To the Graduate Council:

I am submitting herewith a thesis written by Thomas Allan Meredith entitled "Fragmentation and other Institutional Changes in large, Forest Ownerships, Humphreys County, Tennessee, from 1945 to 1975." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Forestry.

Garland Ray Wells

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We have read this thesis
and recommend its acceptance:

Accepted for the Council:

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FRAGMENTATION AND OTHER INSTITUTIONAL CHANGES IN LARGE, FOREST OWNERSHIPS, HUMPHREYS COUNTY, TENNESSEE, FROM 1945 TO 1975

A Thesis

Presented for the

Master of Science

Degree

The University of Tennessee, Knoxville

Thomas Allan Meredith

August 1976

1288011

To my parents, Claude Elbert and Frances Ethlyn, for their encouragement and help in this thesis.

ACKNOWLEDGMENTS

The author expresses deep appreciation to his major professor, Dr. Garland Ray Wells, for his expert guidance and encouragement through the course of the author's studies and in the preparation and analysis of data for this thesis.

Appreciation is also extended to Dr. David M. Ostermeier and Dr. John C. Rennie for their encouragement and their serving as committee members.

Very much assistance was granted to me by Mr. John W. Fortner, Humphreys County, Tennessee, Tax Assessor. I would never have been able to gather my basic data without his aid.

Another contributor was Mrs. Anne P. Westbrook, Humphreys County, Tennessee, Register of Deeds. Her assistance is greatly appreciated.

Mr. A. R. Bateson and Dr. John Meadows, Tennessee Valley Authority, deserve special mention because it was through their efforts that the beginning data were obtained. Mr. Bob Gregory, also with the Tennessee Valley Authority, is thanked for his assistance in obtaining additional forest statistics on Humphreys County, Tennessee.

Two fellow-graduate students helped in obtaining some of the research data; they are John Lee Wells and James Levourn Wiggins. Thanks are extended to these two fellow-students.

Also, the author wishes to thank Mrs. Virginia Patterson, who was instrumental in helping the author with the computer analysis of the data.

Appreciation is given to Inland Container Corporation, for financial support for expenses incurred in data collection during the Summer of 1975.

Also, the author wishes to thank his two youngest sisters, Jennifer Leigh and Bobbi Jane, for their encouragement in this undertaking.

Finally, the author wishes to thank Dr. Donald A. Stumbo of The University of Tennessee Forestry Extension Service for his comments and suggestions upon reading a draft of this thesis.

ABSTRACT

The study dealt with institutional changes in large forest land tracts, 500 acres or larger, in Humphreys County, Tennessee. Register of Deeds records revealed changes in ownership, fragmentation, consolidation, and turnover over a 30-year period, 1945 to 1975.

In 1945, the Tennessee Valley Authority obtained records by professional abstracters of 48 forest land parcels, 500 acres and larger. These records provided the benchmark data for this study. In 1945, 48 original parcels contained 73,880 total acres, of which 71,617 acres were in forest. This forest acreage represented about 30 percent of the forest land of the county. All parcels were privately owned with ownership classes as follows: 50 percent (24) was held by individual owners; about 2 percent (1) was a partnership; about 21 percent (10) was held in estates; about 19 percent (4) was owned by private forest industry; and 8 percent (9) was owned by corporations other than forestry.

Tracing the individual 48 parcels revealed much fragmentation by 1975. Nineteen properties were fragmented into two or more smaller tracts. Five parcels had been fragmented so that each of their total woodland acreage was below 500 acres. Remaining properties had been reduced to 64,970 acres, of which 58,460 acres were forest land.

Consolidation was minimal, including only three properties totaling 1,969 acres, of which 452 acres were forest land. Two of these properties subsequently fragmented during the 30-year period.

By 1975, the original 48 parcels were expanded to 92 parcels of varying sizes. There were 143 sales or transfers to heirs over the 30-year period.

The number of partnerships increased nine-fold over the 30-year period. Fifteen of the individually owned properties had sold timber to forest industry, as evidenced by recorded deeds of two years or longer. Four of these were for 99 years. Industrial forest holdings were relatively stable over the 30-year period.

Fragmentation was found to be significantly associated with parcels containing less than 75 percent forest land and also by turnover as measured by the average number of sales weighted by years of tenure. That is to say, properties that sold more frequently tended to be more often broken into smaller tracts when adjusted to an average annual sales basis. As expected, the largest parcel remaining of the fragmented parcels had a higher assessed value per acre in 1975 than properties which did not fragment.

The average size of large forest tracts in Humphreys County is declining, which may tend to constrain deliberate forest practices due to diseconomies of size; and creates uncertainty regarding timber availability, especially in the long-run.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
	The Problem	1
	Study Objective	2
	Hypothesis	2
	Approach	2
	Data Processing and Statistical Methods Employed	4
II.	STUDY AREA—HUMPHREYS COUNTY, TENNESSEE	6
	History of Humphreys County	6
	Geographical Location	7
	Timber Resource Base	8
III.	LARGE, FOREST LAND PARCELS, 1945	10
	Ownership Classes	10
	Assessed Values	14
	Factors Related to Land Development	17
IV.	THIRTY YEARS OF INSTITUTIONAL CHANGES TO LARGE, FOREST LANDS	19
	Change in Land Status	19
	Ownership Classes	19
	Change in Ownership Pattern; Turnover and Sales	24
	Mortgages and Timber Deeds	31

CHAPTER PAGE

Consolidation 35

Fragmentation 38

V. MAJOR FINDINGS 46

Conclusions 46

Outlook and Implications of this Study 47

Summary 50

BIBLIOGRAPHY 52

APPENDIXES 57

EXPLANATION OF APPENDIX CONTENTS 58

APPENDIX A 60

APPENDIX B 79

APPENDIX C 110

APPENDIX D 118

APPENDIX E 140

APPENDIX F 149

VITA 154

LIST OF TABLES

TABLE		PAGE
I.	Statistical Figures for Properties in 1945	11
II.	Owner Classes, Total Acres, and Woodland Acres per Class in 1945	12
III.	Numbers and Percentages of Parcels per Ownership Class in 1945	13
IV.	Assessed Values in Dollars in 1945 by Owner Classes Including Means and Numbers in Each Owner Class	16
V.	Land Use and County Resident or Nonresident Information in 1945	18
VI.	Land Status of Original Property Over the 30-Year Period 1945—1975	20
VII.	Owner Classes in 1945 and 1975 with Total Acres in 1975 in Each Grouping of the Largest Parcel of the Original	21
VIII.	Ownership Classes and Numbers of Owners in Each Class with Total Acres and Woodland Acres of the Largest Parcel of the Original in 1975	23
IX.	Total Sales by Owner Classes with Mean Numbers of Sales by Owner Class	25
X.	Number of Rural (Nonsubdivided) Properties in 1975 by Owner Class	26

TABLE		PAGE
XI.	Number of Owners of Largest Parcel in 1975 Based on 1945 Owner Classes	28
XII.	Owner Classes and Numbers of Parcels per Class in 1975	29
XIII.	Assessed Value in Dollars in 1975 of Largest Parcel of the Original Based on 1945 Ownership Classes	32
XIV.	Largest Parcel in 1975—Property Encumbered with Percentages Encumbered for Each Class	33
XV.	Timber Deeds Past or Present for Any of the Original 48 Properties Over the 30-Year Period 1945—1975	34
XVI.	Timber Deeds Written in 30-Year Period	36
XVII.	Land Use and County Resident or Nonresident Information of Properties that Fragmented with Acreage in the Fragmented Property	39
XVIII.	Total and Woodland Acres in 1945 and 1975 Based on 1945 Ownership Class and 1975 Ownership Class	41
XIX.	Owner Classes and Total Acres and Woodland Acres in 1975 of all Parcels 500 Acres or Larger Based on 1975 Owner Classes	43
XX.	Major Area Classifications	62
XXI.	Timber Producing Acres Classified by Forest Types and Conditions	63

TABLE		PAGE
XXII.	County Area by Major Area Classes	65
XXIII.	Forest Area by Type and Stand Size, 1955	66
XXIV.	Humphreys County, Tennessee, Commercial Forest Area in Acres by Type and Stand Size	68
XXV.	Humphreys County, Tennessee, Commercial Forest Area in Acres by Type and Tree Stocking	69
XXVI.	Humphreys County, Tennessee, Commercial Forest Area in Acres by Type and Site	71
XXVII.	Total Area and Forest Area, 1971	72
XXVIII.	Commercial Forest Land by Ownership Class, 1971	74
XXIX.	Commercial Forest Land by Forest Type, 1971	75
XXX.	Commercial Forest Land by Stand Size and Class, 1971	75
XXXI.	Humphreys County Forest Landowners	141
XXXII.	Humphreys County Nonindustrial Private Landowners	144
XXXIII.	Chi-Square Table for Average Number of Sales per Year of each Parcel Versus Fragmented	150
XXXIV.	Chi-Square Table for Assessed Value per Acre in 1975 Versus Fragmented	151
XXXV.	Chi-Square Table for Percentage of Woodland Versus Fragmented	153

CHAPTER I

INTRODUCTION

Many studies in the past concerning the economics of forestry have been primarily interested in the institutional aspects of forestry. Studies of tenure and ownership patterns do much to explain the nature of the forest ownership problem and to indicate means of encouraging the development of sound forest practice (Rumsey and Duerr, 1975).

I. THE PROBLEM

In Tennessee, 11.5 million acres, or 90 percent, of the commercial forest land is privately owned (Murphy, 1972). About 2.2 million acres are controlled by private, nonindustrial owners, and each tract is 500 acres or larger in size. There is concern that these larger tracts are being broken up over time.

Fragmentation lowers the average size of forest ownership and thus can have serious effects on forestry efforts given the widely recognized diseconomies of size and scale in timber growing, marketing, and technology (Wells, 1968). Fragmentation can discourage intensive timber growing and create uncertainty regarding timber availability. The high fixed costs associated with modern equipment used in harvesting and forest practices require large tracts to efficiently operate (Walbridge, Jr. and Stuart, 1976).

II. STUDY OBJECTIVE

The purpose of this study was to determine what is happening to large forest holdings (500 acres or larger) with respect to changes in owners and size.

There were four basic things that could have occurred:

1. The ownerships could remain the same size with no change in owners.
2. The properties could be becoming smaller by being fragmented.
3. The parcels could be getting larger due to consolidation.
4. Consolidation and fragmentation could both be occurring on the same properties.

III. HYPOTHESIS

It is hypothesized that large, forest tracts, defined as those containing 500 or more acres of woodland, are slowly being broken up into a number of smaller tracts controlled by numerous owners. The forest ownership pattern in Humphreys County, Tennessee, was studied to test this hypothesis.

IV. APPROACH

Each county in the State of Tennessee maintains a Register of Deeds office in the county courthouse. This office contains the records of land transfers, properly recorded in an official deed book. This study is based on information obtained in the Humphreys County Register of Deeds office and verified by the local tax assessor.

A list of all landowners with holdings in excess of 500 acres in Humphreys County, Tennessee, was obtained from the Tennessee Valley Authority (TVA) for the year 1945. This represented 48 parcels totaling 73,880 acres, with 71,617 acres of forest land. This was approximately 30 percent of the entire forested area in the county. TVA's original listing was obtained in 1945 by two professional abstracters from the Trustee's office in Humphreys County and provided the base for this study.

The chronological transfer of each of the original 48 forest parcels was followed in the county's record books noting the loss or addition of land to each of the properties over a 30-year period from 1945 through August 1975. Any timber deeds were recorded for each of the land units.

A type of "family tree" diagram was used to record all data. Any changes in ownership, the amount of property involved in each transfer, and the year sold or transferred were recorded and diagramed. The original property was listed first with the acreage and the owner in 1945. If either a sale of the property intact or fragmentation of the large holding occurred, a line was drawn downward and then perpendicular to the right; and the fragmented parcel or intact sale of the original parcel was recorded on this line with the new owner, the year sold or transferred, and the acreage involved. This process was repeated until all sales or consolidations were recorded for each original tract.

In this study, a sale was defined as the transfer of the entire tract or any portion of the entire tract to another party. This included properties from undivided estates transferred to heirs. A fragmentation was a special type of "sale" where the property is concomitantly sold and

broken down into smaller units. Turnover was used as an indirect measure of tenure defined as the average number of sales per property per year. Tenure could not be directly measured, since the length of ownership prior to 1945 was unknown.

V. DATA PROCESSING AND STATISTICAL METHODS EMPLOYED

The data were computerized for analysis using three card decks (a summary deck, a fragmentation deck and a tenure deck). The first deck, consisting of 48 cards corresponding to the original 48 land units, summarized the data obtained from 1945 to 1975. The second deck of 28 cards dealt with only the properties that were fragmented into two or more smaller parcels of land. The third deck recorded the number of years a particular piece of land remained in one ownership and other similar data pertaining to tenure. This deck consisted of 113 cards—one card for each original tract and one for each fragmented tract. The reason that there are more than 76 cards (28 plus 48) for the tenure deck is because the fragment cards contain as many as three fragmented properties on one card, and the tenure deck treated each one of these fragmented properties as a separate card.

A complete listing for all three decks, with a code sheet for each, appears in Appendix C.

The original 48 land units, as they existed in 1945, were divided into five owner classes. These classes were individual, partnership, estate, corporation other than forestry, and forest industry. Each of the five owner classes was separated, and analyzed independently.

Data processing procedures of the Statistical Analysis System (SAS) package program was run on summary decks of all 48 original properties to obtain means, frequency counts and percentages of data. The properties were also analyzed to determine what factors were associated with the breaking up of large parcels. Chi-square tests were made to determine which factors were significantly related to fragmentation occurring to the original 48 properties.

CHAPTER II

STUDY AREA—HUMPHREYS COUNTY, TENNESSEE

I. HISTORY OF HUMPHREYS COUNTY

Humphreys County belongs primarily to that geological division of Tennessee known as the Highland Rim. A portion of the county lies in the Western Valley, adjacent to the Tennessee River geological division. The prevailing rocks of the county are freestone and limestone.

The county is on the edge of the great iron belt of Hickman County, Tennessee, and has considerable amounts of iron ore. In 1833, an attempt was made to develop the iron industry of the county, and a furnace was erected in the spring of that year on Big Richland Creek, eight miles west of Waverly. The iron ore operation proved unprofitable, and it was discontinued in 1835. This was the first and only attempt at using the iron ore resources of the county.

All of Humphreys County was granted by the State of North Carolina (at the time this was a portion of that state) to the survivors of the Continental War. Later these lands were sold and farmed out in smaller tracts to the settlers as they arrived from the older states.

The early history of the county shows an interest in the timber. After the Civil War, Major Palmer and his father, City Judge of Findlay, Ohio, became interested in the lumber trade in Johnsonville, Tennessee, and brought timber over a vast area. He had access to customers via

water; the Mississippi River and tributaries, Ohio River, and the Cumberland River (Humphreys County History Book).

