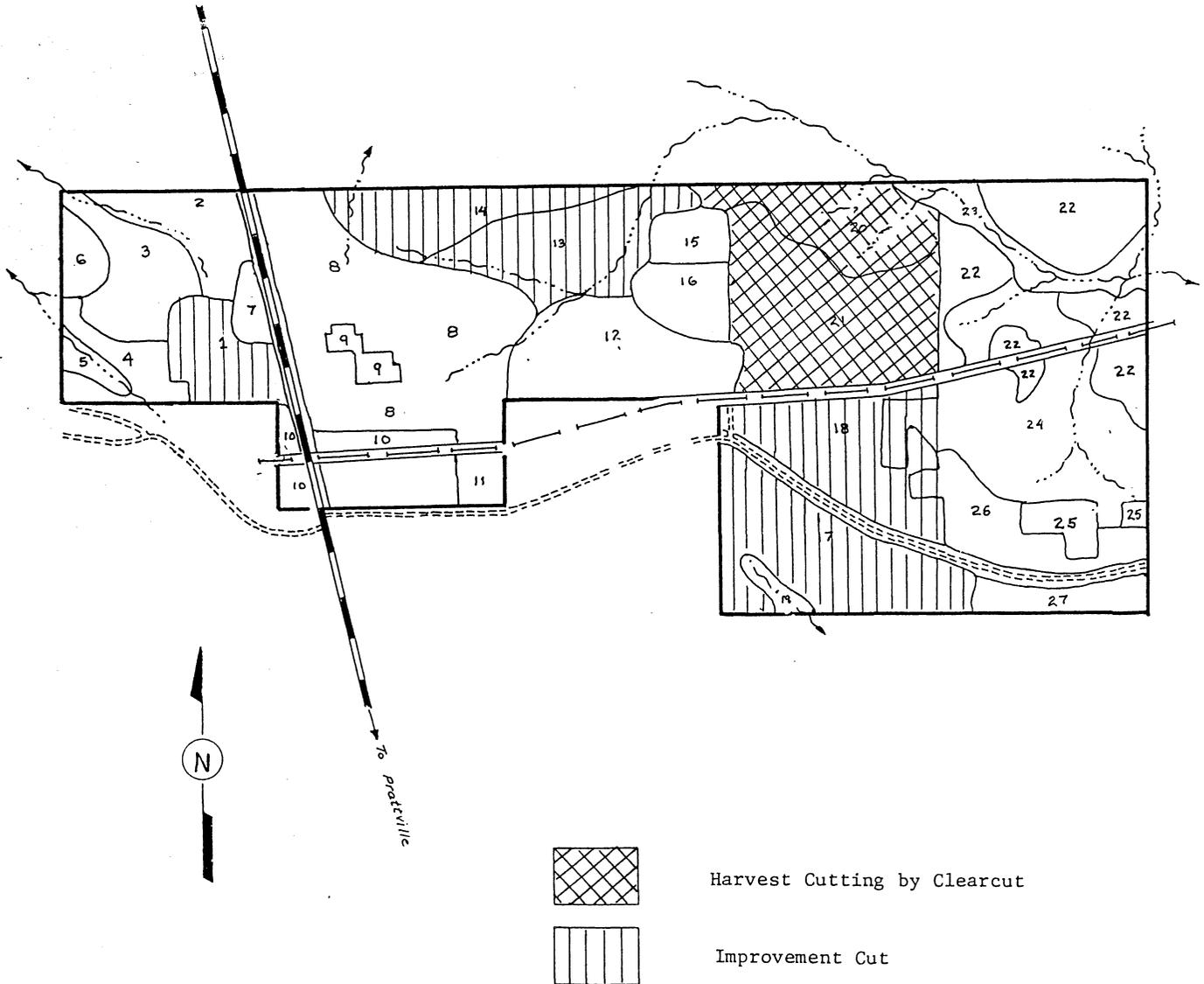
In addition to the harvest cut, improvement cutting will be conducted in several stands on the unit. This cut will remove poor quality, suppressed trees and thin dense areas from below. The cut is intended to improve the overall quality of the treated stands by leaving only vigorous trees.

As planned, the 1997 sale on the Autauga Forest will consist of a clearcut of 38 acres plus marked timber on 53 acres. Total volume is estimated at 231 MBF of pine sawtimber plus about 1,650 cords of pine pulpwood. Most of the timber is of excellent quality and should attract

Figure 28. Timber sales planned for the Autauga County Experimental Forest.

# AUTAUGA COUNTY EXPERIMENTAL FOREST

300 ACRES



**Table 12.** Stumpage value and expected regeneration cost for recommended sale of timber on the Autauga County Experimental Forest.

| <u>Stumpage Value:</u> |                            |                 |
|------------------------|----------------------------|-----------------|
|                        | <u>Volume</u>              | <u>Value</u>    |
| Pine Sawtimber         | 224.5 MBF @ \$200/MBF      | \$44,900        |
| Hardwood Sawtimber     | 0.0 MBF @ \$ 60/MBF        | 0               |
| Pine Cordwood          | 1,650.0 Cords @ \$ 18/Cord | 29,700          |
| Hardwood Cordwood      | 25.0 Cords @ \$ 0/Cord     | 0               |
| TOTAL                  |                            | <u>\$74,600</u> |

| <u>Regeneration Cost:</u> |                       |                 |
|---------------------------|-----------------------|-----------------|
|                           |                       | <u>Cost</u>     |
| Shear/Drum Chopping       | 38 acres @ \$125/acre | \$4,750         |
| Herbicide Application     | 38 acres @ \$ 40/acre | 1,520           |
| Chemical                  | 9.5 gal @ \$325/gal   | 3,087           |
| Prescribed Burning        | 91 acres @ \$ 10/acre | 910             |
| Longleaf Pine Seedlings   | 31M @ \$ 35/M         | 1,395           |
| Machine or Hand Planting  | 38 acres @ \$ 50/acre | 1,900           |
| TOTAL                     |                       | <u>\$13,562</u> |

a number of bidders. If current prices hold, the sale will bring about \$75,000, Table 12.

The harvested area will be reassessed following logging, but will probably require intensive site preparation followed by planting of longleaf pine. Longleaf is well suited to the sterile sands on the Autauga Forest and is not common on the Experiment Station Forest. To establish longleaf will require mechanical site preparation, chemical treatment and burning. Planting failures are common and the area may have to be replanted to obtain good stocking. Regeneration is estimated to cost in the neighborhood of \$350 per acre. The improvement cutting will not require treatment, but prescribed burning will help to maintain healthy stands. Prescribed burning is difficult to conduct and, if a vendor can be located, costs about \$10 per acre. Total cost of all recommended post sale treatments is estimated at \$13,500, Table 12.

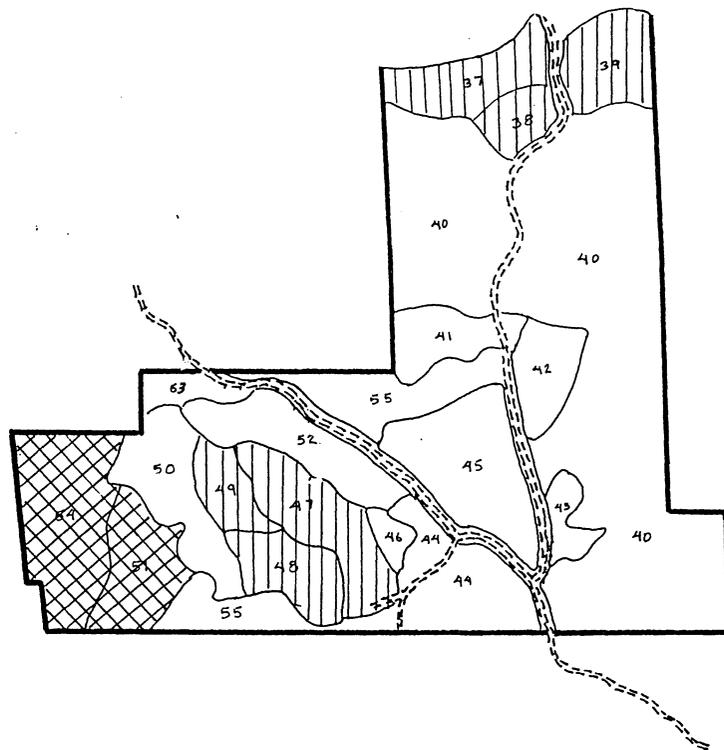
#### **Fayette County Experiment Forest I:**

Harvest cutting and thinning are planned for Compartment I of the Fayette Forest in 1997, Figure 29. For management purposes the Fayette Forest is divided into two compartments. Compartment I consists of the southern half of the forest and contains 624 acres.

The Fayette Forest has received several harvest cuts over the past decade and is now approaching reasonable size class distribution. Currently 40% of the Compartment is in sawtimber, 10% in large poles, 10% in small poles and 40% in regeneration. The only serious problem is the old age of the sawtimber which results in high mortality of valuable timber. The harvest cutting planned is intended to continue development of diversity by harvesting those stands most susceptible to insects and

Figure 29. Timber sales planned for Area I of the Fayette Experimental Forest.

AREA I  
FAYETTE EXPERIMENTAL FOREST  
FAYETTE COUNTY, ALABAMA



**Table 13.** Stumpage value and expected regeneration cost in recommended sale of timber on Area I of the Fayette Experimental Forest.

**Stumpage Value:**

|                    | <u>Volume</u>            | <u>Value</u> |
|--------------------|--------------------------|--------------|
| Pine Sawtimber     | 265.0 MBF @ \$150/MBF    | \$39,750     |
| Hardwood Sawtimber | 155.0 MBF @ \$ 60/MBF    | 9,300        |
| Pine Cordwood      | 870.0 Cords @ \$ 15/Cord | 13,050       |
| Hardwood Cordwood  | 350.0 Cords @ \$ 5/Cord  | <u>1,750</u> |
| TOTAL              |                          | \$63,850     |

**Regeneration Cost:**

|                          |                       | <u>Cost</u>  |
|--------------------------|-----------------------|--------------|
| Application of Herbicide | 62 acres @ \$ 40/acre | \$2,480      |
| Chemical                 | 15.5 gal @ \$325/acre | 5,037        |
| Prescribe Burn           | 62 acres @ \$ 10/acre | 620          |
| Hand Planting            | 62 acres @ \$ 50/acre | 3,100        |
| Loblolly Pine Seedlings  | 46.5M @ \$ 35/M       | <u>1,627</u> |
| TOTAL                    |                       | \$12,864     |

disease. The thinning will take place in plantations of small and large poletimber to maintain vigor and avoid losses to southern pine beetles.

The site chosen for harvest is located in the southwest portion of the Compartment and covers a total of about 62 acres. The area is occupied by a mixture of overmature pine and pine hardwood which should be converted to pine. Mortality has been high in these stands for the past decade and stocking is below an acceptable level. The planned thinnings cover a total of 84 acres. Thinning will be conducted in stands of small and large pole pine removing high risk trees to open the stands and maintain vigor.

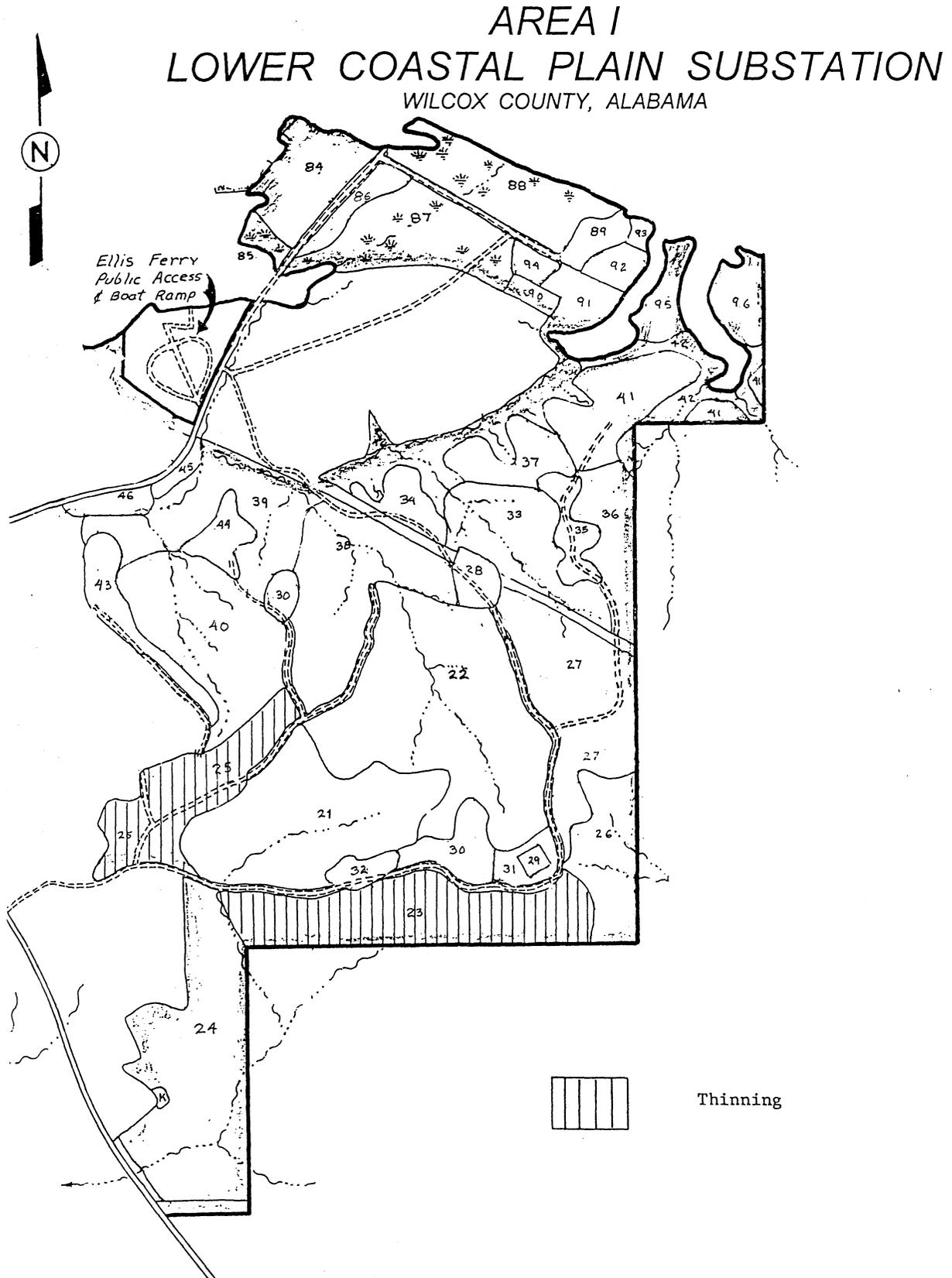
The recommended sale contains an estimated 265 MBF of pine sawtimber, 155 MBF of hardwood sawtimber plus an additional 870 cords of pine and 350 cords of hardwood pulpwood. The timber is of better than average quality but, prices in the area are lower than in other parts of the State and access to this area is difficult. The timber should sell for about \$64,000, Table 13.

The clearcut area will be reassessed following logging. Most likely, regeneration efforts will consist of chemical site preparation by aerial spraying to control hardwood sprouts and prescribed burning followed by hand planting of improved loblolly pine. The thinning will require no post sale treatment. Regeneration costs are estimated at \$12,864, Table 13.

#### **Lower Coastal Plain Substation I:**

A thinning is scheduled for Compartment I of the Lower Coastal Plain Substation in 1997, Figure 30. For management purposes the Lower Coastal Plain Substation is divided into two compartments. Compartment I, essentially, consists of the forested land east of the access road to the

Figure 30. Timber sales planned for Area I of the Lower Coastal Plain Substation.



**Table 14.** Stumpage value and expected regeneration cost for recommended recommended sale of timber on Area I of the Lower Coastal Plain Substation.

| <u>Stumpage Value:</u> |                         |              |
|------------------------|-------------------------|--------------|
|                        | <u>Volume</u>           | <u>Value</u> |
| Pine "Chip-N-Saw"      | 225.0 Cords @ \$45/Cord | \$10,125     |
| Pine Cordwood          | 492.0 Cords @ \$18/Cord | 8,856        |
| TOTAL                  |                         | \$18,981     |

| <u>Regeneration Cost:</u> |                      |             |
|---------------------------|----------------------|-------------|
|                           |                      | <u>Cost</u> |
| Prescribed burning        | 82 acres @ \$10/acre | \$810       |

Ellis Ferry boat ramp. The compartment contains 726 acres of which 498 are classified as commercially operable. A sizeable area, 108 acres, of this compartment was clearcut as a part of research on the environmental effects of forest management on stream quality. Including the research area in calculations yields a size class distribution of 30% regeneration, 19% small trees, 16% small poles, 18% large poles and 17% sawtimber. This is not badly out of balance, but it does exceed regeneration needs in this compartment. No further harvest cuts are planned for the next five years. The only timber sales will consist of thinning.