Today there are four active sawmills in the county. There is a paperboard mill in operation and a preservative treating plant for treated posts and poles (Tennessee Department of Conservation, 1975).

II. GEOGRAPHICAL LOCATION

Humphreys County, Tennessee, is bordered on six sides by Houston, Dickson, Hickman, Perry, Decatur, and Benton Counties, all of which exist in Middle Tennessee.

Rural Characteristics

The county is rural in nature, with the County Seat of Waverly being the only town of any size. Waverly contained 3,794 individuals in the 1970 Census. The county population by the 1970 Census was 13,560 individuals (1970 Census of Population).

The total land area in the county is 357,800 acres, or 555 square miles. Of this total, 69 percent of the county was in commercial forest in 1945 (TVA, 1945). This study accounted for 73,880 acres, or 20.6 percent of the total land area in the county.

Soil Types

The soils differ widely in color, texture, consistency, fertility, relief, and also in conditions of stoniness, erosion and moisture. Largely on the basis of such differences, they have been classified and mapped into 38 units consisting of 24 soil types, 11 soil type phases, and three miscellaneous land types.

The well-drained, well-developed soils of the county have gray surface soils and yellow or red subsoils, apparently belonging to the great soil groups of yellow Podzolic and Red Podzolic soils.

The soils are grouped broadly into five classes according to conditions of productivity, workability and conservability.

Humphreys County has 57 percent of its soils in two class groupings which contain most of the forest land. The 12 percent of the forested acreage not included in these two groupings is in class three.

The two class groupings containing the majority of the forest land are composed of soils of the following types: first group—Baxter, Paden, Bodine, Box, Robertsville, Guthrie, and Melvin; second group—Baxter, Paden, Bodine—rough, strong land, and riverwash (U.S. SCS, 1946).

Climate

The mean annual precipitation is 52.90 inches, including approximately 7.5 inches of snow. The general climate is temperate and continental. The mean temperature is about 59.8°F. The average frost-free season is 197 days, extending from April 8 to October 22 (U.S. SCS, 1946).

III. TIMBER RESOURCE BASE

To show the condition of the total timbershed in this study over the 30-year period, TVA timber surveys for 1941, 1956 and 1969 were used to describe the resource base. In addition, the 1973 United States Forest Service resource appraisal of the area was utilized. (These timber surveys are analyzed in detail in Appendix A.)

Although forest survey data indicate that Humphreys County's physical supply of timber is increasing, such an increase does not necessarily mean that more timber will be marketed. It may be that certain economically important size classes of timber are being harvested faster than they are being replenished. Furthermore, there may be a preponderance of owners who are willing to sell timber, but some may have timber that is uneconomical to harvest due to diseconomies of size and scale. Also a sizable percentage of owners of merchantable timber may not be willing to sell timber.

A look at the pulpwood production in Humphreys County may indicate the magnitude of timber availability in the years that pulpwood procurers have been operating in the area. In 1970, 21,911 standard cords were harvested (Beltz, 1971). This was the first year that a major pulpwood using industry began operation in the county. In 1971, the production was 48,120 standard cords (Bellamy, 1972). The 1972 production was 48,790 standard cords, almost the same as in 1971 (Bertelson, 1973). The 1973 harvest was 42,309, a drop of 6,481 standard cords. The 1974 production was 29,844 standard cords, and 14,500 standard cords which was taken by a whole tree chipper, for a total 1974 yield of 44,344 standard cords (Bertelson, 1975).

It appears that the production has fallen off slightly within the period 1972 to 1974. Whether this reduction in wood supplies was due to fragmentation is not known, but a follow-up study which could answer this question might be suggested.

CHAPTER III

LARGE, FOREST LAND PARCELS, 1945

In 1945, there were 48 parcels of land in Humphreys County containing forested acres of at least 500 acres (Table I). The 48 original parcels contained 73,880 total acres of which 71,617 acres (96.9 percent) were in forest. These forest acreages represented about 30 percent of the county timbershed. Table I also shows the average size of properties to be about 1,539 acres, with 1,492 acres in forest land. All of these parcels were privately owned.

I. OWNERSHIP CLASSES

Table II shows the classification of ownership and the total and woodland acres of the 48 original properties in 1945. Private individuals controlled 49,379 acres in the form of individual owners, partnerships, and estates. These holdings comprised 66.8 percent of the total acreage. The remaining 24,501 acres were in the hands of corporate owners of some nature, either forest (wood-using) industry or corporations other than forestry. This industry land comprised 33.2 percent of the total acreage.

The owner classes and number of parcels in each class in 1945 are shown in Table III. The table shows one-half or 24 properties in 1945 in control by individual private owners. One property was in the hands

TABLE I

STATISTICAL FIGURES FOR PROPERTIES IN 1945

All Properties 1945		Mean	Low	High	Number of Properties
Total acres	73,880	1539	560	5436	48
Woodland acres	71,617	1492	500	5486	48

TABLE II

OWNER CLASSES, TOTAL ACRES, AND WOODLAND ACRES PER CLASS IN 1945

Owner Class	Number	Total Acres	Woodland Acres
Individual	24	25,704.0	24,016.0
Partnership	1	1,000.0	1,000.0
Estate	10	22,675.0	22,100.0
Corporation other than forestry	4	5,783.0	5,783.0
Forest industry	9	18,718.0	18,718.0
Totals	48	73,880.0	71,617.0

TABLE III

NUMBERS AND PERCENTAGE OF PARCELS PER OWNERSHIP CLASS IN 1945

Owner Class	Number	Percentage
Individual	24	50.0
Partnership	1	2.1
Estate	10	20.8
Corporation other than forestry	4	8.3
Forest industry	9	18.8
Totals	48	100.0

of a partnership; 10 properties were in estates;[1] four parcels were controlled by corporations other than forestry; and nine tracts were in the hands of forestry industry, for a total of 48 properties in all owner classes. Figure 1 shows the location in the county of the 48 properties.

II. ASSESSED VALUES

The assessed values (in dollars) of the original property of all ownerships by owner classes are given in Table IV. In the table, the mean assessment per parcel is given for each owner class. The assessed value of the industrial forest land was highest at $4.74 per acre. The assessed value per acre of all three of the private noncorporate owner classes taken together was only $2.38. Two reasons may explain why forest industry was almost doubly assessed: first, they were nonresidents* of the county; second, industrial lands would be expected to have more productive lands with higher timber volumes and values than other ownerships. Timber values were not exempt from the assessment process until 1973, by the Property Assessment and Classifications Act.

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[1]These were largely undivided estates but often they are not changed to new owners until long after the estates are settled.

*Nonresident is one who resides outside the confines of Humphreys County, Tennessee. Resident is defined in this work as an individual who lives within the confines of Humphreys County, Tennessee. All people owning land in the county and residing outside the county are considered nonresidents.

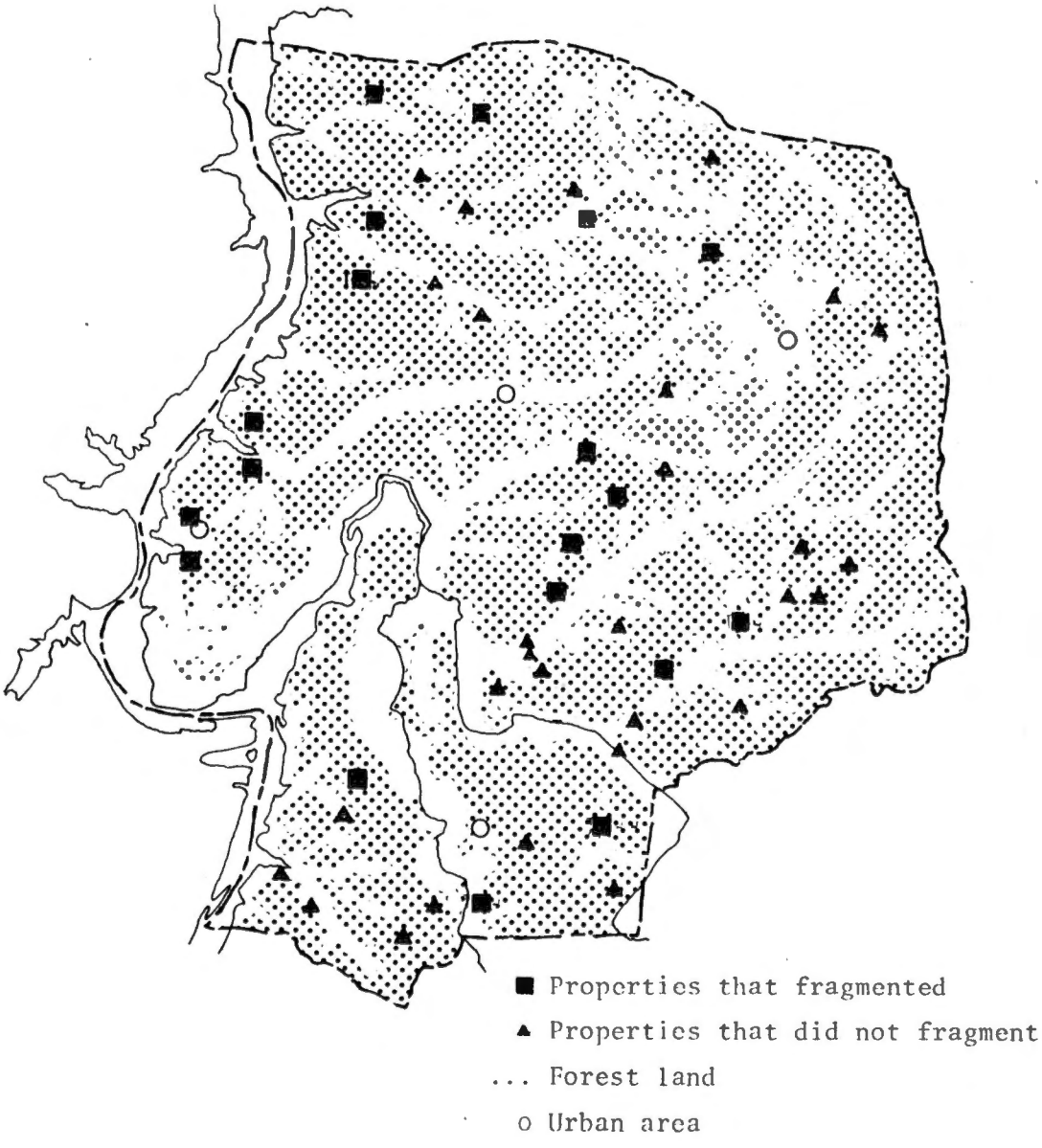


Figure 1. Humphreys County Tennessee—approximate location of large forest land tracts.

Source: TVA Department of Forestry Relations, August 1945.

TABLE IV

ASSESSED VALUES IN DOLLARS IN 1945 BY OWNER CLASSES
INCLUDING MEANS AND NUMBERS IN EACH OWNER CLASS

Owner Class	Number	Assessed Value	Mean	Average Per Acre
Individual	24	$ 56,985.00	$ 2,374.38	$2.22
Partnership	1	$ 1,000.00	$ 1,000.00	$1.00
Estate	10	$ 65,800.00	$ 6,580.00	$2.90
Corporation other than forestry	4	$ 8,970.00	$ 2,242.50	$1.55
Forest industry	9	$ 88,704.00	$11,088.00	$4.14
Totals	48	$221,459.00	$ 4,711.89	$3.00

III. FACTORS RELATED TO LAND DEVELOPMENT

The status of the land, either forest or nonforest, and the county resident or nonresident information in 1945 may give clues to what happened to the land over the next 30 years.

Table V shows the land use, whether forested or nonforested, and the county resident or nonresident information in 1945. The table is divided into land use and county resident or nonresident classes as urban and resident (platted), urban and nonresident, agricultural and forest and resident, and agricultural and forest and nonresident.

Table V reveals that in 1945, 58.34 percent of the owners was nonresidents of Humphreys County, Tennessee. There was a total of 28 owners out of 48 who were nonresidents. This fact has important implications because nonresidents sometimes differ from residents in their attitudes toward forestry practices on their lands. Nonresidents are sometimes less willing to make timber sales because they are often not dependent on their land for income (Schallau, 1965).

Of the total 28 nonresidents, nine were forest industry. Industrial forest owners would be expected to manage their forest holdings with some degree of professional skill (Nelson, 1967).

TABLE V

LAND USE AND COUNTY RESIDENT OR NONRESIDENT INFORMATION IN 1945

Land Use	Number	Percentage
Urban and resident (platted)	0	0.00
Urban and nonresident	3	6.25
Forest and resident	16	33.33
Forest and nonresident	23	47.92
Agricultural and forest and resident	4	8.33
Agricultural and forest and nonresident	2	4.17
Totals	48	100.00

CHAPTER IV

THIRTY YEARS OF INSTITUTIONAL CHANGES TO LARGE, FOREST LANDS

Considerable institutional changes have occurred in the land ownership pattern for large acreages in Humphreys County during the 30-year period covered in this study. The individual 48 parcels were traced from 1945 and they revealed much fragmentation by 1975. Properties had been reduced to 64,970 total acres of the tracts in 1945, with 500 acres or larger of the largest remaining parcel; 58,460 acres of this total was forest land. The original 48 properties had expanded to 92 parcels by 1975.

I. CHANGE IN LAND STATUS

To observe how the properties have changed in size over the 30-year period, Table VI summarizes the land status of the original 48 land units over the 30-year period. The greatest change occurred by properties becoming fragmented into smaller units. This fragmentation often led to a further breaking of the already fragmented property. Only five properties remained intact and were not sold.

II. OWNERSHIP CLASSES

Table VII shows the owner classes in 1945 and 1975, with total acres in 1975 for each owner class of the largest parcel of the original, the largest parcel being the largest land unit left after fragmentation.

TABLE VI

LAND STATUS OF ORIGINAL PROPERTY OVER THE
30-YEAR PERIOD 1945—1975

Land Status Since 1945	Number	Percentages
No change in size	26	54.17
Fragmentation	19	39.58
Consolidation	1	2.08
Fragmentation and consolidation	2	4.17
Totals	48	100.00

TABLE VII

OWNER CLASSES IN 1945 AND 1975 WITH TOTAL ACRES IN 1975 IN EACH GROUPING OF THE LARGEST PARCEL OF THE ORIGINAL

Owner Class 1945	Number	Total Acres	Owner Class 1975	Number	Total Acres
Individual	24	22,177	Individual	21	16,138
Partnership	1	1,000	Partnership	8	12,795
Estate	10	19,538	Estate	3	8,700
Corporation other than forestry	4	5,180	Corporation other than forestry	6	10,164
Forest industry	9	18,577	Forest industry	10	18,675
Totals	48	66,472		48	66,472

Note: Includes the two subdivided properties and the consolidated properties.

Table VIII shows the ownership classes and numbers of owners in each class with total acres and woodland acres of the largest parcel of the original in 1975. Comparing this table with Table I (page 11) shows that the number of individual owners had decreased to 21 in 1975.

Partnerships had increased from one in 1945 to eight in 1975. This is probably due to the increase in taxes, as well as land values, it being easier for two or more individuals to share the burden of ownership than it is for one person to assume these costs.

Estates decreased from 10 in 1945 to three in 1975. These numbers tend to fluctuate as owners of land pass their holdings on to their heirs in the form of wills or trusts.

Corporations other than forestry showed a slight increase from four to six holdings in 1975. This increase was probably due to land speculation over the 30-year period in some of the original 48 land parcels.

Forest industry showed a modest gain of one ownership by 1975, as compared to 1945. This increase depends on the policy of the individual forest industries operating in the county, and it shows that they have not been too active in acquiring additional forest acreage in this particular area. The figures include three properties which had a total of 1,969 acres consolidated to the original properties.

It must also be remembered that the total acres and woodland acres in this table do not include the property which originated from the 1945 parcels and is now in the form of smaller fragmented parcels.

The total acres in the form of the largest parcel of the original was 66,472. Included in this total acreage were 59,806 acres of woodland.

TABLE VIII

OWNERSHIP CLASSES AND NUMBERS OF OWNERS IN EACH CLASS
WITH TOTAL ACRES AND WOODLAND ACRES OF THE
LARGEST PARCEL OF THE ORIGINAL IN 1975

Ownership Classes	Number	Total Acres	Woodland Acres
Individual	21	16,138	14,621
Partnership	8	12,795	10,307
Estate	3	8,700	7,052
Corporation other than forestry	6	10,164	9,685
Forest industry	10	18,675	18,141
Totals	48	66,472	59,806

Note: Above figures include three consolidated properties which were added to the original tracts and their subsequent fragmentations.

III. CHANGE IN OWNERSHIP PATTERN; TURNOVER AND SALES

Turnover, as used in this work, will be defined as the average number of sales per property per year.

Table IX lists the total sales by owner classes with mean numbers of sales by owner classes. The table shows that the most active sales based on the ownership classes in 1945 occurred with the one partnership which existed in 1945.

In 1975, the most number of sales per owner in the class was with the estates.

The table gives a total of 143 sales of all types, intact sales and fragmentation sales, in the 30-year period. Two tracts which were subdivided in 1950 are not included in this total.

There has been a considerable amount of owner changes or turnovers in the original property in the 30-year period. This turnover may be observed clearly in Table X, which gives the turnover or change in owners in each owner class in the 30-year period, based on the 1945 owner classes. Table X shows that of all properties, including fragments, there was a number of sales for all owner classes.

The estate figures do not include two ownerships which were platted into urban lots in 1950, and these two parcels would account for about 200 more sales if included in the total. These two properties are now included in the corporate limits of Waverly.

Forest industry lands had a total of 13 turnovers; however, all properties released by these companies were small, with the largest parcel sold containing only 90 acres.

TABLE IX

TOTAL SALES BY OWNER CLASSES WITH MEAN NUMBERS OF SALES BY OWNER CLASS

Owner Class	Total Sales	Mean 1945 Owner Class	Mean 1975 Owner Class
Individual	98	4.08	4.66
Partnership	6	6.00	0.66
Estate	13	1.30	4.33
Corporation other than forestry	21	5.25	3.50
Forest industry	5	1.25	0.50
Totals	143	3.488	1.785

Note: Two subdivided parcels deleted from total sales.

TABLE X

NUMBER OF RURAL (NONSUBDIVIDED) PROPERTIES
IN 1975 BY OWNER CLASS

Class	Number
Individual	58
Partnership	9
Estate	3
Corporation other than forestry	12
Forest industry	10
Totals	92

Note: The above totals do not include the two original tracts that were subdivided in 1950.

Corporations other than forestry had 22 owners over the 30-year period. Speculators bought and sold this property quite actively.

As would be expected, the individual owner class had the largest number in its group because there were more to begin with in 1945. There were 98 turnovers in the individual owner class in the 30-year period.

Partnerships had a total number of six owners. This was considerable since only one partnership existed in 1945.

Estates had a turnover rate of 18. This should be expected because the nature of an estate lends itself to changes in ownership.

The number of owners of largest parcels in 1975 based on the 1945 owner classes is shown in Table XI. As can be seen, there are multiple owners for some of the properties. This is substantiated by the nine partnerships in the 1975 owner classes. The number of partnerships increased 900 percent from 1945 to 1975. The number of owners in 1975 of the largest parcel based on the 1945 owner classes was 28 individual, one partnership, 13 estates, four corporations other than forestry, and nine forest industry, for a total of 55 owners.

The owner classes and numbers of parcels per class are presented in Table XII. Probably the most important information that this table reveals is the fact that the number of ownerships classified as a partnership increased dramatically. The increase was from one to nine owners in this class. In my opinion, one reason for this increase was monetary constraints which are placed on present-day property owners, or it simply costs a great deal of money to own land today. The land tracts of today are much more expensive to purchase, regardless of inflation,

TABLE XI

NUMBER OF OWNERS OF LARGEST PARCEL IN 1975
BASED ON 1945 OWNER CLASSES

Owner Class	Number	Percentages
Individual	28	50.91
Partnership	1	1.82
Estate	13	23.64
Corporation other than forestry	4	7.27
Forest industry	9	16.36
Totals	55	100.00

TABLE XII

OWNER CLASSES AND NUMBERS OF PARCELS PER CLASS IN 1975

Owner Class	1975
Individual	58
Partnership	9
Estate	3
Corporation other than forestry	12
Forest industry	10
Total	92

than they were in 1945, so it appears that present-day owners of large tracts are banning together in groups of two or more to form cooperative landowner partnerships. This allows each owner an individual share in the total property, and it enables each individual involved to pay less taxes on the land and yet keep a large holding intact.

The large increase in individual owners may be noted. Many of these new individual owners control only a small portion of the original land. There were 58 individual parcels in 1975.

There were only three estate parcels in existence in 1975. This figure will vary from time to time, as landowners die and wills are probated.

The corporations other than forestry held 12 parcels in 1975. They held only four parcels in 1945.

Forest industry held 10 tracts in 1975, having obtained one new parcel in the 30-year period; however, many have purchased timber deeds on the other tracts.

Change to Urban Uses

Of the total acreage in 1945 (73,880), 3,245 were lost directly to urban development. This loss was only 4.4 percent of the total original, and was registered in two properties which were estates in 1945.

Change in Assessed Values

The assessed value in 1975 of the largest parcel of the original shows that there has been an increase in assessed values in the 30-year period.

Table XIII gives the assessed values and average value per acre in 1975 of the largest parcel of the original based on the 1945 ownership class, so that a comparison may be made with Table X (page 26), which listed the assessed value of the property in 1945 by owner class.

A considerable increase in assessed value has occurred in the 30-year period. The estates and individual lands show the highest assessed values in 1945. Estates increased from $2.90 to $32.66 per acre, an increase of 8.4 percent compounded over the 30 years. Thus many of the other increases in accrued value were not real when inflation is considered.

IV. MORTGAGES AND TIMBER DEEDS

The fact that a piece of land is mortgaged will make it harder for the wood procurer to get timber rights or other forest products deeds for this land. Also, the property may be more likely to fragment due to the mortgage to pay off the debt.

Table XIV gives the number of properties by the largest parcel of the original which were encumbered in 1975 by mortgages. A majority, 68.8 percent of the total 48 properties, of the parcels are free of mortgages in 1975, and should be free for use in forestry operations if the owners are willing to negotiate for such undertakings.

There have been several timber deeds written on the original 48 tracts since 1945. Table XV gives the past or present amount of timber deeds which were active on these properties sometime during the 30-year period. This table shows that a total of 15 timber deeds has been written on the original 48 land parcels over the 30-year period. The

TABLE XIII

ASSESSED VALUE IN DOLLARS IN 1975 OF LARGEST PARCEL OF THE ORIGINAL BASED ON 1945 OWNERSHIP CLASSES

Owner Class	Number	Assessed Value	Mean	Average Per Acre
Individual	24	$492,049.00	$20,502.04	$30.49
Partnership	1	$ 10,145.00	$10,145.00	$ 0.79
Estate	10	$284,186.00	$28,418.60	$32.66
Corporation other than forestry	4	$100,778.00	$25,194.50	$ 9.92
Forest industry	9	$303,515.00	$33,723.89	$16.25

TABLE XIV

LARGEST PARCEL IN 1975—PROPERTY ENCUMBERED WITH PERCENTAGES ENCUMBERED FOR EACH CLASS

Encumbrance	Number	Percentage
Encumbered in 1975	1	2.0
Encumbered in last five years	9	18.8
Encumbered in last 10 years	5	10.4
Not encumbered	33	68.8
Totals	48	100.00

TABLE XV

TIMBER DEEDS PAST OR PRESENT FOR ANY OF THE ORIGINAL 48 PROPERTIES OVER THE 30-YEAR PERIOD 1945—1975

Deed Status	Timber Deeds	Percentages
Past or present deeds in effect	15	31.25
Not in effect	33	68.75
Totals	48	100.00

timber deeds are written for specified periods of time, ranging from two to 99 years. The short-time period deeds are similar to timber sales; the long-term contracts are approaching industrial fee ownership of the timber for a long period of time (samples of these deeds are given in Appendix D).

Table XVI gives the operational number of years for each timber deed type and the number of ownerships which fall into each grouping; 12.91 percent of the timber deeds was written for 99 years. This is a long time to encumber property, and was not the most common of practices among landowners.

No deeds of less than two years were recorded. Two-year timber deeds had six ownerships, or 19.36 percent of the total. Fifteen ownerships had timber deeds for three years, and this was 48.39 percent of the total, by far the most common. One ownership had a deed written for four years, which was 3.22 percent of the total. Five-year deeds were recorded as 16.12 percent of the total. Greater than five years and less than 99 years had no ownerships in this type deed class; 99-year deeds were written on four ownerships.

V. CONSOLIDATION

Consolidation of Original Property

Consolidation did not play an important role in the makeup of the original properties in 1975. Only three properties were affected by consolidation.

The total acres added to the original property was 1,969. The woodland acres added were only 451 acres. Two of the properties that

TABLE XVI

TIMBER DEEDS WRITTEN IN 30-YEAR PERIOD

Number of Years	Timber Deeds	Percentages
Less than two years	0	0.00
Two years	6	19.36
Three years	15	48.39
Four years	1	3.22
Five years	5	16.12
Greater than five years and less than 99 years	0	0.00
99 years	4	12.91
Totals	31*	100.00

*Includes timber deeds which were transferred to fragmented properties.

consolidated also were later broken up into smaller parcels by fragmentation.

Trends in County Consolidation of Forest Land

To get an idea what has been taking place in the county as a whole, with respect to consolidation, two owner directories are presented (Tables XXXI and XXXII found in Appendix E) which show the total and woodland acres of all owners with 500 acres or greater in property. The first directory (Table XXXI) was printed in 1966; the second (Table XXXII) was printed in 1975.

The question that is raised by these directories is why do they not match precisely the data for 1975 presented in Appendix B. One reason is that consolidation occurred over the 30-year period in properties which, in 1945, were not 500 acres in total size; but more important is the fact that not all properties said to be in one tract in Tables XXXI and XXXII are actually in one tract. This study included only those properties 500 acres or larger in one tract which were in existence in 1945. Tables XXXI and XXXII were taken from the tax rolls and all ownerships by an individual are often grouped into one tract for tax billing purposes—this may explain the reference to one tract in each of the ownerships in these tables. Another reason for the discrepancy is the fact that resurveys since 1945 of the land in the county changed some of the sizes of the properties considerably. Deeded acres were used entirely in this study, where properties were resold, calculated or surveyed acres exceeded deeded acres.

A comparison of the total acres in 1975, according to this study, in parcels 500 acres or larger was made with the total acres in Tables XXXI and XXXII. For 1975, there was a total acreage of 64,970 in ownerships of 500 acres or larger.

Table XXXI yielded a total of 93,034 total acres of ownerships 500 acres or larger in total size. This figure was 28,064 total acres larger than the 1975 figures. Table XXXI figures were for the year 1966.

Table XXXII yielded a total of 72,311 total acres in ownerships of 500 acres or larger in total acres. This figure is 7,341 acres larger than the 1975 figures. Table XXXII figures were for the year 1975.

This small difference in the two 1975 figures is undoubtedly due to the consolidation which occurred in the county since 1945 on properties which, in 1945, were not 500 acres in one tract, or it may be due to the fact that the figures in this study generally were deeded and not resurveyed acreages, whereas the figures in Table XXXII may include a large number of resurveyed acreages.

VI. FRAGMENTATION

Over the 30-year period there were 7,408 acres (less consolidations) lost to fragmentation. This figure does not include the largest remaining parcel of an original tract which was fragmented and which technically would be considered a fragmented parcel, also. This acreage in the largest remaining fragments is 26,236. The sum of both fragmented types of parcels yields 33,644 acres affected by fragmentation of some type. These figures are located in Table XVII.

TABLE XVII

LAND USE AND COUNTY RESIDENT OR NONRESIDENT INFORMATION OF PROPERTIES THAT FRAGMENTED WITH ACREAGE IN THE FRAGMENTED PROPERTY

Land Use and County Resident or Nonresident of Fragmented Properties	Number	Acres
Urban and resident (platted)	7	
Urban and nonresident (platted)	0	
Forest and resident	42	
Forest and nonresident	10	
Agricultural and forest, and resident	10	
Agricultural and forest, and nonresident	0	
Total	69	
Total number of properties that had fragments	19	
Total number of fragments less largest parcel	50	7,408
Total number of largest remaining parcels	19	26,236
Totals	69	33,644

Nineteen properties had fragments, and there is a total of 50 small fragments of which seven are urban, resident and platted; none are urban, nonresident and platted; 10 are forest and nonresident; 10 are agricultural, forest and resident; none are agricultural, forest and nonresident. Since 19 properties had fragments, there are 19 largest remaining parcels which are themselves fragments. A total of 69 fragmented tracts of land was thus obtained.

Table XVIII shows the total and woodland acres in 1945 and 1975, based on 1945 ownership classes and 1975 ownership classes. Subtracting the total acres in 1975 from the total acres in 1945 as given in the table, gives the amount of acreage lost to fragmentation, less the largest remaining fragmented parcel. It also shows how fragmentation affects woodland acres on the largest remaining parcel in 1975. Nineteen of the properties in the woodland acres column for 1975 were fragmented and these parcels, along with the largest remaining parcels which were not fragmented, amounted to 59,806 acres. This figure compared to the woodland acres in 1945 (71,617) shows a net loss in woodland acres of 11,811. There were some woodland acres in the 50 smaller fragments, but for all practical purposes these small fragmented parcels are probably lost to forest management on a competitive economic scale.