The stands scheduled for thinning are all pine plantations, cover a total of 82 acres and vary in age from 20 years to 35 years old. They were first thinned in 1989 and are now ready for a second thinning. About 26 acres of the proposed thinning is located along the upper slopes of drainages in water quality research. If the study is still active these stands will not be treated.

If all 82 acres are included in the thinning the sale will include about 750 cords of pine some of which will be large enough to harvest as "Chip-N-Saw". The sale should bring about \$11,000, Table 14. The only post sale treatment needed is prescribed burning to control hardwood encroachment. If not done internally this will cost about \$10 per acre for a total of \$820, Table 14.

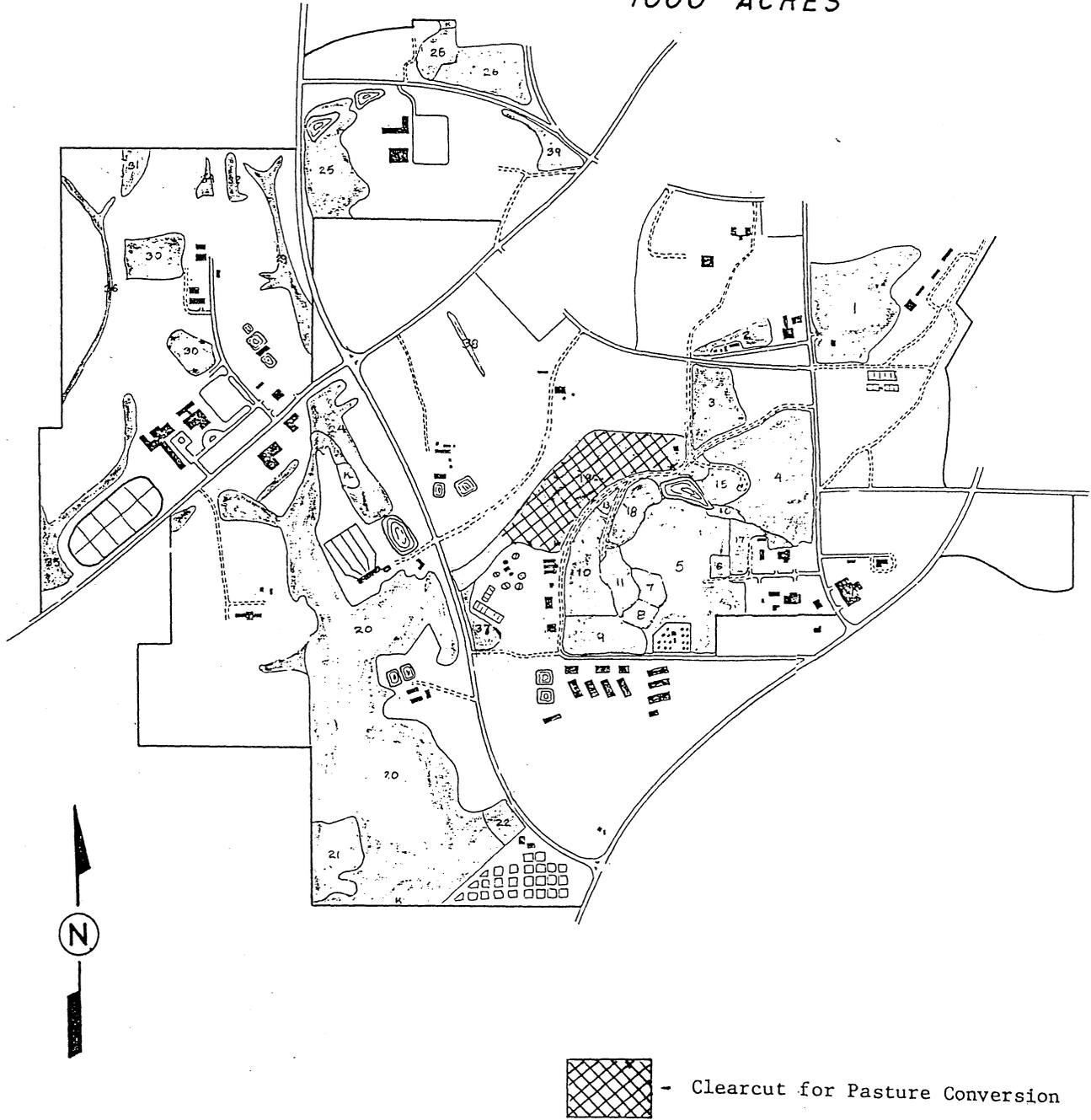
**Main Station:**

Permission is requested to sell timber on an area contemplated for pasture conversion on the Main Station, Figure 31. The area consists of about 32 acres between the "Forestry Plots" and pasture currently used for the Main Station beef cattle herd. The site was once in pasture and was

Figure 31. Timber sales planned for the Main Station.

# MAIN STATION

LEE COUNTY  
1000 ACRES



**Table 15.** Stumpage value in recommended sale of timber on the Main Station.

| <u>Stumpage Value:</u> | <u>Volume</u>           | <u>Value</u>   |
|------------------------|-------------------------|----------------|
| Pine Sawtimber         | 14.5 MBF @ \$150/MBF    | \$2,175        |
| Hardwood Sawtimber     | 46.5 MBF @ \$ 60/MBF    | 2,790          |
| Pine Cordwood          | 0.0 Cords @ \$ 15/Cord  | 0              |
| Hardwood Cordwood      | 480.0 Cords @ \$ 5/Cord | <u>2,400</u>   |
| TOTAL                  |                         | <u>\$7,365</u> |

gradually abandoned beginning in the early 1960's. It is now stocked with a variety of poor quality hardwoods and scattered pine with an understory infested with privet and Kudzu.

Plans call for clearing the area to provide wooded pasture. The new pasture would help replace the grazing area lost to the recently constructed Women's Soccer Field and facilitate movement of cattle from the northern pastures to fields on the west side of the Auburn bypass. Although the sale is planned for 1997, approval will be required from the U. S. Soil Conservation Service and a permit may be required from the U.S. Corps of Engineers before work proceeds.

If proper approval is obtained, trees to be retained for shade will be selected and the remainder offered for sale. Estimated volume is low, 14.5 MBF of pine sawtimber, 46.5 MBF of hardwood sawtimber and 480 cords of hardwood pulpwood. Sale of this timber should bring about \$7,000, Table 15. Following the removal of the merchantable timber the area will be windrowed, burned, graded and seeded to grass. Most of this work will be accomplished internally through the Department of Research Operations.

#### **E.V. Smith Center:**

A sale is planned for the E.V. Smith center in 1998 to begin the process of rehabilitating cut over pine and pine hardwood stands on the unit, Figure 32. The Center contains 1,166 acres of woodland 859 acres of which are considered commercially operable. Most of the timberland was cut over just prior to purchase by Auburn University in 1975. Many of the hardwood stands are still adequately stocked or were cut heavy enough to regenerate well, but the pine and pine hardwood stands are in poor shape and need to be regenerated as quickly as possible.