The table shows the total acres in owner class in 1945 and 1975. In 1945, 24 individual owners controlled a total acreage of 25,704; in 1975, 21 individual owners controlled 16,138 total acres—a net loss in 1975 of 9,566 acres to this owner class.

TABLE XVIII

TOTAL AND WOODLAND ACRES IN 1945 AND 1975 BASED ON 1945 OWNERSHIP CLASS AND 1975 OWNERSHIP CLASS

Owner Class 1945	Number	Total Acres	Woodland Acres	Owner Class 1975	Number	Total Acres (Largest Parcel)	Woodland Acres
Individual	24	25,704	24,016	Individual	21	16,138	14,621
Partnership	1	1,000	1,000	Partnership	8	12,795	10,307
Estate	10	22,675	22,100	Estate	3	8,700	7,052
Corporation other than forestry	4	5,783	5,783	Corporation other than forestry	6	10,164	9,685
Forest industry	9	18,718	18,718	Forest industry	10	18,675	18,141
Totals	48	73,880	71,617		48	66,472	59,806

In 1945, one partnership controlled 1,000 total acres; in 1975, eight partnerships owned 12,795 total acres—a net gain of 11,795 total acres.

In 1945, 10 estates controlled 22,675 total acres; in 1975, three estates controlled 8,700 acres—a net loss in 1975 of 13,975 total acres to this owner class.

In 1945, four corporations other than forestry had title to 5,783 total acres; in 1975, six corporations other than forestry had holdings of 10,164 total acres—a net gain of 4,381 total acres to this owner class.

Forest industry owners totaling nine in 1945 owned 18,718 total acres; in 1975, they had lost 43 acres, for a total holding of 18,675 acres.

The woodland acres showed similar trends from 1945 to 1975 based on the numbers of acres gained or lost.

The effect of fragmentation can be further seen in Table XIX, which shows the owner classes and total acres and woodland acres in 1975 of all parcels 500 acres or larger based on 1975 owner classes.

This table shows the woodland acres lost to fragmentation if one compares the woodland acres in 1945 (71,617) to the woodland acres in 1975 of all parcels 500 acres or larger (58,460), or a net loss of 13,157 acres. Of course this figure does not include all woodland acres in 1975, but it includes those holdings that would be considered large enough to respond to proper forestry management techniques.

TABLE XIX

OWNER CLASSES AND TOTAL ACRES AND WOODLAND ACRES IN 1975 OF ALL PARCELS 500 ACRES OR LARGER BASED ON 1975 OWNER CLASSES

Owner Class	Number	Total Acres	Owner Class	Number	Woodland Acres
Individual	16	14,636	Individual	16	13,275
Partnership	8	12,795	Partnership	8	10,307
Estate	3	8,700	Estate	3	7,052
Corporation other than forestry	6	10,164	Corporation other than forestry	6	9,685
Forest industry	10	18,675	Forest industry	10	18,141
Total	43	64,970		43	58,460

It appears from the data gathered and analyzed in this work that fragmentation will likely continue to take its toll on large forest holdings in Humphreys County. A similar study finding in the Lake States by Schallau (1965) agrees with this finding.

Factors Associated with Fragmentation

Assessed values in 1945 were not significantly related to fragmentation at the .05 level. There were no assessed values in 1945 on properties that later fragmented which could be singled out as being associated with fragmentation. Since the fragmentation occurred on properties with varying values of assessment in 1945, this variable was not significant.

Assessed values in 1975 were significant with respect to fragmentation at the .05 level. It was observed while gathering the data that assessed values went up each time a tract of land was fragmented. This variable was significant since it showed the relationship between higher assessed values and fragmentation.

The size of the original tract in 1945 and the size of the largest parcel of the original in 1975 were both not significant at the .05 level with respect to fragmentation. The fragmentation occurred in all size classes, so no definite relationship could be obtained on these two variables.

The percentage of woodland acres was significant with respect to fragmentation at the .05 level. The properties with a lower percentage of woodland tended to have more acres taken from them in sales, and this fact caused this variable to be significant.

The average number of sales per year was significant at the .05 level with respect to fragmentation. This would be expected, since sales in most instances resulted in fragmentation.

The number of sales of each parcel prior to fragmentation was marginally significant with respect to fragmentation at the .10 level. This is due to the fact that the properties which fragmented often sold intact before they were fragmented.

Owner classes in 1945 and 1975 were not significant with respect to fragmentation at the .05 level. Since the fragmentations were spread over all ownership classes with no group getting an unusually large amount proportionately, these variables were not significant, but many were small in sample size.

Whether the properties were encumbered or not encumbered was not significant with respect to fragmentation at the .05 level. No trend was discernible with respect to encumbered or not encumbered tracts with both types selling freely.

Civil districts were recorded in the original data and, though not discussed in the text, were used in the statistical analysis. Civil districts of the original properties were not significant with respect to fragmentation at the .05 level. The fragmentations were found in all districts with no district containing a disproportionate amount.

CHAPTER V

MAJOR FINDINGS

I. CONCLUSIONS

1. The timber resources improved in quantity and quality from 1945 to 1975, based on the TVA timber surveys and the USFS resources appraisal.

2. Only five properties did not sell any portion of the tract or did not change owners in the 30-year period. Ownership changes in the remaining 43 properties were dramatic with 43 new owners added to the original property by 1975 for 92 total owners.

3. Fragmentation greatly affected the makeup of the size of the parcels in 1975. It is probable that fragmentation will continue to slowly break up large forest holdings in the future, with the exception of industrial forest ownerships in the study area. Factors which were significantly related to fragmentation were assessed values in 1975, percentage of woodland acres, and average number of sales per year.

4. Consolidation did not have much effect on the overall changes in the land tracts. Only 1,969 total acres were added to the original parcels and only 452 acres of this total were forest land.

5. The total number of sales in the 30-year period was 143.

6. Timber deeds were actively written on the properties with 15 deeds on the original property.

II. OUTLOOK AND IMPLICATIONS OF THIS STUDY

This study deals primarily with institutional changes in large, forest land holdings, but the change of fragmentation has taken many of these holdings out of the large classification (500 acres or larger).

What then happens to timber availability and timber management on these small holdings? Viewing the small woodlands of the United States, not separately but in relation to all the economy and to private forestry, one does not see them as playing a vital role in a wood-supply problem. As they stand, one cannot expect them to be managed intensively; this would require consolidation into more efficient management parcels, development of profitable markets, and promotion of favorable public policies regarding taxation, fire control and the like (Zivnuska, 1963). Since consolidation is not occurring in the county on properties studied, the problem is one of dealing with these small land units. Information gathered from holders of small forest tracts in various regions of the United States indicates complex reasons for lack of intensive management. Forest owners most likely to intensify their management are: (1) less than 40 years of age, (2) well-educated, (3) well-off financially, (4) using land as an investment, and (5) well-informed (McClellan, 1967).

There were three suspected reasons why the properties fragmented in the county. One reason was the loss of large parcels to urbanization. Another reason was development of summer homes along the Tennessee River. The final reason was loss of land which was needed for highway construction. All of these reasons may be due to progress and prosperity, and it appears that they will continue in the future.

The short-term supply of timber may be increased by fragmentation since previous owners may not have been willing to sell timber and new owners may be willing to sell their wood. I feel, however, that the long-term effect of fragmentation will cause the timber supply to decrease due to the fact that small holdings are generally not managed intensively. Costs of procurement will go up because the procurement forester will have to contact an increasing number of land owners. Also, transportation costs will increase due to the fact that the small tracts are more widely dispersed (Schallau, 1975).

The major wood user in Humphreys County is Inland Container Corporation. In 1974, the company put into full operation a whole tree chipper. In order for the chipper to operate at an economic gain, the forest area being processed must contain a minimum of 800 acres of forest land. The properties that are being fragmented into smaller units with no parcel containing 800 acres of forest land are effectively being removed from the possibility of being utilized by the whole tree chipper. This will cause the wood using company to go farther distances to find an economically large enough parcel on which to operate and will increase total costs of production.

For effective operation with modern equipment, it is necessary to have large acreages, more capital investment, and larger work forces than can be provided on the family forest farm. Actually, the number of forest parcels organized on a family farm basis is so small that that type of operation is unimportant in the forest economy (Benedict, 1958).

Almost every study of forests in a region or area shows that the small private forests are managed less intensively than are the larger

private forests. Most small private forest owners neglect or ignore their forests, mostly letting nature take its course (Clawson, 1974).

Large clear-cut harvests may be the only way that our larger labor-saving logging equipment can be efficiently employed (Wells, 1968).

As the area of forest land and level of timber capital (growing stock) increase the size of a management unit, the returns to the technical and managerial skill may rise. Sometimes these rises are even more than proportionately related to an increase in the size of the forest enterprise brought about (Wells, 1968).

Since the larger properties are being fragmented, timber availability is likely being affected by these changes; diseconomies of scale probably exist in timber management, timber marketing, and in technology of harvesting and timber management practices on the smaller properties. It is less costly to set up a forest products harvesting operation in one location with many acres involved than it is to set up entirely different operations in a number of smaller tracts. Timber management costs are often lower, since it is possible to adopt large-scale operations such as mechanical tree planting, site preparations, and the like (Clawson, 1974).

Taxes may also adversely affect sound forestry practices. Below are listed several basic ways by which death taxes and the American system of inheritance could act as a deterrent to intensive forestry and thereby adversely affect future timber supplies:

1. They may encourage dismemberment of an efficiently and intensively managed forest into several small fragments which tend to be uneconomical to operate.

2. They may force the property into a co-ownership status in which the majority of the several owners have little or no interest in intensive forestry, especially if it requires additional out-of-pocket money.

3. They may discourage the buildup of large and efficient landed estates by individuals who are capable of doing so because these persons anticipate that one or both of the above undesirable circumstances will befall the property upon the event of their death.

4. They may result in the liquidation of enough timber capital on a forest property in meeting the tax liability to seriously impair its future productive capability (Yoho, 1965).

III. SUMMARY

In summary, fragmentation does affect timber supply, and in most cases it reduces the supply with a concurrent increase in operating costs (Clawson, 1974).

The answer in Humphreys County may be long-term contracts with forest land owners by wood-using industries. It is usually not economical to put a natural stand of less than 500 acres under contract unless the term is long enough—more than 80 years—to enable complete sustained integration of the tract into the company's operation. The parcels that are being fragmented often leave no one parcel larger than 500 acres. Presently these units are noneconomical to put under contract but future technology or wood demand may bring them into the profitable managing class (Siegel, 1973).

More studies are needed to find the scope and true causes of fragmentation in order that remedial action programs may be assessed. For example, public education regarding the new optional present-use assessment law might aid in checking land lost to urban land-use pressures. Increases in the Federal estate tax exemption may also discourage the breaking up of large forest properties if the impact of death taxes is found to be a cause of fragmentation. By studying only large forest properties regarding fragmentation, only the tip of a larger "iceberg" may have been exposed, since smaller properties would be expected to undergo more frequent changes. The implications to private forestry, so important to Tennessee, are serious enough to warrant further study on a wider scale.

BÍBLIOGRAPHY

BIBLIOGRAPHY

LITERATURE CITED

Bellamy, Thomas R. 1974. Southern pulpwood production, 1973. USDA Forest Service Resource Bulletin SE-29. 21 pp.

_____. 1972. Southern pulpwood production, 1971. USDA Forest Service Resource Bulletin SE-23. 20 pp.

Beltz, Roy C. 1971. Southern pulpwood production, 1970. U.S. Forest Service Resource Bulletin SO-28. 22 pp.

Benedict, Murray R. 1958. Forest credit in the United States. Report of a committee appointed by Resources for the Future, Inc. 164 pp.

Bertelson, Daniel F. 1973. Southern pulpwood production, 1972. Forest Service Resource Bulletin SO-41. 25 pp.

_____. 1975. Southern pulpwood production, 1974. U.S. Forest Service Resource Bulletin SO-54. 24 pp.

Bureau of Census, 1970 Census of Population. 1973. U.S. Dept. of Commerce. 1163 pp.

Clawson, Marion. 1974. Forestry for Whom and for What. The Johns Hopkins University Press, Baltimore. 175 pp.

McClellan, J. C. 1967. The small woodlands mystery. Northern Logger and Timber Processer 16(5):8-9, 30-31, 48.

Murphy, Paul A. 1972. Forest resources of Tennessee. USDA Forest Service Resource Bulletin SO-35. 33 pp.

Nelson, T. C. 1967. The forest situation in the south. Forest Farmer 27(3):9-10.

Rumsey, Fay and William A. Duerr. 1975. Social sciences in forestry. W. B. Saunders Company, Philadelphia. 409 pp.

Schallau, Con H. 1975. Fragmentation—Import on Michigan's forest economy. Legis. Hear. Spec. House Comm. Studying Forestry, State of Michigan. Michigan Technological University, Houghton. pp. 165-169.

_____. 1965. Fragmentation, absentee ownership, and turnover of forest land in northern Lower Michigan. Lake States Forest Exp. Sta., St. Paul, Minn. (U.S. Forest Serv. Res. Paper LS-17). 12 pp., illus.

Siegel, William C. 1973. Long-term contracts for forest land and timber in the South. U.S. Forest Service Research Paper SO-87. 14 pp.

Tennessee Department of Conservation, 1975. Directory of primary wood-using industries in Tennessee. 51 pp.

Tennessee Valley Authority. 1969. Forest inventory statistics—Humphreys-Perry County Unit. TVA Div. of Forestry Development. Bulletin 140. 19 pp.

_____. 1956. Forest inventory statistics for Humphreys County, Tennessee. TVA Div. of Forestry Relations. Forestry Bulletin 43. 18 pp.

_____. 1941. Forestry data for the Tennessee Valley. TVA Div. of Forestry. Forestry Bulletin 3. 110 pp.

United States Forest Service. 1973. Forest area statistics for midsouth counties. U.S. Dept. Agr. Forest Resource Bulletin SO-40. 64 pp.

Walbridge, T. A., Jr. and W. B. Stuart. 1976. Constraints on the utilization of our forest resources in the South. Jour. Forestry 74(3):156-159.

Welles, G. M. and N. V. Robbins. 1946. Soil survey Humphreys County, Tennessee. U.S. Dept. Agr. 100 pp.

Wells, G. R. 1968. Economies of even-aged forest management. KTC Journal 8(4):6-10.

Yoho, James C. 1965. Economic impact of state and local and death taxes on timber resources. Timber Tax Journal 1(1):60.

Zivnuska, J. A. 1963. An economic view of the small forest ownership situation. Soc. Amer. Foresters Proc. 1962:14-17. 1963. Also in Forest Ind. 90(2):32-34, 111.

SELECTED REFERENCES

Anderson, W. C. 1974. The South—an unregulated forest region. Jour. Forestry 72:221-223.

Babeu, Richard G., Arnold D. Rhodes and William P. MacConnell. 1965. Forest owner characteristics and attitudes in Berkshire County, Massachusetts. Mass. Agr. Exp. Sta. Bulletin 549. 55 pp.

Clawson, Marion. 1957. Resources for the future, Inc. Jour. Forestry 55:521-526.

Gansner, David A. 1966. Timber resources of Missouri's Southwestern Ozarks. Univ. of Missouri Agr. Exp. Sta. Bulletin B845. 51 pp.

Guttenberg, Sam. 1973. Changing land use and the South's timber supply. For. Prod. Jour. 23(12):14-16.

_____. 1967. Converting forest resource statistics to timber supply. Proc. Seventh Conf. on Southern Ind. Forest Management. Duke Univ. pp. 46-51.

Helemo, Fred J. and Peter J. Dyson. 1971. Landowner attitudes and practices concerning timber production and marketing in the Piedmont Region of Georgia. Georgia Forest Res. Pa. 66, Ga. Forest Res. Council. 12 pp.

Larsen, David N. and David A. Gansner. 1973. Explaining the forest product selling behavior of private woodland owners. USDA Forest Ser. Res. Paper NE-257. 4 pp.

Lawrence, J. Dewel and Frank O. Lege. 1973. Availability of timber on lands of farm and miscellaneous private owners in Florida. Division of Forestry, Florida Dept. of Agriculture, and Consumer Services. 35 pp.

LeRay, Nelson L. 1970. Nonindustrial resident forest landowners in Northern New Hampshire-2. Marketing of forest products. New Hampshire Agr. Exp. Station Research Report No. 11. 21 pp.

Minckler, Leon S. 1971. Forestry, small-ownership. In Encyclopedia of Science and Technology. Ed. 3 pp. McGraw-Hill Book Company, Inc., New York. pp. 511-513.

Murphy, Paul A. 1972. Forest resources of Tennessee. USDA Forest Ser. Res. Bul. SO-35. 33 pp.

Nelson, Thomas C. and Robert N. Stone. 1973. Supply and forest owners. In Timber! Problems, Prospects, Policies. Ed. Duerr. Iowa State Press. pp. 64-69.

Pleasonton, A. 1974. Trends in forest land values. For. Prod. Jour. 24(1):16-18.

Siegel, W. C. 1974. Long-term timber contracts in the South. Forest Farmer 34(1):8-9, 17.

Sternitzke, H. S. and J. F. Christopher. 1970. Timber supply trends in the South. Forest Farmer 29(8):8-9, 17.

Stone, Robert A. 1967. Forest stand-size trends in upper Michigan, 1955-1966. U.S. Forest Service Research Note NC-39. 2 pp.

Won, Duk-Joong and Ian W. Hardie. 1971. An analysis of non-industrial woodland owners' attitudes toward timber sales on the Southern Eastern shore of Maryland-1970. Univ. Maryland Agr. Exp. Sta. Bulletin MP-790. 73 pp.

Yoho, James G. and Kenneth B. Pomeroy. 1964. North Carolina lands. American Forestry Association. pp. 311-313.

APPENDIXES

EXPLANATION OF APPENDIX CONTENTS

Appendix A contains highlights of three TVA timber surveys and the USFS resource appraisal.

Appendix B contains a summary of the original properties over the 30-year period and the properties that fragmented over the 30-year period, as well as the 29 properties that did not fragment. The number in the first column is a four-digit number to identify each separate property. The 29 properties which did not fragment are represented in the first two digits of the code by the number that the author assigned to that property in 1945. All properties which did not fragment have 00 in the last two digits.

Appendix B also lists all the properties which fragmented, 19 in total. Their code is somewhat different in the last two digits. The first two properties that were involved in the split were coded as 01 for the larger of the two, and 02 for the smaller of the two.

If a subsequent break in the property occurs and this fragment comes from the 01 property, then its third digit would be 1. The last digit in a fragmented property is the chronological order in which they fragmented. If another break occurs from the third fragmented property, its third digit would be 3, and so on.

The assessed value per acre in 1975 in Appendix B is the value for the largest remaining parcel.

Appendix C contains the code sheets which were used to place the summary deck, fragmentation deck, and tenure deck on computer cards. In

addition, the code sheet for the Chi-square analysis is also shown in Appendix C.

Appendix D contains a representative sampling of timber deeds.

Appendix E contains two owner directories prepared by the State of Tennessee Division of Forestry, Department of Conservation.

Appendix F contains the matrices which were used in the Chi-square analysis of factors related to fragmentation.

APPENDIX A

APPENDIX A

TIMBER SURVEYS

TVA, 1941 TIMBER SURVEY (TVA, 1941)

Table XX shows that the total forest area in 1940 was 240,820 acres. The total area of the county is 356,000 acres, so woodland comprised about 68 percent of the total land area in the county in 1940. Forest in this survey included all areas denoted as forest cover on United States Geological Survey—TVA planimetric maps. These maps were developed from aerial photographs taken in 1934. Field checks have indicated that the forest cover boundaries as defined include all areas supporting a growth of forest trees.

Table XXI shows the timber-producing areas in acres classified by forest types and conditions. The sawtimber and cordwood classes contained 37 percent of the total forest acreage of 240,820 in 1940; 63 percent of the total was in the below-cordwood class, which indicates the forest land had experienced extensive cutting prior to this date and was primarily stocked with immature trees.

Bottomland hardwoods were found chiefly in the southern and western portions of the Tennessee River Valley, located in the bottomlands of the larger streams and in swamps, bays and branch heads. Upland hardwoods were found chiefly in the mountainous or hilly areas on moist sites, usually on loamy, well-drained soils. Several timber types were

TABLE XX

MAJOR AREA CLASSIFICATIONS

Land Class	Area—Acres	Proportion of Total Area—Percent
Forest	240,820	68
Nonforest	92,160	26
Water	23,080	6
Total	356,060	100

Note: 1,740 acres in the Tennessee River Basin were deleted from this survey by TVA.

Source: TVA, 1941.

TABLE XXI

TIMBER PRODUCING AREAS CLASSIFIED BY FOREST TYPES AND CONDITIONS

Forest Types	Sawtimber	Cordwood	Below Cordwood	Total	Proportion of Total Area—Percent
	Acres				
Bottomland hardwoods	290	350	---	640	--
Upland hardwoods	41,420	44,480	105,410	191,310	80
Oak-chestnut	380	50	---	430	--
Blackjack oak-hardwoods	---	2,680	45,630	48,310	20
Yellow pine-hardwoods	---	---	60	60	--
Cedar-hardwoods	20	---	50	70	--
Total	42,110	45,560	151,150	240,820	100
Percent of total	17	20	63	100	

Source: TVA, 1941.

represented. Oak-chestnut occurrence was in the mountainous or hilly areas on fairly moist, well-drained soils. Blackjack oak-hardwoods occurred on the dry sites. Both the size and quality of this timber type were generally not acceptable for sawtimber. Yellow pine-hardwoods predominated in stands in which the percentage of all pines lay between 25 and 75 percent of the total dominant and co-dominant stems. The cedar-hardwoods class was stands in which cedar comprised from 25 to 75 percent of the total dominant and co-dominant stems (TVA, 1940).

TVA, 1956 TIMBER SURVEY (TVA, 1956)

A second TVA timber survey, published in 1956, showed that the total forest area had dropped 1.2 percent from the first survey. Table XXII shows that the total forest area in 1950 was 239,100 acres, or 66.8 percent of the total land area in the county. Total land area was 357,800 acres in 1975, or 1,740 more acres than were reported in 1940, due to 1,740 acres in the Tennessee River Basin being deleted from the first survey.

Nonforest area increased 10,240 acres, and water was shown as occupying 16,300 acres, or 6,700 less acres than previously reported.

Table XXIII shows the forest area by type and stand size in 1955. The size and quality of the timber supply in the county slightly improved in the period represented by the two surveys. The sawtimber class shows an increase of 3 percent. Seven percent of the sawtimber in 1955 was in the large class while 33 percent was in the small sawtimber classification. Poles were represented in 1955 as occupying 113,200 acres, or 47 percent of the commercial forest area. Only 25,500 acres of timber

TABLE XXII

COUNTY AREA BY MAJOR AREA CLASSES

Major Area Class	Acres	Percent
Forest	239,100	66.8
Nonforest land	102,400	28.6
Water	16,300	4.6
Total	357,800	100.0

Sources: Forest Area—TVA (1950).

Water Area—TVA.

Total Area—U.S. Bureau of the Census (1950).

TABLE XXIII

FOREST AREA BY TYPE AND STAND SIZE, 1955

Forest Type	Stand Size					All Stands	
	Sawtimber		Poles	Seedlings and Saplings	Other Area		
	Large	Small					
	Acres						Percent
Bottomland hardwoods		1,600	1,600	—	—	3,200	1
Upland hardwoods	17,500	76,500	110,000	23,900	4,800	232,700	98
Cedar-hardwoods	—	—	1,600	1,600	—	3,200	1
All types	17,500	73,100	113,200	25,500	4,800	239,100	
Percent	7	33	47	11	2		100

Note: Dashes indicate that small amounts may be present.

Source: TVA, 1956.

were classified as seedlings or saplings, and this class occupied only 11 percent of the total forest acreage.

TVA, 1969 TIMBER SURVEY (TVA, 1969)

A third TVA timber survey was published in 1969 for Humphreys and Perry counties combined. Separating the data for Humphreys County shows an increase in total forest acres in the county from 1956, with a total forest area of 247,428 acres—an increase of 8,328 acres from 1955.[1] Thus, forest area increased by 9.6 percent (TVA, 1969).

Table XXIV gives the commercial forest area in acres by type and stand size. The number of acres in the larger and more valuable stand size classes showed an increase in 1969 from 1955. The increase from 1955 to 1969 in the large sawtimber, small sawtimber, and pole class acreages was 6.1 percent.

The acreages in the seedlings and saplings class decreased from 11 percent in 1955 to 6.9 percent in 1969—a gain which was reflected in the increases in the larger stand sizes.

Table XXV shows the commercial forest area in acres by type and tree stocking. In 1969, the timbershed was medium to overstocked in 96.5 percent of the total forest acreage, and 94.2 percent was in the well and medium class of tree stocking, with only 2.3 percent in the overstocked class. Only 3.4 percent of the acreage was in the poor

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[1] Humphreys County data were separately analyzed by TVA for this study. Published data include both Perry and Humphreys counties combined.

TABLE XXIV

HUMPHREYS COUNTY, TENNESSEE, COMMERCIAL FOREST AREA
IN ACRES BY TYPE AND STAND SIZE

Forest Type	Stand Size						
	Large Sawtimber	Small Sawtimber	Poles	Seedlings & Saplings	Other	Total	Percent
Cedar	0	2,844	0	0	0	2,844	1.1
Oak-Gum-Cypress	0	2,844	2,844	0	0	5,688	2.3
Elm-Ash-Soft Maple	0	2,844	2,844	0	0	5,688	2.3
Oak-Hickory	14,220	82,476	99,540	14,220	0	210,456	85.1
Blackjack Oak-Post Oak	0	2,844	5,688	0	0	8,532	3.4
Sassafras-Persimmon	0	0	0	2,844	0	2,844	1.1
Beech-Birch-Hard Maple	0	0	2,844	0	0	2,844	1.1
Northern Red Oak-Basswood-Ash	0	0	5,688	0	0	5,688	2.3
Cedar-Hardwoods	0	2,844	0	0	0	2,844	1.1
Total	14,220	96,696	119,448	17,064	0	247,428	
Percent	5.7	39.1	48.3	6.9	0.0		100.0

Source: TVA computer printout drawn from forest inventory statistics, Humphreys-Perry County Unit, 1969.

TABLE XXV

HUMPHREYS COUNTY, TENNESSEE, COMMERCIAL FOREST AREA IN ACRES
BY TYPE AND TREE STOCKING

Forest Type	Tree Stocking						
	Over	Well	Medium	Poor	None	Total	Percent
Cedar	0	2,844	0	0	0	2,844	1.1
Oak-Gum-Cypress	0	5,688	0	0	0	5,688	2.3
Elm-Ash-Soft Maple	0	0	5,688	0	0	5,688	2.3
Oak-Hickory	2,844	93,852	105,228	8,532	0	210,456	85.1
Blackjack Oak-Post Oak	0	2,844	5,688	0	0	8,532	3.4
Sassafras-Persimmon	0	0	2,844	0	0	2,844	1.1
Beech-Birch-Hard Maple	0	2,844	0	0	0	2,844	1.1
Northern Red Oak-Basswood-Ash	2,844	0	2,844	0	0	5,688	2.3
Cedar-Hardwoods	0	2,844	0	0	0	2,844	1.1
Total	5,688	110,916	122,292	8,532	0	247,428	
Percent	2.3	44.8	49.4	3.4	0.0		100.0

Source: TVA computer printout drawn from forest inventory statistics, Humphreys-Perry County Unit, 1969.

tree stocking class. No portion of the forest was without some form of stocking.

The tree species of the oak-hickory type classification comprised 85.1 percent of the total; 2,844 acres were overstocked with this class; 93,852 acres were well stocked; and 105,228 acres were of medium stocking in the oak-hickory class. These three tree stocking classes contained 201,924 acres or 81.6 percent of the total woodland acreage, with only 1.1 percent of the total acreage being in the overstocked class.

The total acreage in the timbershed in 1969 had shown an increase of 8,328 acres, or an increase of 3.4 percent.

Table XXVI shows the commercial forest area in acres by type and site. Site productivity classes show various annual cubic-foot growth capacity per acre. For example, the oak-hickory forest type had 162,108 acres with 85 cubic feet or more potential (TVA, 1969). This table reveals that the growth capacity of the forest lands was good, with over 97 percent of the timberlands capable of producing more than one cord per acre per year.

UNITED STATES FOREST SERVICE—1973 RESOURCE APPRAISAL (USFS, 1973)

Table XXVII shows the total acres in the county, commercial forest acres, and noncommercial forest acres, and the percentage of forest acres. The U.S. Forest Service lists 248,000 acres of forest in Humphreys County, an increase of 572 acres from the 1969 TVA Survey.