E.V. SMITH CENTER  
MAGON COUNTY  
3200 ACRES

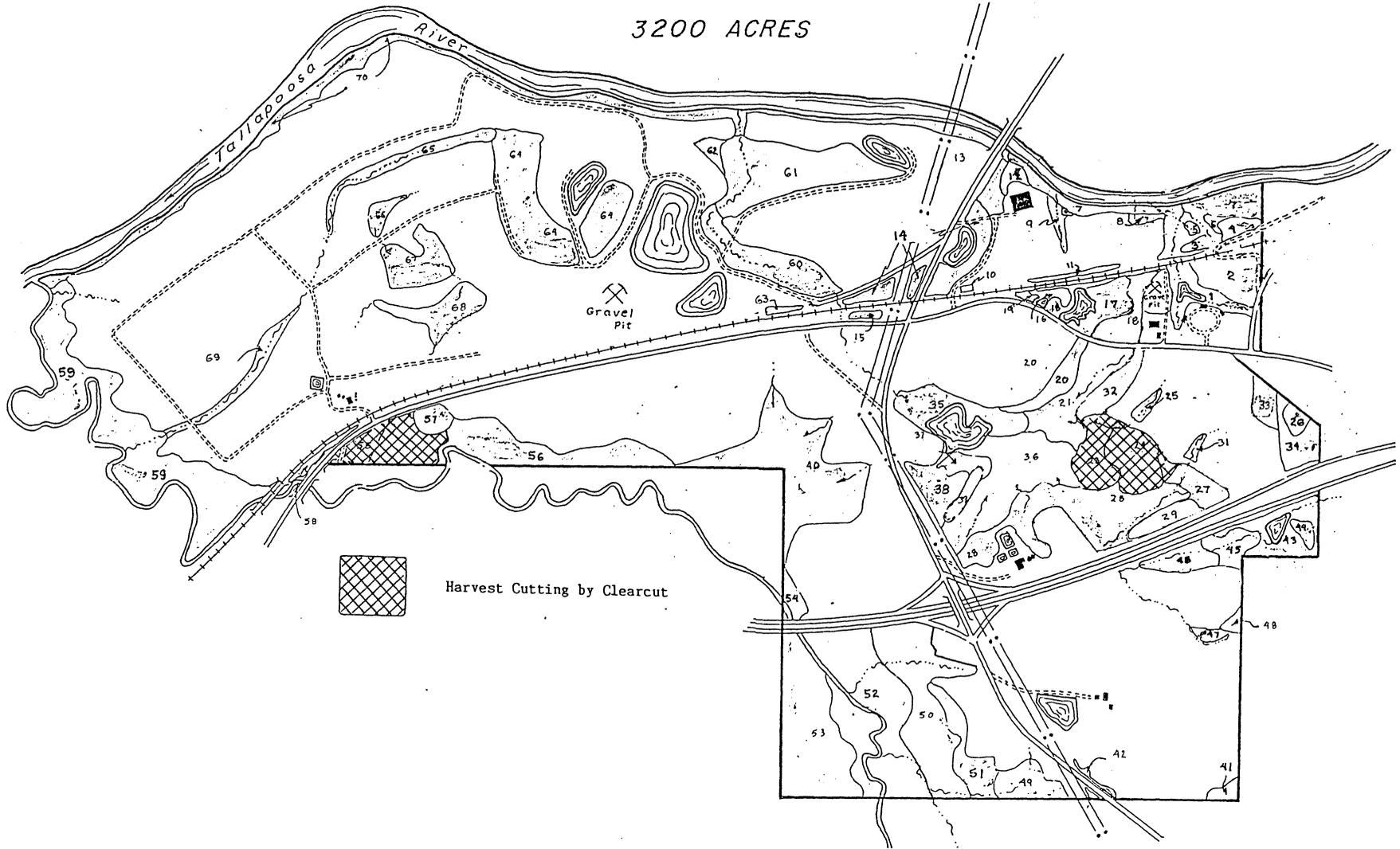


Figure 32. Timber sales planned for the E.V. Smith Center.

**Table 16.** Stumpage value and expected regeneration cost for recommended sale of timber on the E.V. Smith Center.

| <u>Stumpage Value:</u> |                          |                 |
|------------------------|--------------------------|-----------------|
|                        | <u>Volume</u>            | <u>Value</u>    |
| Pine Sawtimber .       | 102.0 MBF @ \$150/MBF    | \$15,300        |
| Hardwood Sawtimber     | 139.5 MBF @ \$ 60/MBF    | 8,370           |
| Pine Cordwood          | 378.0 Cords @ \$ 15/Cord | 5,670           |
| Hardwood Cordwood      | 664.5 Cords @ \$ 5/Cord  | 3,320           |
| TOTAL                  |                          | <u>\$32,660</u> |

| <u>Regeneration Cost:</u> |                       |                 |
|---------------------------|-----------------------|-----------------|
|                           |                       | <u>Cost</u>     |
| Shear-Chop-Burn           | 76 acres @ \$150/acre | \$11,400        |
| Herbicide application     | 30 acres @ \$ 40/acre | 1,200           |
| Herbicide (Tordon 25K)    | 15 gal. @ \$ 95/gal.  | 1,425           |
| Hand Planting             | 76 acres @ \$ 50/acre | 3,800           |
| Loblolly Pine Seedlings   | 57M @ \$ 35/M         | 1,995           |
| TOTAL                     |                       | <u>\$19,820</u> |

The planned harvest of two areas covers a total of 64 acres. One of the areas includes a dense stand of slash pine which has suffered high mortality over the past five years plus enough of the surrounding mixed pine hardwood stand to make a total of about 25 acres. The other site chosen includes a 14 acre stand of very poorly stocked pine and 25 acres of poorly stocked and low quality hardwood. These hardwood stands should be converted to pine or pine hardwood mix. In addition to restoring productivity to the affected area, the harvest will improve the size class distribution. The E.V. Smith Center currently has 55% of the timbered area classified as sawtimber and there is very little regeneration.

Volume in both sale areas is estimated at 102 MBF of pine sawtimber, 139.5 MBF of hardwood sawtimber, plus 378 cords of pine and 664 cords of hardwood pulpwood. The timber is of average quality, is reasonably accessible and should bring in a total of about \$32,500, Table 16.

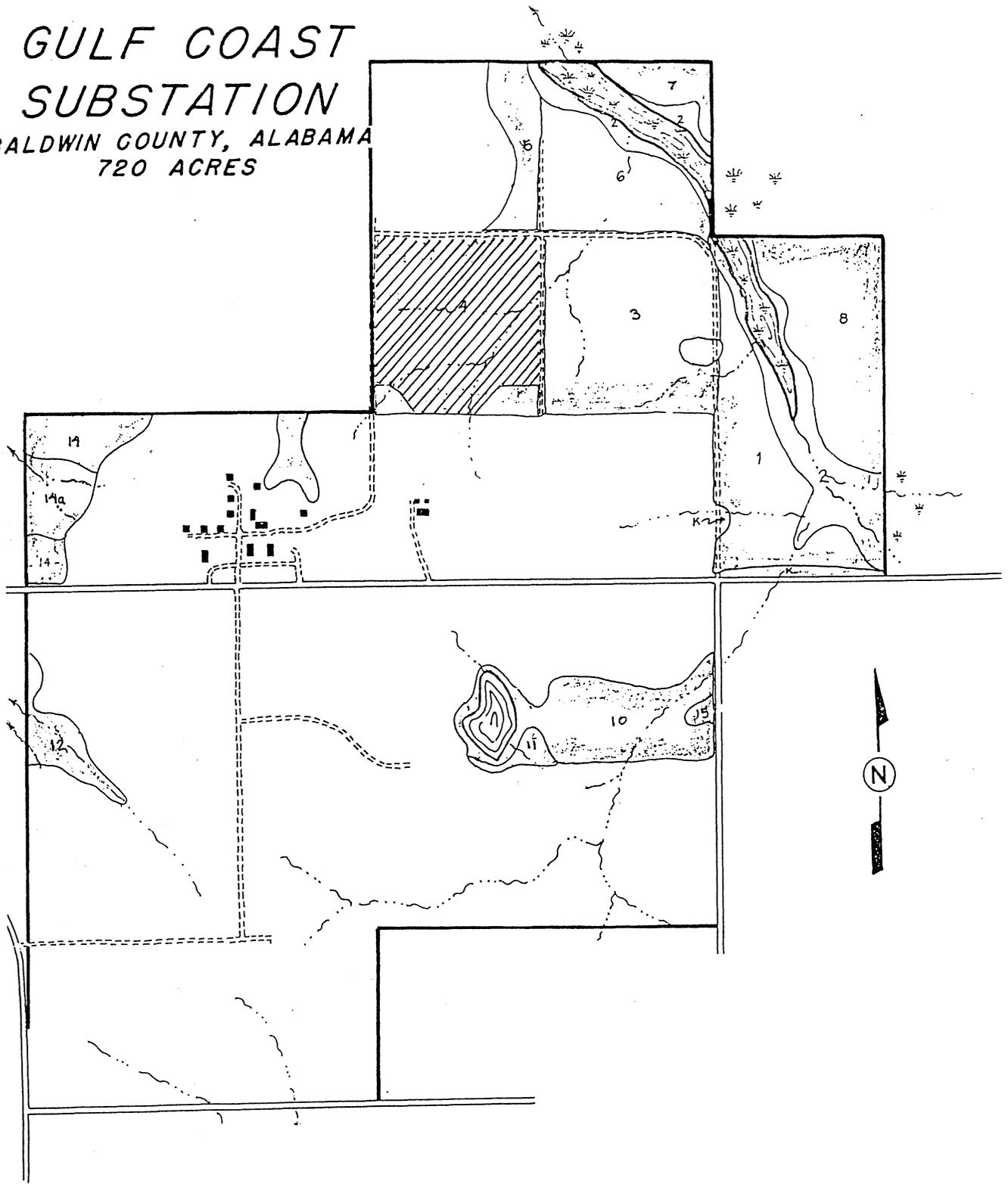
After the sale, site preparation will probably require a combination of mechanical and chemical treatment. If a large amount of material is left after logging it will be necessary to chop or shear the sites. Both of these areas have an understory of river cane which will require a herbicide treatment, probably with Tordon. These treatments will be followed by prescribed burning and hand planting. If all of this work is required the cost will be in the neighborhood of \$250 per acre. Total regeneration costs are estimated at \$19,920, Table 16.

#### **Gulf Coast Substation:**

Regeneration work on the Gulf Coast Substation began in 1991 with a clearcut of 40 acres and a shelterwood cut of 40 acres. The clearcut area

Figure 33. Timber sales provisionally planned for the Gulf Coast Substation.

**GULF COAST  
SUBSTATION**  
BALDWIN COUNTY, ALABAMA  
720 ACRES



- Provisional Harvest, shelterwood trees to be removed when regeneration is adequate.

Table 10. Stumpage value and expected regeneration cost for recommended sale of timber on Area I of the North Auburn Unit.

| <u>Stumpage Value:</u> |                         |                 |
|------------------------|-------------------------|-----------------|
|                        | <u>Volume</u>           | <u>Value</u>    |
| Pine Sawtimber         | 41.5 MBF @ \$175/MBF    | \$7,262         |
| Hardwood Sawtimber     | 42.5 MBF @ \$ 60/MBF    | 2,550           |
| Pine Cordwood          | 54.5 Cords @ \$ 18/Cord | 981             |
| Hardwood Cordwood      | 17.5 Cords @ \$ 5/Cord  | 87              |
| TOTAL                  |                         | <u>\$10,880</u> |

| <u>Regeneration Cost:</u> |                       |                |
|---------------------------|-----------------------|----------------|
|                           |                       | <u>Cost</u>    |
| Drum Chopping             | 10 acres @ \$65/acre  | \$650          |
| Herbicide Application     | 10 acres @ \$45/acre  | 450            |
| Chemical                  | 3 gals @ \$325/gal    | 975            |
| Hand Planting             | 10 acres @ \$ 50/acre | 500            |
| Loblolly Pine Seedlings   | 7.5M @ \$ 35/M        | 262            |
| TOTAL                     |                       | <u>\$2,837</u> |

has been regenerated. The shelterwood cut has not yet resulted in sufficient regeneration to remove the overstory. No additional harvesting is planned for the Gulf coast substation until regeneration on both of these areas is well established.

The shelterwood stand is made up of about twenty large longleaf pine per acre. The stand was treated in 1992 with herbicide to control hardwoods and has been burned to prepare a seedbed under the stand. To date only a small amount of regeneration is present and the site will probably require more prescribed burning and additional herbicide work to maintain conditions for a good seed catch. As soon as the seedling count in the understory reaches sufficient levels, about 5000 seedlings per acre, the overstory should be removed. Harvest of the overstory will probably not be made during the next five years, but is listed here in case it is needed, Figure 33.

Volume within the shelterwood area is estimated at 186 MBF of pine sawtimber with little hardwood or cordwood volume. When sold this sale should bring about \$27,000. No additional treatments should be needed following harvest, Table 17.

#### **Lower Coastal Plain Substation II:**

Harvest cutting and improvement cutting are planned for Compartment II of the Lower Coastal Plain Substation for 1998, Figure 34. For management purposes, the Lower Coastal Plain Substation is divided into two compartments. Compartment II consists essentially of that portion of the unit west of the access road to Ellis Ferry boat ramp and contains 573 forested acres, 470 acres of which are considered as commercially operable.

# AREA II LOWER COASTAL PLAIN SUBSTATION WILCOX COUNTY, ALABAMA

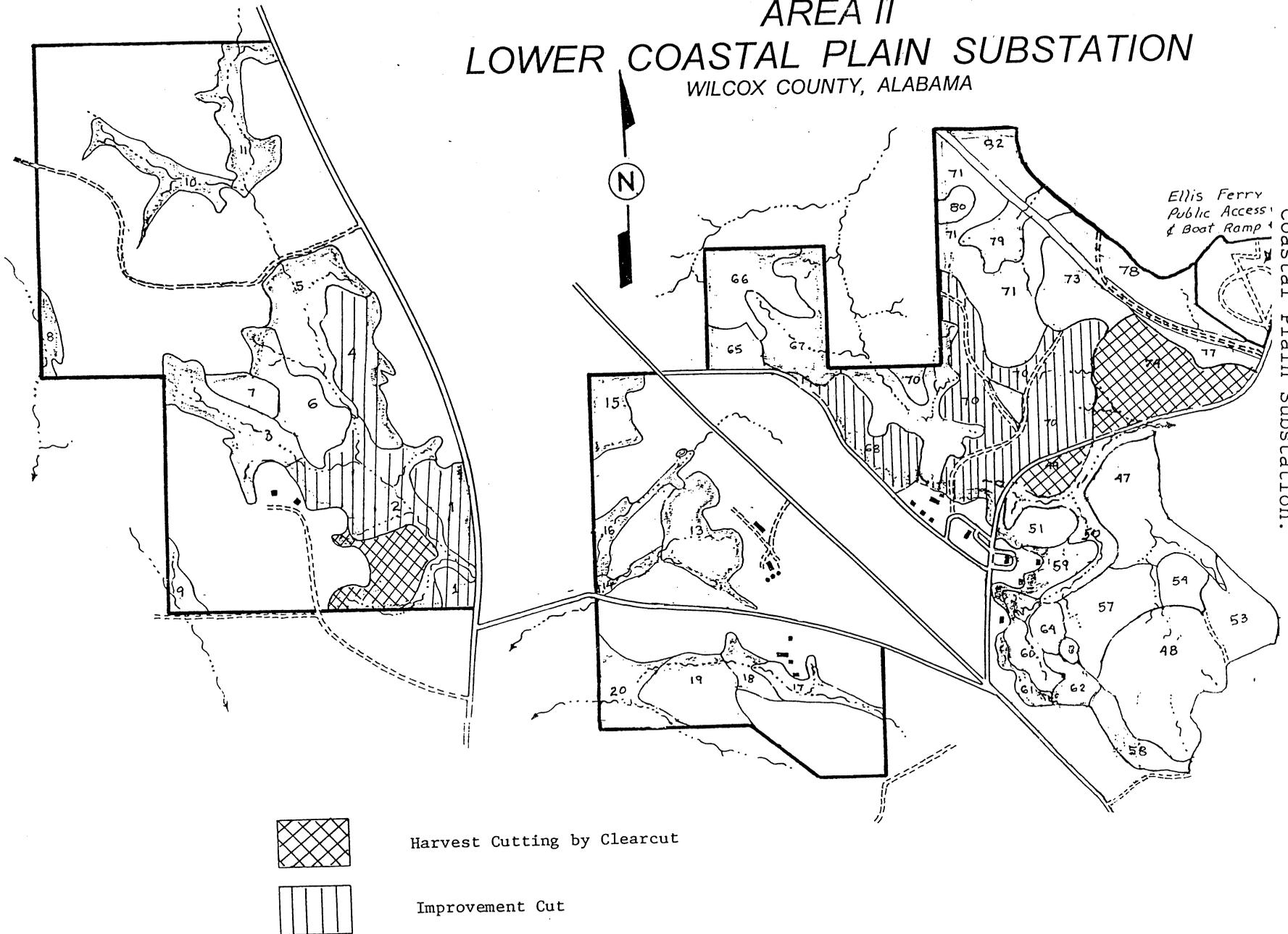


Figure 34. Timber sales planned for Area II of the Lower Coastal Plain Substation.

**Table 18.** Stumpage value and expected regeneration cost for recommended sale of timber on Area II of the Lower Coastal Plain Substation.