TABLE XXVI

HUMPHREYS COUNTY, TENNESSEE, COMMERCIAL FOREST AREA
IN ACRES BY TYPE AND SITE

Forest Type	Site Productivity Class Annual Cubic Foot Growth Capacity Per Acre					
	120 +	85-120	50-85	Less Than 50	Total	Percent
Cedar	0	2,844	0	0	2,844	1.1
Oak-Gum-Cypress	5,688	0	0	0	5,688	2.3
Elm-Ash-Soft Maple	2,844	2,844	0	0	5,688	2.3
Oak-Hickory	19,908	142,200	45,504	2,844	210,456	85.1
Blackjack Oak-Post Oak	0	2,844	2,844	2,844	8,532	3.4
Sassafras-Persimmon	0	0	2,844	0	2,844	1.1
Beech-Birch-Hard Maple	0	2,844	0	0	2,844	1.1
Northern Red Oak-Basswood-Ash	0	2,844	2,844	0	5,688	2.3
Cedar-Hardwoods	0	28,44	0	0	2,844	1.1
Total	28,440	159,264	54,036	5,688	247,428	
Percent	11.5	64.4	21.8	2.3		100.0

Source: TVA computer printout drawn from forest inventory statistics, Humphreys-Perry County Unit, 1969

TABLE XXVII

TOTAL AREA AND FOREST AREA, 1971

Total Area 1,000 Acres	Commercial Forest 1,000 Acres	Noncommercial Forest 1,000 Acres	Percent
357.8	248.0	---	69

Source: U.S. Department of Agriculture, Forest Service Resources Bulletin SO-40, 1973.

Table XXVIII shows this commercial forest acreage by ownership class in 1971. Eighty-seven percent, or 215,900 acres, of the forest land was privately owned. Forest industry owned 24,800 acres; farmers owned 86,700 acres; and miscellaneous private owners controlled 129,200 acres.

Table XXIX shows the commercial forest land by forest type in 1971. This table shows that oak-hickory remained the predominant species type; this composition occupied 235,600 acres or 95 percent of the total county timbershed.

Table XXX shows the commercial forest land by stand size class in 1971. This table shows that 31,000 acres were occupied by sawtimber; 130,200 acres were occupied by poletimber; and 86,800 acres were stocked with sapling and seedling types. These results show timber quality has improved considerably from the condition of the timbershed in 1940 (USFS, 1973).

The figures for 1940 showed 105,410 acres in the below cordwood class.

The figures for 1971 showed only 86,800 acres in the below cordwood stand size class, or sapling and seedling size trees.

The state of the forest acreage in the county in 1971 showed 161,200 acres in the larger than sapling and seedling size, with approximately 24 percent of this total in the sawtimber class. Only 17 percent of the timbershed was in the sawtimber class in 1940.

TABLE XXVIII

COMMERCIAL FOREST LAND BY OWNERSHIP CLASS, 1971

All Ownerships	National Forest	Other Public	Forest Industry	Farmer	Miscellaneous Private
	1,000 Acres				
248.0	---	7.3	24.8	86.7	129.2

Source: U.S. Department of Agriculture, Forest Service Resources Bulletin SO-40, 1973.

TABLE XXIX

COMMERCIAL FOREST LAND BY FOREST TYPE, 1971

All Types	White Pine	Loblolly-Shortleaf Pine	Oak-Pine	Cedar	Oak-Hickory	Maple-Beach-Birch
	1,000 Acres					
248.0	---	---	---	12.4	235.6	---

Source: U.S. Department of Agriculture, Forest Service Resources Bulletin SO-40, 1973.

TABLE XXX

COMMERCIAL FOREST LAND BY STAND SIZE AND CLASS, 1971

All Classes	Sawtimber	Poletimber	Sapling and Seedling	Nonstocked Areas
	1,000 Acres			
248.0	31.0	130.2	86.8	---

Source: U.S. Department of Agriculture, Forest Service Resources Bulletin SO-40, 1973.

TVA SURVEY DEFINITION OF TERMS

The condition classes used in the survey included sawtimber stands containing at least 500 board feet (International 1/4 inch rule), gross volume, to the average acre in sawtimber-size trees.

Cordwood stands contained less than 500 board feet, gross volume, to the average acre in sawtimber-size trees, and four cords or more to the average acre in cordwood-size trees.

Below cordwood was stands containing less than 500 board feet, gross volume, to the average acre in sawtimber-size trees and less than four cords to the average acre in cordwood-size trees.

Sawtimber was separated as to hardwoods and conifers. Hardwoods were classified sawtimber if they were 13.0 inches d.b.h. and over; conifers were classified sawtimber if they were 9.0 inches d.b.h. and over. Cedar 5.0 inches d.b.h. and over was classified as sawtimber types.

Cordwood was divided as to hardwoods and conifers. Hardwood, 5.0 inches to 13.0 inches d.b.h., was considered cordwood; conifers, 5.0 to 9.0 inches d.b.h., were considered cordwood.

Pole timber was classified as stands with less than 1,500 net board feet per acre having at least 30 sound trees of pole size or larger, of which at least 15 are pole size.

Seedlings and saplings classification included any stand not qualifying as either sawtimber or pole timber, but with at least 100 seedlings and saplings per acre.

"Other area" was classified as stands which did not meet the minimum requirements for any of the above, but which were forest by usage or definition. Natural forest areas were lands on which stocking was less than 10 percent as the result of fire, cutting, small water areas, noncommercial species, or cull trees of commercial species.

Forest was defined by TVA in 1969 as land acres with a minimum size of one acre and 100 feet in width, which are at least 10 percent stocked with trees of any size.

Forest types were classified as hardwood type, softwood type, and mixed type.

Hardwood type groups were stands in which hardwood species made up 76 percent or more of the dominant and co-dominant trees.

Softwood type groups were stands in which coniferous species made up 50 percent or more of the number of dominant or co-dominant trees.

Mixed type groups were stands in which coniferous species comprise 25-49 percent of the number of dominant and co-dominant trees.

The definitions for large sawtimber, small sawtimber, poles, seedlings and saplings, and other, were the same in the 1969 survey as that used in the 1956 survey.

The five degrees of stocking were as follows:

1. Overstocked was 100 percent crown cover, or over 700 seedlings and saplings per acre or equivalent combination.

2. Well stocked was at least 70 percent crown cover, or 550 well-distributed seedlings and saplings per acre or equivalent combination.

3. Medium stocked was from 40 to 70 percent crown cover, or 75 to 300 seedlings and saplings per acre.

4. Poorly stocked was from 10 to 40 percent crown cover, or 75 to 300 seedlings and saplings per acre.

5. Nonstocked were forests which did not meet any of the above criteria.

Sawtimber trees were those that are of commercial species, containing at least a 12-foot saw log, and meeting regional specifications for freedom from defect. Softwoods had to be at least 9.0 inches in diameter at breast height and hardwoods at least 11.0 inches.

Poletimber was merchantable trees of commercial species at least 5.0 inches in diameter at breast height, but smaller than sawtimber size.

Cubic foot volume was net volume of wood without bark and limbs to the following minimum top diameters (inside bark):

Sawtimber, hardwoods—eight inches.

Sawtimber, softwoods—six inches.

Poletimber, all species—three inches.

APPENDIX B

APPENDIX B

Tract #0200 Map & Parcel #117-4 TVA #6, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
E. O. Denslow	1142	500	$14.45	Individual	1945
A. B. Clayborne	1142	500		Individual	1959
Loretta Lynn	1142	500		Individual	1966
Loretta Lynn	1142	500	$57.88	Individual	1975

Tract #0600 Map & Parcel #136-9 TVA #7, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
Annie Parks Gould	1315	800	$16.20	Estate	1945
Gould Heirs	1315	800		Estate	1945
Gould Heirs	1315	800	$52.05	Estate	1975

Tract #0700 Map & Parcel #145-12 TVA #8, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
James Gray	1070	1070	$ 2.34	Estate	1945
Charles Kerwin	1070	1070		Individual	1945
Frank M. Wright, Jr.	1070	1070		Individual	1969
Frank M. Wright, Jr.	1070	1070	$10.42	Individual	1975

Tract #0800 Map & Parcel #140-1 TVA #9, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
W. L. Hailey & Co.	5486	5486	$ 1.00	Estate	1945
Hailey Heirs	5486	5486		Estate	1945
Hailey Heirs	5486	5486	$14.44	Estate	1975

Tract #1200 Map & Parcel #41-61 TVA #13, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
S. D. Johnson	640	640	$ 1.56	Estate	1945
E. F. Connally	640	640		Individual	1945
E. F. Connally	640	640	$11.79	Individual	1975

Tract #1600 Map & Parcel #47-1 TVA #15, Tract #3

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
Kopper's Company, Inc.	3177	3177	$ 2.83	Forest Industry	1945
Kopper's Company, Inc.	3177	3177	$12.12	Forest Industry	1975

Tract #1800 Map & Parcel #119-25 TVA #16, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
Jack & Tom Larkins	1000	1000	$ 1.00	Partnership	1945
T. Claude	1000	1000		Individual	1951
E. C. Kelling	1000	1000		Individual	1958
G. C. Minor	1000	1000		Individual	1964
Mabel O. Stokes	1000 (1/2 int.)	1000		Individual	1966
V. Evans	1000 (1/2 int.)	1000		Individual	1972
Koskot Interplanetary	1000	1000	$10.14	Corp. other than forestry	1975

Tract #1900 Map & Parcel #63-44 TVA #17, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
J. O. Ledbetter	950	950	$ 1.58	Individual	1945
Central States Investment Company	950	950		Corp. other than forestry	1973
M. G. & F. M. Langford, Jr.	950	950	$ 9.94	Partnership	1975

Tract #2200 Map & Parcel #71-30 TVA #19, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
Paul H. Luten	1620	1620	$ 1.54	Individual	1945
Frank M. Langford	1620	1620		Individual	1972
C. E. Smith & O. B. Langford	1620	1620		Partnership	1973
C. E. Smith & O. B. Langford	1620	1620	$12.43	Partnership	1975

Tract #2300 Map & Parcel #155-22 TVA #20, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
R. H. McKeel	1330	1330	$ 0.98	Individual	1945
Ora Bone & Ruby McKeel	1330	1330		Partnership	1953
Guy T. Vise	1330	1330		Individual	1959
Guy T. Vise	1330	1330	$11.89	Individual	1975

Tract #2400 Map & Parcel #144-6 TVA #21, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
T. J. Moss American	1221	1221	$ 2.87	Forest Ind.	1945
T. J. Moss American	1221	1221	$12.70	Forest Ind.	1945

Tract #2500 Map & Parcel #161-1 TVA #21, Tract #2

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
T. J. Moss American	1497	1497	$ 1.00 (assigned	Forest Ind.	1945
T. J. Moss American	1497	1497	$17.92 by author)	Forest Ind.	1975

Tract #2600 Map & Parcel #17-3 TVA #21, Tract #3

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
T. J. Moss American	2400	2400	$ 3.75	Forest Ind.	1945
T. J. Moss American	2400	2400	$ 7.48	Forest Ind.	1975

Tract #2700 Map & Parcel #19-2 TVA #21, Tract #4

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
T. J. Moss American	700	700	$ 1.71	Forest Ind.	1945
T. J. Moss American	700	700	$ 9.71	Forest Ind.	1975

Tract #2800 Map & Parcel #103-1 TVA #22, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
Nashville Trust Co.	1143	1143	$ 1.31	Corp. other than forestry	1945
Mary Napier	1143	1143	$43.92	Individual	1975

Tract #2900 Map & Parcel #142-1 TVA #23, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
M. B. Nickell	800	700	$ 1.00	Individual	1945
Christine N. McClanahan	800	700		Individual	1963
The Maxwell Company	800	700		Corp. other than forestry	1965
The Maxwell Company	800	700	$11.84	Corp. other than forestry	1975

Tract #3000 Map & Parcel #160-1 TVA #23, Tract #2

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
M. B. Nickell	560	560	$ 1.07	Individual	1945
Dr. T. J. Jackson	560	560		Individual	1951
Dr. T. J. Jackson	560	560	$66.21	Individual	1975

Tract #3100 Map & Parcel #160-1 TVA #23, Tract #3

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
M. B. Nickell	644	644	$ 1.21	Individual	1945
Dr. T. J. Jackson	644	644		Individual	1951
Dr. T. J. Jackson	644	644	$57.58	Individual	1975

Tract #3200 Map & Parcel #148-2 TVA #23, Tract #4

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
M. B. Nickell	605	605	$ 1.52	Individual	1945
Frank M. Langford	605	605		Individual	1952
R. B. Masikgale	605	605		Individual	1953
E. L. Patterson	605	605		Individual	1953
Robbie T. Lindsey	605	605		Individual	1955
Robbie T. Lindsey	605	605	$11.16	Individual	1975

Trace #3300 Map & Parcel #156-12 TVA #24, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
Carl Pace	800	700	$ 1.00	Individual	1945
James P. Loder	800	700		Individual	1966
Cuba Landing Syndicate	800	700		Corp. other than forestry	1970
Simmons & Masoud Agency	800	700		Corp. other than forestry	1973

Tract #3700

Map & Parcel #16-16

TVA #28, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
M. L. Sykes	810	810	$ 1.09	Individual	1945
Lorena P. Roberts	810	810		Individual	1945
Clifford A. Allison	810	810		Individual	1973
Clifford A. Allison	810	810		Individual	1975

Tract #3800

Map & Parcel #58-30; 40-1

TVA #29, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
Tenn. Products Corp.	1100	1100	$ 2.27	Corp. other than forestry	1945
Joseph Kraft	1100	1100		Individual	1966
MMF Land Company	1100	1100		Corp. other than forestry	1967
Long Acre, Inc.	1100	1100		Corp. other than forestry	1972
Charles W. Mobley, Sr.	1100	1100		Individual	1972
Charles W. Mobley, Sr.	1100	1100	$ 7.61	Individual	1975

Tract #4100

Map & Parcel #29-12

TVA #31, Tract #2

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
J. A. Turner	2000	2000	$ 3.75	Estate	1945
Baraga & Wehrenberg	2000	2000		Partnership	1945
Baraga & Wehrenberg	2000	2000	$ 8.68	Partnership	1975

Tract #4200

Map & Parcel #29-8

TVA #31, Tract #3

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
J. A. Turner	1868	1868	$ 1.61	Estate	1945
Baraga & Wehrenberg	1868	1868		Partnership	1945
Baraga & Wehrenberg	1868	1868	$ 4.89	Partnership	1975

Tract #4400

Map & Parcel #162-6

TVA #33, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
Andrew Weatherspoon	1200	1200	$ 1.00	Individual	1945
S. R. Rountree, Jr.	1200	1200		Individual	1951
S. R. Rountree, Jr.	1200	1200	$11.58	Individual	1975

Tract #4500 Map & Parcel #83-2 TVA #34, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
Phillip V. Weems	2004	2004	$ 1.00	Individual	1945
W. C. Hairston	2004	2004		Individual	1951
George C. Burke	2004	2004		Individual	1953
Abraham Goodman	2004	2004		Individual	1956
Frank M. Langford	2004	2004		Individual	1965
C. E. Smith & O. B. Langford	2004	2004		Partnership	1973
C. E. Smith & O. B. Langford	2004	2004	$12.08	Partnership	1975

Tract #4600 Map & Parcel #101-7 TVA #35, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
Greenie Williams	1020	1020	$ 1.00	Individual	1945
J. D. Richmond, Jr.	1020	1020		Individual	1947
T. M. Grinnell	1020	1020		Individual	1949
G. M. Walker	1020	1020		Individual	1951
Roy H. Fitzgerald	1020	1020		Individual	1951
T. M. Grinnell	1020	1020		Individual	1953
George E. Hetzel & Wilbur C. Sensing, Jr.	1020	1020		Partnership	1960
Building Corp. of America	1020	1020		Corp. other than forestry	1969
Robert F. Hayes	1020	1020		Individual	1970
Robert F. Hayes	1020	1020	$17.06	Individual	1975

Tract #4700 Map & Parcel #72-37 TVA #36, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
J. D. Wrather	784	784	$ 2.55	Individual	1945
J. D. Wrather, Jr.	784	784		Individual	1949
Frank M. Langford	784	784		Individual	1972
C. E. Smith & O. B. Langford	784	784		Partnership	1973
C. E. Smith & O. B. Langford	784	784	$ 8.79	Partnership	1975

Tract #4800 Map & Parcel #145-3 TVA #3, Tract #1

Owner's Name	Total Acres	Woodland Acres	Assessed Value Per Acre	Type of Owner	Year
F. E. Burt	1350	1350	$ 1.00	Individual	1945
Tom Larkins	1350	1350		Individual	1948
T. J. Moss American	1350	1350		Forest Ind.	1948
T. J. Moss American	1350	1350	$10.99	Forest Ind.	1975

ORIGINAL PROPERTY

Tract #0100 Map & Parcel #10-35 TVA #5, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Value Per Acre	Type of Owner	Year
Carrie C. Davis	750	750	$1.33	$38.87	Individual	1945
C. F. Artis	750	750			Individual	1946

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
0101	C. F. Altis	1974	503
0102	E. C. Hall	1974	247
0103	G. A. Tefft	1974	20
0114	E. C. Hall	1975	220
0115	G. A. Tefft	1975	20
0156	O. P. Meaton	1975	14

Note: Assessed value per acre—1975 is of largest parcel.