**Stumpage Value:**

|                    | <u>Volume</u>            | <u>Value</u>    |
|--------------------|--------------------------|-----------------|
| Pine Sawtimber     | 272.5 MBF @ \$225/MBF    | \$61,200        |
| Hardwood Sawtimber | 33.5 MBF @ \$ 60/MBF     | 2,010           |
| Pine Cordwood      | 675.0 Cords @ \$ 18/Cord | 12,150          |
| Hardwood Cordwood  | 202.0 Cords @ \$ 5/Cord  | 1,010           |
| TOTAL              |                          | <u>\$76,370</u> |

**Regeneration Cost:**

|                          |                       | <u>Cost</u>     |
|--------------------------|-----------------------|-----------------|
| Herbicide Application    | 60 acres @ \$ 45/acre | \$2,700         |
| Chemical                 | 15 gal @ \$325/gal    | 4,875           |
| Prescribe Burn           | 60 acres @ \$ 10/acre | 600             |
| Hand Planting            | 60 acres @ \$ 50/acre | 3,000           |
| Loblolly Pine Seedlings  | 45M @ \$ 35/M         | 1,575           |
| Herbicide Spot Treatment | 60 acres @ \$ 30/acre | 1,800           |
| TOTAL                    |                       | <u>\$13,750</u> |

The Lower Coastal Plain has received several harvest cuts over the past decade, but only one has been conducted on the western portion of the station. As a result most of Compartment II is in sawtimber size classes. Currently 86% of the compartment's forest is in sawtimber, 7% in large poles, 1% in small poles and 6% in regeneration. The harvest cutting planned is intended to continue the process of establishing diversity in size classes. The improvement cutting will remove high risk trees from several stands of pine sawtimber. The purpose of the cutting is maintain vigor and reduce risk of loss to insects and disease.

The areas chosen for harvest cover a total of about 50 acres. These stands are occupied by overmature pine or by a mixture of overmature pine and hardwood which should be converted to pine. Mortality has been high in these stands during the past five years and stocking is now well below an acceptable level. The planned improvement cutting covers a total of 120 acres. The majority of the cutting will be in older pine stands to remove risk trees from stands which may not be harvested for another twenty years.

As recommended, the sales contains an estimated 272.5 MBF of pine sawtimber, 33.5 MBF of hardwood sawtimber, plus an additional 675 cords of pine and 122 cords of hardwood pulpwood. The timber is of average quality and access is good. The timber should yield about \$76,370, Table 18.

The clearcut site will be reassessed following logging, but regeneration will likely consist of application of herbicide to control hardwoods, prescribe burning and planting of improved loblolly pine. The area will likely require herbicide spot treatment to reduce hardwood competition a year after planting. The improvement cut will require no post sale treatment. Total regeneration cost is estimated at \$13,750, Table 18.

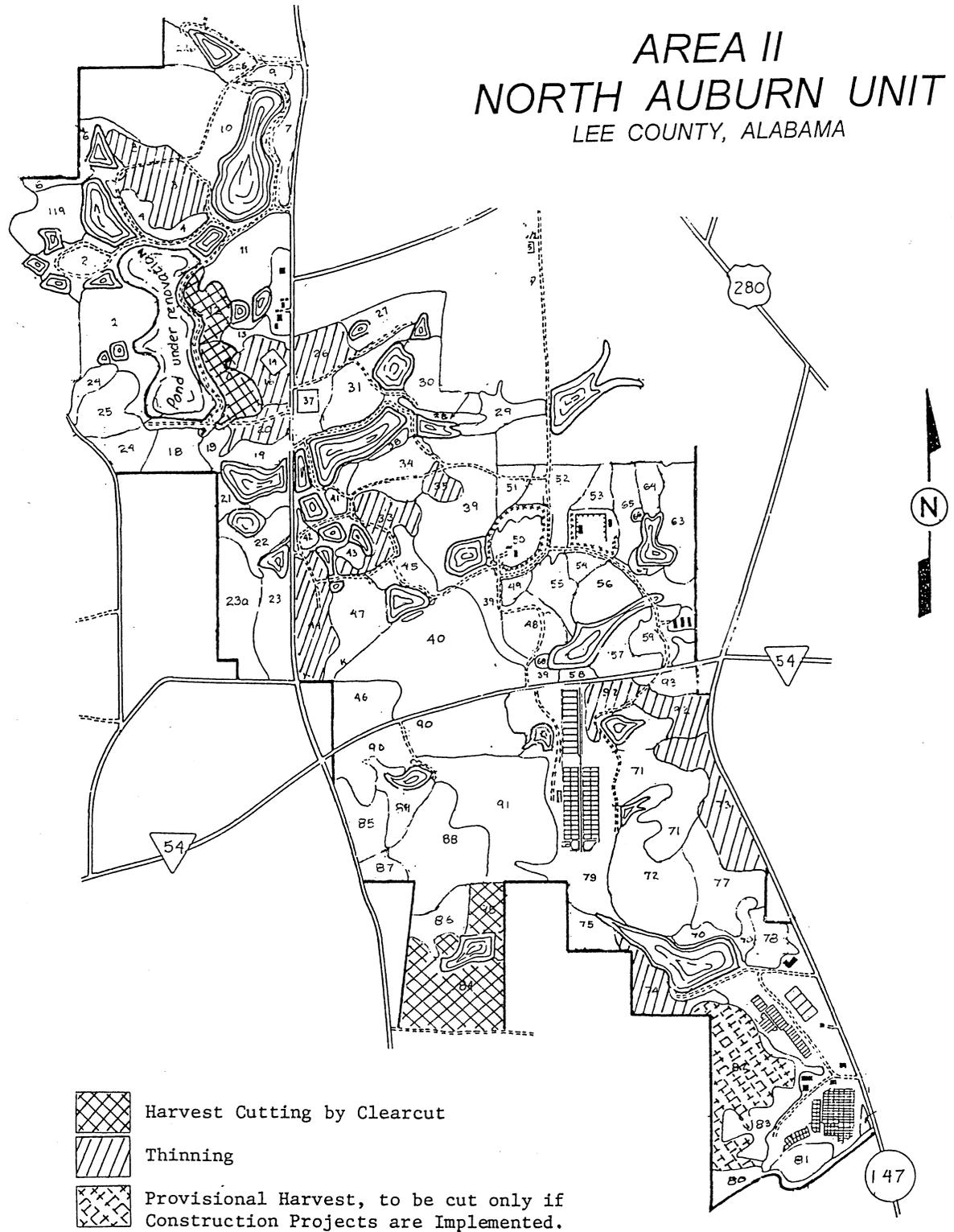
### North Auburn III:

Harvest cutting and thinning are recommended for Compartment III of the North Auburn Unit, Figure 35. Compartment III is made up of the land assigned to the Fisheries Department. The compartment contains 896 acres of forested land 808 acres of which is classified as commercially operable. Currently 9% of the woodland is in regeneration, 26% in small trees, 20% in small poles, 2% in large poles and 43% in sawtimber. To maintain this balance of size classes a regeneration cut is planned for 1999. In addition plans call for thinning a number of young pine stands.

Two areas have been selected for harvest cutting. One of these areas is a 25 acre stand of mixed pine which was apparently planted as a spacing study in 1942. There is no record of this study after it was planted. The timber is now overmature and due for harvest. The other site is a 13 acre band of poor stocked and poor quality pine sawtimber along the east side of the Department of Fisheries storage pond #6. The pond is scheduled for renovation work and it is desirable to conduct harvest and regeneration before fisheries research resumes in the pond.

A number of small pole pine stands, totaling about 130 acres, are in need of thinning. The stands were planted in abandoned agricultural fields following Kudzu control between 1975-78. To help control regrowth of the Kudzu, the pines were planted on tight spacing. Pine beetles are becoming a serious problem in these stands and thinning is badly needed. Re-inventory is scheduled for 1999 in the compartment, but this work will proceed as soon as a merchantable sale can be prepared.

Figure 35. Timber sales planned for Area III of the North Auburn Unit.



**Table 19a.** Stumpage value and expected regeneration cost for recommended sale of timber on Area III of the North Auburn Unit.

| <u>Stumpage Value:</u> |                         |                 |
|------------------------|-------------------------|-----------------|
|                        | <u>Volume</u>           | <u>Value</u>    |
| Pine Sawtimber         | 232.5 MBF @ \$175/MBF   | \$40,687        |
| Pine Cordwood          | 231.0 Cords @ \$18/Cord | 4,158           |
| Hardwood Cordwood      | 45.0 Cords @ \$5/Cord   | 225             |
| TOTAL                  |                         | <u>\$45,070</u> |

| <u>Regeneration Cost:</u> |                      |                |
|---------------------------|----------------------|----------------|
|                           |                      | <u>Cost</u>    |
| Drum Chopping             | 15 acres @ \$85/acre | \$1,275        |
| Herbicide Application     | 33 acres @ \$45/acre | 1,485          |
| Chemical                  | 8.5 gals @ \$325/gal | 4,247          |
| Prescribe Burning         | 33 acres @ \$10/acre | 330            |
| Hand Planting             | 33 acres @ \$50/acre | 1,650          |
| Loblolly Pine Seedlings   | 25M @ \$ 35/M        | 875            |
| TOTAL                     |                      | <u>\$9,862</u> |

| <u>Kudzu Treatment:</u> |                       |                |
|-------------------------|-----------------------|----------------|
|                         |                       | <u>Cost</u>    |
| Prescribe Burning       | 130 acres @ \$10/acre | \$1,300        |
| Spot Herbicide Tmt      | 75 acres @ \$15/Acre  | 1,225          |
| TOTAL                   |                       | <u>\$2,525</u> |

**Table 19b.** Stumpage value and expected regeneration cost for provisional sale of timber on Area III of the North Auburn Unit.

| <u>Stumpage Value:</u> |                         |                 |
|------------------------|-------------------------|-----------------|
|                        | <u>Volume</u>           | <u>Value</u>    |
| Pine Sawtimber         | 225.0 MBF @ \$175/MBF   | \$39,375        |
| Hardwood Sawtimber     | 45.0 MBF @ \$60/MBF     | 2,700           |
| Pine Cordwood          | 186.0 Cords @ \$18/Cord | 1,548           |
| Hardwood Cordwood      | 65.0 Cords @ \$5/Cord   | 325             |
| TOTAL                  |                         | <u>\$43,948</u> |

| <u>Regeneration Cost:</u> |                      |                |
|---------------------------|----------------------|----------------|
|                           |                      | <u>Cost</u>    |
| Drum Chopping             | 23 acres @ \$85/acre | \$1,955        |
| Herbicide Application     | 23 acres @ \$45/acre | 1,035          |
| Chemical                  | 5.5 gals @ \$325/gal | 1,787          |
| Prescribe Burning         | 23 acres @ \$10/acre | 230            |
| Hand Planting             | 23 acres @ \$50/acre | 1,150          |
| Loblolly Pine Seedlings   | 17M @ \$ 35/M        | 595            |
| TOTAL                     |                      | <u>\$9,865</u> |

Total volume in the recommended sales is estimated at 232.5 MBF of pine sawtimber plus 231 cords of pine and 45 cords of hardwood pulpwood.

The timber is of better than average quality and, although prices in the Auburn area are lower than much of the state, is estimated to sell for \$45,070, Table 19.

The clearcut areas will be reassessed following harvest, but regeneration efforts will likely include site preparation by herbicide application and prescribed burning followed by hand planting to loblolly pine. Replanting of slash pine and longleaf pine will be considered as an alternative to provide some variety in pine types on the unit. Regeneration is estimated to cost in the neighborhood of \$9,862, Table 19.

Kudzu control is an ongoing process on the North Auburn Unit but these efforts will need to be intensified in the thinned stands for a couple of years until the canopy closes. These efforts will include prescribed burning and spot treatment with herbicide. Treatment of the thinned stands is estimated at \$2,525, Table 19.

Permission is also requested for the sale of timber located on the hill to the west of the main fisheries ponds, Figure 35. The Department of Fisheries has plans for development of a water recycling system which would involve major construction through the area. It makes sense to harvest the timber in the area at that time. The timber here was also planted in 1942, apparently, as a part of spacing studies for loblolly and shortleaf pine. The timber is overmature and the stand is now falling apart.

This sale will only take place if the construction work proceeds. Currently the area has no reasonable access. If the sale is conducted,

revenue is estimated at \$43,948. Cost of follow up regeneration work will depend on the needs after construction is completed, but should be about \$9,800, Table 20.

**Turnipseed Ikenberry Place II:**

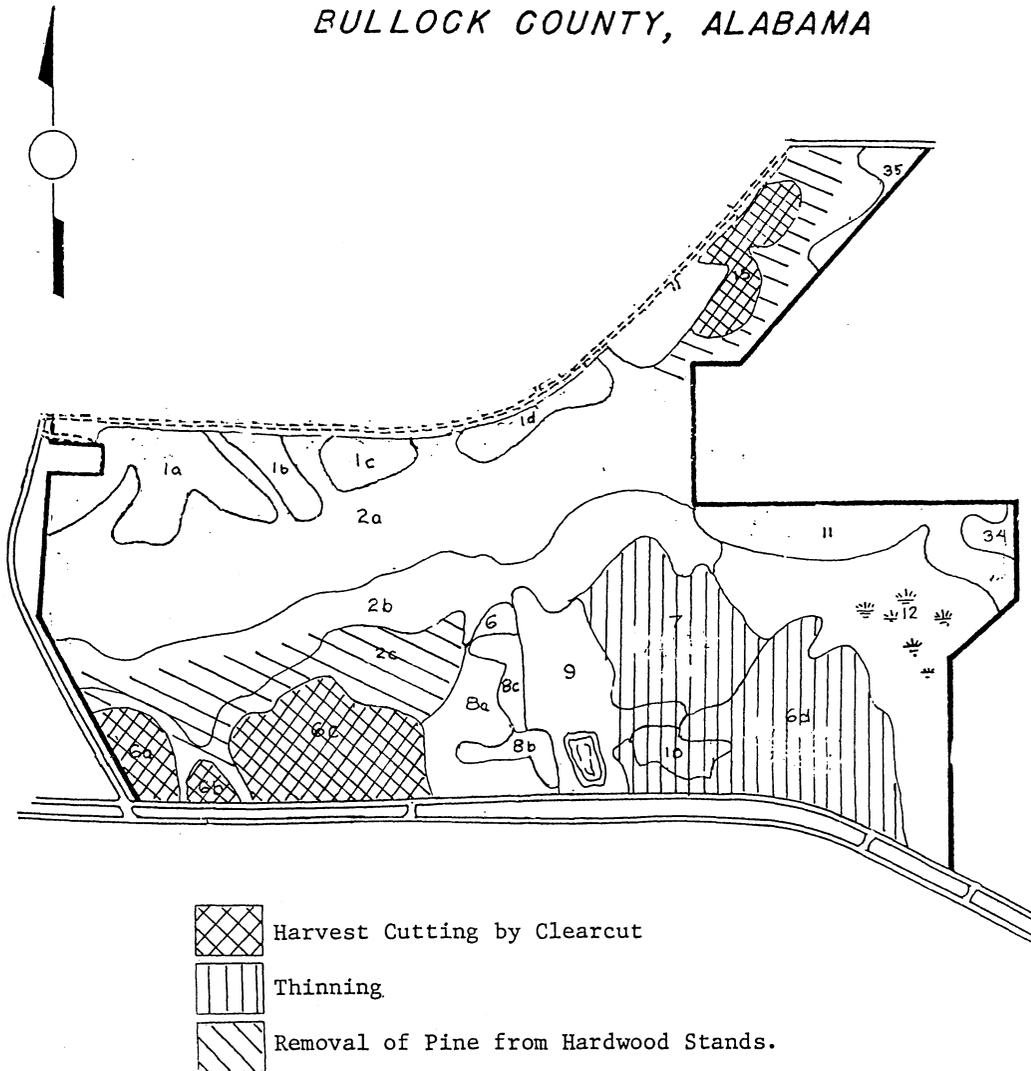
For management purposes the Turnipseed Ikenberry Place is split into two compartments. Compartment II consists of that portion of the unit south of the abandoned railroad which bisects the tract. The compartment contains 439 acres of which 386 acres is considered commercially operable. One harvest cut has been made in the compartment, but the size class distribution is still skewed toward the larger size classes. Currently 75% of the area is in large poletimber or sawtimber. Additional regeneration is needed on the compartment to improve the size class distribution.

Harvest cutting, thinning and improvement cutting are planned for Compartment II in 1999. The areas chosen for harvest are illustrated in Figure 36 and cover a total of 32 acres. Most of these areas are located on fields abandoned over fifty years ago and are now occupied by poorly stocked overmature pine with an understory of poor quality hardwoods. Mortality has been high in these stands and stocking is far below an acceptable level.

The planned thinning covers a total of 45 acres. The thinning is in stands of young pine sawtimber which contain a considerable quantity of smaller trees. These stand are adequately stocked and it will be desirable to keep them for at least another ten years. The thinning will remove suppressed trees to maintain vigor and reduce the risk of loss from insects or disease.

Figure 36. Timber sales planned for Area II of the Turnipseed Ikenberry Place.