Tract #0300 Map & Parcel #130-4 TVA #1, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
Dave H. Anderson	1045	1045	$1.72	$39.42	Individual	1945

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
0301	Dave H. Anderson	1957	1016
0302	W. B. Bone	1957	29
0313	William R. Anderson	1966	125

Tract #0400 Map & Parcel #117-7 TVA #2, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
John W. Anderson	2470	2470	$1.00	$15.31	Corporation other than forestry	1945
W. H. Mason	2470	2470			Individual	1947
Frank M. Langford	2470	2470			Individual	1969

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
0401	Frank M. Langford	1972	1943
0402	Loretta Lynn	1972	792
0403	Farms & Homes, Inc.	1972	40
0404	Bobby Capps	1972	8
0415	Thelma F. Murray	1975	86
0416	Stanley Czarnik	1975	50
0417	J. H. Hoke	1975	19
0418	Church of Christ	1975	3

Tract #0500 Map & Parcel #96-1 TVA #4, Tract #1

Owner's Name	Total -Acres-	Woodland -Acres-	Assessed Value 1945 Per Acre	Assessed Value 1975 Per Acre	Type of Owner	Year
Tom Cannon	1206	800	$4.98	$18.27	Individual	1945

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
0501	Frank M. Langford	1957	647
0501	Kopper's	1957	647
0502	Tom Cannon	1957	636
0502	Dr. J. C. Armstrong	1959	636
0502	Flossie Hicks	1966	636
0502	Orville Hicks	1974	636

Tract #0900 Map & Parcel #95-22 TVA #10, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
Claude Harris	1135	1355	$1.01	$21.67	Individual	1945

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
0901	Claude Harris	1956	1134
0902	William R. McClure	1956	1
0901	H. I. Choate	1957	1134
0901	K-P Corporation	1957	1134
0901	Louis A. Koch	1959	1134
0901	John S. Owen	1964	1134
0901	Robert L. McCracken	1966	1134
0901	Cavalier Group, Inc.	1973	1134

Tract #1000 Map & Parcel #51-1 TVA #11, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
Indiana Tie Co.	1900	1900	$2.11	$13.48	Forest Industry	1945

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
1001	Indiana Tie Co.	1961	1899
1002	State of Tennessee	1961	1
1001	Frank M. Wright, Jr.	1969	1899

Tract #1100 Map & Parcel #27-9 TVA #12, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
J. H. Johnson	900	900	$1.00	$29.44	Individual	1945

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
1101	J. H. Johnson	1954	550
1102	T. Wheeler	1954	350
1101	R. Johnson	1955	550
1101	J. H. Johnson	1955	550

Tract #1300

Map & Parcel #151-7; 150-7

TVA #14, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
J. G. Jones	4550	4490	$2.20	$12.46	Estate	1945
Charles O. French, Jr. & Elizabeth Harrison	4550	4490			Partnership	1951

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
1301	Charles O. French & E. Harrison	1963	4490
1302	State of Tennessee	1963	35
1301	Central States Investment Co.	1972	4490
1301	Imperial Land Investment Co.	1972	4490

Tract #1400 Map & Parcel #150-1 TVA #15, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
Kopper's	4455	4455	$3.37	$18.80	Forest Industry	1945

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
1401	Kopper's	1957	4452
1402	C. A. Dyer	1957	3

Tract #1500 Map & Parcel #33-7 TVA #15, Tract #2

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
Kopper's	968	968	$3.92	$16.68	Forest Industry	1945

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
1501	Kopper's	1967	878
1502	N. Freeman, Jr.	1967	90

Tract #1700 Map & Parcel #12-5 TVA #15, Tract #4

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
Kopper's	2400	2400	$3.00	$17.55	Forest Industry	1945

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
1701	Kopper's	1960	2353
1702	W. M. Jackson	1960	47

Tract #2000 Map & Parcel #110-13; 91-30.1 TVA #18, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
A. W. Lucas, Jr.	1950	1950	$3.85	$25.07	Estate	1945

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
Platted in 1950	Numerous individuals	1950	Platted

Tract #2100 Map & Parcel #64DF-35 TVA #18, Tract #12

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
A. W. Lucas, Jr.	1295	1295	$1.93	$15.58	Estate	1945

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
Platted in 1950	Numerous individuals	1950	Platted

Tract #3400 Map & Parcel #119-36 TVA #25, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
J. L. Shannon	920	920	$1.03	$35.03	Individual	1945

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
3401	J. L. Shannon	1949	500
3402	Wylie Wheeler	1949	355
3401	A. R. James	1949	500
3413	E. B. Pewitt	1949	6
3424	Raymond Hammonds	1959	65
3424	Dr. George E. Burch	1960	65
3424	Bonfouch Assets, Inc.	1965	65-1/2 (interest)
3525	Daniel D. Davis	1965	289
3525	Charles E. Mochlenkamp	1965	289
3525	Farms and Homes, Inc.	1967	289
3525	Ventures, Inc.	1967	289
3525	Albert J. Dale	1968	289
3525	Paul R. Booker	1973	289
3525	Joyce Wiley	1973	289

Tract #3500 Map & Parcel #154-4 TVA #26, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
Quinton M. Smith	1440	1000	$3.47	$27.66	Individual	1945

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
3501	Roscoe Rochelle	1947	1259
3502	J. A. O'Bryan & J. C. O'Bryan	1947	394
3523	Vet A. Bandy	1964	9
3514	Brown Rochelle	1968	325
3525	Pierce Marrs	1968	241
3526	William D. Marrs	1968	145
3567	Thomas Barnett	1970	10
3558	Vet A. Bandy	1973	53
3569	Thomas Barnett	1973	49
3514	Robert C. Rochelle	1969	325
3525	Reed DePriest & William H. Collier	1973	212
3525	Robert Mathis	1973	212
3525	Alvin C. Leegan	1973	212

Tract #3600

Map & Parcel #148-4; 148-3

TVA #27, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
State of Tennessee	1070	1070	$2.34	$12.55	Corp. other than forestry	1945
C. A. Thompson & McClanahan	1070	1070			Partnership	1947
Charles C. Kerwin	1070	1070			Individual	1947
C. A. Thompson	1070	1070			Individual	1947

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
3601	C. A. Thompson	1960	997
3602	State of Tennessee	1960	73
3601	Timber Resources, Inc.	1974	997

Tract #3900 Map & Parcel #44-10 TVA #30, Tract #1

Owner's Name	Total -Acres-	Woodland -Acres-	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
W. M. Tolly	1125	1125	$3.96	$25.00	Individual	1945
Porch, Litterton, Peeler & Murray	1125	1125			Partnership	1965

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
3901	Porch, Littleton, Peeler & Murray	1970	1115
3902	David Wagster	1970	10
3913	Edwin A. Hatcher	1973	500
3914	James F. Dotson	1973	181
3935	C. L. Wright	1972	20
3916	Charles T. Mitchell	1974	12

Tract #4000 Map & Parcel #102-1 TVA #31, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
J. A. Turner	2501	2501	$2.00	$12.11	Estate	1945
Christine Baraga & Mary Jo Wehrenberg	2501	2501			Partnership	1945

Fragmentation Date

Tract Number	Owner's Name	Year	Acres in the Divided Property
4001	Baraga & Wehrenberg	1968	2391
4002	Lester Capps	1968	110
4013	C. D. Speights	1974	2
4014	Carl McBride	1974	1

Tract #4300 Map & Parcel #106-1 TVA #32, Tract #1

Owner's Name	Total Acres	Woodland Acres	1945 Assessed Value Per Acre	1975 Assessed Value Per Acre	Type of Owner	Year
R. E. Voorhies	1564	1564	$1.00	$13.41	Individual	1945

Fragmentation Date

Tract Number	Owner's Name	Date	Acres in the Divided Property
4301	R. E. Voorhies	1946	1473
4302	L. C. Bohanan	1946	91
4323	D. Gueataer	1961	25
4304	E. Tinsler & F. W. Smith	1963	1246
4345	Smith	1969	65

APPENDIX C

APPENDIX C

CODE SHEET FOR SUMMARY DECK

Data	Column(s)
I.D. or tract number	2-3
Owner class Individual—1 Partnership—2 Estate—3 Corporation other than forestry—4 Forest industry—5	4
Size of tract in acres in 1945	5-8
Woodland acres in 1945	9-12
Status of land since 1945 No change—1 Fragmentation—2 Consolidation—3 Fragmentation & consolidation—4	13
Number of parcels property makes up in 1975	14
Total number of sales of all parcels	15-16
Actual assessed value in dollars in 1945	17-22
Land use code and county resident or nonresident information Urban & resident—1 Urban & nonresident—2 Forest & resident—3 Forest & nonresident—4 Agricultural & forest & resident—5 Agricultural & forest &nonresident—6	23
Encumbered in 1975—1 Encumbered in last five years—2 Encumbered in last 10 years—3 Not encumbered—4	24

Data	Column(s)
Timber deeds Yes—1 No— 2	25
Change in land Roads added—1 Power lines—2 Structures—3 Roads & power lines—4 Roads & structures—5 Power lines & structures—6 Roads, power lines, & structures—7	26
Largest parcel of original tract in acres in 1975	27-30
Woodland acres in 1975 of largest parcel	31-34
Year consolidated	35-36
Total acres added to original property	37-40
Woodland acres added to original property	41-44
Land use and county resident or nonresident information for consolidated parcel	45
Assessed value in dollars of consolidated property in 1975	46-51
Change in land use of consolidated property (same as column 26)	52
Total number of consolidations of all properties	53
Assessed value in dollars of largest parcel of original	54-59
Number of owners of original property since 1945 (use 99 if platted)	60-61
Number of owners of largest parcel in 1975	62
Type owner of largest parcel in 1975 (same as column 4)	
Card number	77-80

CODE SHEET FOR FRAGMENTATION DECK

Data	Column(s)
Tract number	2-3
Refers to the last digit of the tract or fragmented tract from which the subject fragment came, and these digits are in chronological order in which the property was fragmented with the largest fragmented property being numbered first when sales were made in the same year	4
Refers to next sequential break or sale in the original property	5
Year fragmented	6-7
Acres in divided property	8-11
Land use and county resident or nonresident information (same as column 23 in Summary Deck)	12
Assessed value	13-18
Property encumbered (same as column 24 in Summary Deck)	19
Change in land use (same as column 26 in Summary Deck)	20
Number of times this new tract sold or was resold	21-22
First time resold in the year	23-24
Second or last time resold if more than two resales	27-28
Fragmentation number (same as column 4)	29
Fragmentation number (same as column 5)	30
Acres in divided property	33-36
Land use and county resident or nonresident information (same as column 23 in Summary Deck)	37
Assessed value in dollars	38-43
Property encumbered (same as column 24 in Summary Deck)	44

Data	Column(s)
Change in land use (same as column 26 in Summary Deck)	45
Number of times this new tract sold or was resold	46-47
First time resold in the year	48-49
Second or last time resold if more than two resales	50-51
Tract number	52-53
Fragmentation number (same as column 4)	54
Fragmentation number (same as column 5)	55
Year fragmented	56-57
Acres in divided property	58-61
Land use and county resident or nonresident information (same as column 23 in Summary Deck)	62
Assessed value in dollars	63-68
Property encumbered (same as column 24 in Summary Deck)	69
Change in land use (same as column 26 in Summary Deck)	70
Number of times this new tract sold or was resold	71-72
First time resold in the year	73-74
Second or last time resold if more than two resales	75-76
Card number	77-80

CODE SHEET FOR TENURE DECK

Data	Column(s)
Tract number	2-3
Tract within parcel (same as column 4 in Fragmentation Deck)	4
Sequential break in property (same as column 5 in Fragmentation Deck)	5
Longest number of years tract remained in one ownership	6-7
Total number of owners in 1945	8-14
Number of owners between 1946 and 1955	15-21
Number of owners between 1956 and 1965	22-28
Number of owners between 1966 and 1975	29-35
Total number of sales	36-37
Total number of owners from 1945 to 1975	38-39
Fragmentation or original year sold by first owner	40-41
By second owner	42-43
By third owner	44-45
By fourth owner	46-47
By fifth owner	48-49
By sixth owner	50-51
By seventh owner	52-53
By eighth owner	54-55
By ninth owner	56-57
By tenth owner	58-59
Ownership fee simple—0 Easements or right-of-way—1 Timber deeds—2 Divided interest of largest parcel—3	60

Data	Column(s)
1 + 2—4 2 + 3—5 3 + 4—6 1 + 4—7 1 + 3—8 2 + 4—9	60
Acres of easement or right-of-way (less than one acre coded as one acre)	61-62
Type of timber deed Less than one year—1 Two years—2 Three years—3 Four years—4 Five years—5 Greater than five years but less than 99 years—6 99 years—7	
Card number	77-80

CHI-SQUARE TEST

Data	Column(s)
I.D. or tract number (same as columns 1-4 in Fragmentation Deck)	1-4
Fragmentation..... -1 No fragmentation... +1	5-6
Owner classes Corporation other than forestry..... +3 Forest industry..... +2 Estate..... +1 Individual..... -2 Partnership..... -4	7-8
Owner classes (same code as columns 7-8)	9-10
Number of sales of each parcel prior to any fragmentation, if any	11-13
Assessed value per acre in 1945	14-18
Assessed value per acre in 1975	19-24
Encumbered..... +1 or Not encumbered.... -1 (largest parcel in 1975)	25-26
Size of property in total acres in 1945	27-30
Size of property in total acres in 1975	31-34
Civil district 2 = +3 4 = +2 1 = +1 3 = -3 5 = -3	35-36
Percentage of woodland acres in 1945	37-39
Number of times fragmented	40-41
Average number of sales per year on each parcel (+1 added to each value to eliminate zeros)	42-45
Card number	76-80

APPENDIX D

APPENDIX D

WARRANTY DEED

FOR AND IN CONSIDERATION OF the sum of Six Thousand & No/100 Dollars ($6,000) Cash, the receipt of which is hereby acknowledged, We, Q. M. Smith and wife Laura, Smith, have this day bargained and sold and do hereby transfer and convey to Guy Oakley and his heirs and assigns all the standing timber of every kind and character, except walnut and cherry measuring 43 inches or more in circumference at a point 12 inches from the ground on a certain tract of land in the 5th Civil District of Humphreys County, Tennessee, bounded and described as follows:

Beginning at an elm on the south bank of Buffalo River; thence South 17 degrees West 129 poles with R. E. Horner's East Line to stake in fence, with mulberry pointers; thence South 73 degrees East 10 poles to a stake at corner of fence; thence South 9 degrees West 20 poles to stake on hillside, beech pointers; thence South 32 degrees East 35 poles to stake, corner of fence; thence South 34 poles to stake, corner of fence; thence East 13 poles to stake in fence; thence South 2 degrees West 62 poles to center of hollow; thence down said hollow with its meanders to old house place; thence leaving said hollow (and two large white oak trees outside the boundaries of the land hereby described) and following said fence to Buffalo River; thence with said river and its meanders to the beginning.