AREA II  
TURNIPSEED-IKENBERRY PLACE  
BULLOCK COUNTY, ALABAMA



**Table 20.** Stumpage value and expected regeneration cost for recommended sale of timber on Area II of the Turnipseed-Ikenberry Place.

| <u>Stumpage Value:</u> |                        |                 |
|------------------------|------------------------|-----------------|
|                        | <u>Volume</u>          | <u>Value</u>    |
| Pine Sawtimber         | 245 MBF @ \$200/MBF    | \$49,000        |
| Hardwood Sawtimber     | 35 MBF @ \$60/MBF      | 2,100           |
| Pine Cordwood          | 920 Cords @ \$185/Cord | 16,560          |
| Hardwood Cordwood      | 165 Cords @ \$5/Cord   | 825             |
| TOTAL                  |                        | <u>\$68,485</u> |

| <u>Regeneration Cost:</u> |                       |                |
|---------------------------|-----------------------|----------------|
|                           |                       | <u>Cost</u>    |
| Aerial Spraying           | 36 acres @ \$ 40/acre | \$1,440        |
| Chemical                  | 9 gal. @ \$325/gal    | 2,925          |
| Prescribe Burn            | 36 acres @ \$10/acre  | 360            |
| Hand Planting             | 36 acres @ \$50/acre  | 1,800          |
| Loblolly Pine Seedlings   | 27M @ \$34/M          | 918            |
| Herbicide Spot Treatment  | 36 acres @ \$30/acre  | <u>1,080</u>   |
| TOTAL                     |                       | <u>\$8,523</u> |

An improvement cut is recommended for an additional 33 acres. This cutting will remove pine sawtimber where the stocking of pine is so low that a stand of small pole hardwood has developed in the understory. The hardwood stand is of good quality and can be managed as the main stand. The mature pine will be removed leaving only those pines which can be managed to rotation with the hardwood.

As recommended, the sale areas contain an estimated total of 245 MBF of pine sawtimber, 35 MBF of hardwood sawtimber plus 920 cords of pine and 165 cords of hardwood pulpwood. The timber is of better than average quality and access is good. The timber should sell for about \$68,370, Table 20.

The clearcut area will be reassessed following logging, but regeneration of the clearcut area will probably consist of aerial spray with herbicide followed by prescribed burning and hand planting of loblolly pine. The site will probably require spot treatment to control hardwood sprouts a year after planting. Regeneration costs are estimated at about \$8,523, Table 20. Neither the thinning or the improvement cut will require post sale treatment.

## Expenses and Estimated Cash Flow

### **Introduction:**

Implementation of this plan will require the full time effort of a forest manager and continued effort from station personnel. The majority of the treatments will be conducted through outside contractors. Only a few treatments such as Kudzu control, mowing and other maintenance can be accomplished by current station staff. Reliance on contractors is satisfactory in most cases, but it limits the type of silvicultural treatments which can be conducted. As the Experiment Station forest is developed , it may be advisable to add station employees assigned to forest work in order to gain flexibility.

Funding from the Experiment Station will be required to provide for the salary of the forest manager, travel expenses, cost of regeneration and other cultural treatments and to provide for maintenance. The forest manager is employed in the School of Forestry and paid from state allocated research funds. Travel, part time labor, and maintenance expenses are handled through School of Forestry accounts and reimbursed from the Agricultural Experiment Station auxiliary accounts. Major treatment expenses are handled directly through the Experiment Station accounts.

### **Cash Flow:**

Cash flow for the Experiment Station forest as presented in Tables 21 and 22 are a series of educated guesses involving both revenue and expenses. Revenue estimates are intentionally conservative and are based on current prices. The total cost of silvicultural treatments is difficult to predict. In general the most intensive treatment envisioned was used for cost estimation for regeneration. In many cases a less expensive

treatment will be used. The cash flow is presented for long term budget planning. It is not for the purpose of financial analysis.

The timing of revenue and expenses is particularly hard to predict. Sales contracts are written to cover 12 -18 months and the timber may be cut at any time within that period. Regeneration will take place as soon as possible after the area is released by the buyer. The order of the sales may change if the priorities on the various substations change. To develop the cash flow, sales revenue is assumed to come in the year the sale is planned, Tables 7 through Table 20, Regeneration and other post sale treatments are assumed to take place the year after the sale. The first years regeneration expenses come from sales conducted under the previous plan and not yet complete.

Administration expenses for the purpose of cash flow include salaries, travel expenses, equipment and supplies for small projects as well as mowing and other routine maintenance jobs. The easiest method of estimating these expenses is to use a per acre charge. In this case a charge of \$7.00 per forested acre per year was used.

Overall, revenue from recommended sales is more than sufficient to offset costs. However, as Tables 21 and 22 illustrate the revenue and expenses vary widely. Furthermore, revenues are often deposited in accounts different from where expenses are charged. Because of the cooperation of all unit supervisors and the Director's office, work proceeded smoothly during the last five year management period. Continued administrative effort will be required to ensure that funds are available when needed.

**Table 21.** Source of revenue and expenses from forest management on the Alabama Agricultural Experiment Station.

|                                                         |                 |
|---------------------------------------------------------|-----------------|
| <u>1995</u>                                             |                 |
| *Sale Area I Lower Coastal Plain Substation.            | \$185,000       |
| Sale Area I Fayette Experimental Forest                 | 37,355          |
| Sale (Pasture Conversion) Piedmont Substation           | 35,140          |
| *Regeneration Arae I, Lower Coastal Plain Substa tion   | (42,000)        |
| *Regeneration Autauga Experimental Forest               | (7,560)         |
| *Regeneration Turnipseed-Ikenberry Place                | (13,200)        |
| *Regeneration Fayette Experimental Forest               | (8,750)         |
| Administration including maintenance salary and travel. | <u>(63,005)</u> |
| TOTAL                                                   | \$122,980       |
| <u>1996:</u>                                            |                 |
| Sale (Patch Cutting) Piedmont Substation                | \$100,435       |
| Sale Barbour Experimental Forest                        | 31,345          |
| Sale Area I, North Auburn Unit                          | 12,543          |
| Sale Upper Coastal Plain Substation                     | 4,827           |
| Regeneration Arae I, Fayette Experimental Forest        | (13,625)        |
| Pasture Conversion Piedmont Substation                  | (21,200)        |
| Administration including maintenance salary and travel  | <u>(63,005)</u> |
| TOTAL                                                   | \$51,320        |
| <u>1997:</u>                                            |                 |
| Sale Autauga Experimental Forest                        | \$74,600        |
| Sale Area II, Fayette Experimental Forest               | 63,850          |
| Sale Area II, Lower Coastal Plain Substation            | 18,981          |
| Sale Main Station                                       | 7,365           |
| Regeneration Piedmont Substation                        | (16,142)        |
| Regeneration Barbour Experimental Forest                | (14,100)        |
| Regeneration Arae I, North Auburn Unit                  | (12,543)        |
| Pasture Conversion Upper Coastal Plain Substation       | (4,355)         |
| Administration including maintenance salary and travel  | <u>(63,005)</u> |
| TOTAL                                                   | \$ (54,651)     |
| <u>1998:</u>                                            |                 |
| Sale E.V.Smith Center                                   | \$32,660        |
| Sale Area II, Lower Coastal Plain Substation            | 76,370          |
| Regeneration Autauga Experimental Forest                | (13,562)        |
| Regeneration Area I, Fayette Experimental Forest        | (12,864)        |
| Prescribed Burn Area I, Lower Coastal Plain Substation  | (810)           |
| Administration including maintenance salary and travel  | <u>(63,005)</u> |
| TOTAL                                                   | \$18,789        |
| <u>1999:</u>                                            |                 |
| Sale Area III, North Auburn Unit                        | \$45,070        |
| Sale Area II, Turnipseed Ikenberry Place                | 68,485          |
| Regeneration E.V. Smith Center                          | (19,820)        |
| Regeneration Area II, Lower Coastal Plain Substation    | (13,750)        |
| Administration including maintenance salary and travel  | <u>(63,005)</u> |
| TOTAL                                                   | \$16,980        |

**Table 22.** Estimated cash flow from the forested land on the Alabama Agricultural Experiment Station.

| <u>Year</u>  | <u>Sales Revenue</u> | <u>Regeneration Cost</u> | <u>Net Revenue</u> | <u>Administration Cost</u> | <u>TOTAL</u>     |
|--------------|----------------------|--------------------------|--------------------|----------------------------|------------------|
| 1995         | \$257,495            | \$ (71,510)              | \$185,985          | \$ (63,005)                | \$122,980        |
| 1996         | 149,150              | (34,825)                 | 114,325            | (63,005)                   | 51,320           |
| 1997         | 164,796              | (47,140)                 | 117,656            | (63,005)                   | 54,651           |
| 1998         | 109,030              | (27,236)                 | 81,794             | (63,005)                   | 18,789           |
| 1999         | 113,555              | (33,570)                 | 79,985             | (63,005)                   | 16,980           |
| <b>TOTAL</b> | <b>\$794,026</b>     | <b>\$ (214,281)</b>      | <b>\$579,745</b>   | <b>\$ (315,025)</b>        | <b>\$264,720</b> |