And being part of the same land described in deed from L. L. Shipp, et al., to E. J. Smith and Q. M. Smith, of record in Book 47, page 180 Register's office of Humphreys County, Tennessee. The interest in said land of the said E. J. Smith, now deceased was inherited by his son and sole heir, the undersigned Q. M. Smith.

We covenant that we are lawfully seized and possessed of said timber; that we have a good right to convey it; that it is clear and unincumbered; and we warrant the title.

We hereby grant to the purchaser and his assignes a period of two years from the date of this conveyance to cut and remove said timber from said land, and rights of way over said land and suitable mill sites thereon for the cutting, manufacturing and removing of said timber, and it is agreed that any timber remaining on said land at the expiration of said two year period will revert to and become the property of the owners of said land.

It is expressly understood, stipulated and agreed that the purchaser and his assigns will be liable for and will compensate the granters for any damage to fences, buildings, livestock on said land resulting from the cutting, manufacturing or removal of said timber, and the said purchaser and his assigns will exercise reasonable care to avoid damage to other timber on said land not included in this conveyance but will not be liable for unavoidable damage to such other timber.

Witness our hands this March 4th, 1946.

Revenue Stamps

$6.00

Q. M. Smith

Laura Smith

STATE OF TENNESSEE II

RUTHERFORD COUNTY II PERSONALLY appeared before me, Ewing Smith a Notary Public in and for said State and County, the within named Q. M. Smith and wife Laura Smith, the bargainers, with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

WITNESS MY Hand and official seal, at Murfreesboro, Tennessee, this March 4th, 1946. NOTARIAL SEAL: My commission expires Jan. 17th 1949.

Ewing Smith
Notary Public

TIMBER DEED

THIS DEED, made the 24th day of May 1974, by and between ROBERT HAYES and wife, AILEEN T. HAYES, (hereinafter called "Grantor," whether one or more) and INLAND CONTAINER CORPORATION (hereinafter called "Grantee"), an Indiana Corporation with an office or place of business at New Johnsonville, Humphreys County, Tennessee; WITNESSETH:

That for and in consideration of the sum of $2,948.00, cash in hand paid, the receipt of which is hereby acknowledged, and for the further consideration of there being paid to the grantors herein for all additional tonnage of timber cut and removed, over and above the initial tonnage of 2,460 tons, at the sum of One and 00/100 ($1.00) Dollars per ton. It is specifically agreed that the sum of $1.00 per ton shall not be applicable except that the cutting exceeds 2,460 tons, with the sum of $1.00 per ton, being the total consideration for all such overage, as so cut,

The sand Grantor does hereby sell and convey unto said Grantee, its successors and assigns, all of the following described trees and timber, to-wit:

TRACT A. All merchantable timber,

TRACT B. All merchantable timber,

TRACT C. All merchantable timber West of road and North of high power line plus a 10 acre block South of high power line bounded by fence on the West and pasture on the South and East, and all timber East of road excluding block behind old Weatherspoon house,

Situated and being located on the following described property located in Humphreys County and Dickson County, Tennessee, to-wit:

TRACT A.

Lying and being situated in the 3rd Civil District of Humphreys County, Tennessee, and in the 1st Civil District of Dickson County, Tennessee, as follows:

BEGINNING on a stake in the public road in the original West boundary line, and in Jessie Herbison's East boundary line, the said stake being 19 poles North from a common corner, between the Grantee and the Grantor; running thence with the said line North 5 poles to a stake in Herbison's field at another common corner of the said lands; thence East 20 poles to a stake in the said road; thence due West with the said road 20-1/2 poles to the beginning, containing 50 sq. rods.

Lying and being in the First District of Dickson County, Tennessee, and the Old Ninth District of Humphreys County, Tennessee,

BEGINNING in Humphreys County at a red oak (now a rock) in A. Hood's line, runs East 40 poles to a pile of stones; thence North 20 poles to a pile of stones; thence East 40 poles to a pile of stones; a double red oak pointer; thence North 160 poles to a chestnut; thence West 100 poles to a stake, post oak pointer; thence with said tract 4, for the following three dalls; South 100 poles to a Dunaway's branch at a pile of stones; thence West 40 poles to a post oak; thence about S. 36 E. 100 poles to the beginning corner, containing by estimation 110 acres.

BEING the same property conveyed to Robert F. Hayes and wife, Aileen T. Hayes, by Jessie Herbison and wife, Opal Herbison, by deed dated March 28, 1972, of record in Deed Book 116, Page 1172, Register's Office for Humphreys County, Tennessee.

TRACT B.

Lying and being situated in the Third Civil District of Humphreys County, Tennessee, bounded and described as follows:

BEGINNING on a post oak stump, one of Robertson's, now Jesse Herbison's corners, running thence with Herbison's line along a wire fence S. 25° E. 112 poles to a stake in the edge of the old road, the same being one of Homer Rumsey's corners of the Cook tract; thence with Rumsey's N.B.L. N. 86° W. 101 poles to

a stake in the Furrie's, now Ridings, now Sensings EBL; thence N. 4° E. with the said line and Rumsey's line 192 poles to a stake at Rumsey's NEC and in Huggins, now Work's SBL; thence with Work's et al line S. 86° E. 80 poles to a stake in a small hollow, formerly a black oak; thence S. 4° W. 72 poles to a stake in Robertson's line; thence with Robertson's line S. 62-1/2° West 40 poles to the beginning, containing 90 acres.

BEING the same property conveyed to Robert F. Hayes and wife, Aileen T. Hayes, by Truman Moran and wife, Effie Moran, of record in Deed Book 115, Page 1138, Register's Office for Humphreys County, Tennessee.

TRACT C.—I

TRACT NO. 1: A certain tract or parcel of land situated in the 3rd (old 9th) Civil District of Humphreys County, Tennessee, on the waters of Tumbling Creek and described as follows:

BEGINNING at a post oak, James Rumsey's Southeast corner and running thence South 61 poles to a post oak; thence East 185 poles to a post oak now down with post oak pointers; thence South 240 poles to a rock, Franklin Heirs' northeast corner; thence west 42 poles to a black jack, Franklin Heirs' Northwest corner; thence South 192 poles to a Spanish Oak in G. H. Miller's line; thence West 123 poles with Miller's line to a post oak, M. Crowder's Southeast corner; thence North 231 poles with Miller's line to a post oak M. Crowder's Southeast corner; thence North 281 poles to a stake in Thomas' line, elm and hickory pointers; thence North 75° West 19-1/2 poles to a pile of rock, Weatherspoon's Northeast corner; thence West 30 poles to a black gum, Weatherspoon's Northwest corner; thence South 95 poles to a red oak, S. W. Taylor and Company's Northeast corner; thence West 212 poles with said S. W. Taylor and Co.'s line to a chestnut oak, S. W. Taylor and Co.'s corner; thence West 10 poles to a black oak; thence North 242 poles to a post oak; thence East 62 poles to a stake; thence North 5 poles to a stake; thence East 200 poles to the beginning, containing 865 acres, more or less.

TRACT NO. 2: A tract of land situated in the 3rd Civil District of Humphreys County, Tennessee, on both sides of Indian Creek, about 10 miles South of McEwen and bounded as follows:

BEGINNING at a white oak in Hickory Hollow, Guy Oakley's corner in Smith's line, running thence East 37-1/2 poles to a stake, G. C. Williams Southwest corner; thence North with this line 250 poles to a post oak, William's Northwest corner in Brake's line; thence West with Brake 113-1/2 poles to a stake with

hickory pointers in a hollow, one of Rumsey's corners; thence South with Rumsey and Smith 192 poles to a pile of stone about 3 poles South of Indian Creek Road, one of Smith's corners; thence East 76 poles to a stake at the corner of Smith's fence; thence South 58 poles to the beginning, containing by estimation 150 acres, more or less.

Included in the above described property but expressly EXCLUDED therefrom is the property set out in the deed from Wilbur C. Sensing, Jr. and George E. Hetzel to Berliey Landon Duncan and wife, Geraldine Fay Duncan, of record in Deed Book 84, Page 135, Register's Office of Humphreys County, Tennessee, containing 3.30 acres more or less, and in the deed from Wilbur C. Sensing, Jr., and George E. Hetzel to Elmer Buttrey and wife, Lura Mae Buttrey, of record in Deed Book 83, Page 413, said Register's Office, containing 10.20 acres, more or less.

BEING the same property conveyed to Robert F. Hayes from the Building Corporation of America by deed dated August 25, 1970, of record in Deed Book 114, Page 363, Register's Office for Humphreys County, Tennessee.

TRACT C.—II

A certain tract or parcel of land in the Third Civil District bounded and described as follows:

BEGINNING at a pile of stones near the head of a drain, with white oak and hickory pointers, Robertson's Southwest corner, in Meadow's E.B.L., running thence South 150 poles to a stake R.O.P., at the cross fence; thence South 78° East with the fence 20 poles to a stake near the road, hickory and elm pointers; bhence East 56 poles to a stake with red oak, white oak and dogwood pointers; thence North 90 poles to a large black gum; thence East 9 poles to a post oak; thence North 62 poles to a stake in Robertson's line; thence West 85 poles to the beginning, containing by estimation 75 acres or more or less, including and excluding 3 acres heretofore conveyed to J. C. Fitzgerald on June 2, 1953, and of record in Deed Book 73, Page 494, Register's Office for Humphreys County, Tennessee, and described as follows:

BEGINNING at a pile of rock, Crowder's Northwest corner, Wheeler's Southwest corner; thence South with Crowder's West line 21 poles to a stake with white oak and hickory pointers; thence East to the West margin of Tumbling Creek Road at an iron stake; thence Northerly with the West margin of said road to Crowder's North line, Wheeler's South line; thence West with said line to the beginning, containing three acres, more or less.

BEING the same property conveyed to Robert F. Hayes by Cebren F. Pack and wife, Jenny Pack, by deed of record in Deed Book 114, Page 515, Register's Office for Humphreys County, Tennessee.

IT IS HEREIN SPECIFICALLY UNDERSTOOD AND AGREED AS BETWEEN GRANTORS AND GRANTEE, THAT THE ABOVE CONVEYANCE OF TIMBER IS SUBJECT TO THE FOLLOWING THREE (3) STIPULATIONS AND CONDITIONS:

1. All wood taken out of the above described property is to be so taken out by roads running along the Northern boundaries of said property.
2. No maple tree of any kind, size or description is to be cut.
3. All logging roads are to be leveled after the timber is removed.

It is the express intention of the parties hereto that the trees and timber hereinabove described are hereby granted and conveyed as real estate, irrespective of the length of the cutting period hereinafter specified, and that this deed shall be recorded with the land records of the above named county or counties.

The Grantor hereby grants to the Grantees, its successors and assigns, the right to go in, upon and over the real estate hereinabove described for the purpose of cutting and manufacturing said timber and trees hereby conveyed in such manner and by such methods as Grantee may choose to adopt, and to use such machinery and/or equipment therefor as said Grantee may choose to adopt, and for the purpose of removing the same, or such parts thereof as Grantee may desire, from said real

estate. The Grantee, its successors and assigns, are hereby given the right to go in, upon and over any other real estate belonging to said Grantor, including any rights-of-way belonging to Grantor or vested in Grantor, for the purpose of performing any of the aforesaid acts on the land hereinabove described, except as hereinabove provided, any express provision taking precedence over the general provisions.

The Grantor hereby covenants with the Grantee, its successors and assigns, that he is the owner of the land on which said timber and trees are situated; that he is seized and possessed of the same, and has a good right to sell and convey the same; that the title to such timber and trees as hereby sold and conveyed is free, clear and unincumbered; that he will pay all taxes and assessments on said land and on said trees and timber and keep the same free from all liens and incumbrances during the period herein granted; that he, his heirs and assigns, will warrant and defend unto the Grantee, its successors and assigns, the title and quiet possession to said timber and trees and to the land whereupon they are located, against the claims of all persons whomsoever.

The Grantor hereby grants to said Grantee, its successors and assigns, the right, during the period herein granted, to use any water on said land hereinabove described; to set sawmills in such places as Grantee may desire on said land for the purpose of sawing the timber and trees herein sold and conveyed or otherwise handle or process the same, to remove at the termination of the period herein granted all machinery, equipment, and buildings and structures constructed, erected or placed on such land, and to exercise any and all other rights and

privileges which may be appropriate for the cutting, manufacture and removal of said timber and trees.

The Grantee, its successors and assigns, are hereby granted the period of Three (3) years from the date hereof within which said timber and trees herein sold and conveyed must be cut and removed.

At the expiration of such period or periods of time the right, title and interest herein sold and conveyed to the Grantee shall revert to and reinvest in said Grantor, his heirs and assigns, and all rights and privileges herein granted, sold and conveyed to the Grantee shall cease and determine.

It is expressly understood and agreed that there is attached to this instrument a topo map of the area of land designated by the lands herein described and referred to, which map shows thereon the road and high power line referred to within this instrument, and has the areas of timber to be cut shaded and/or colored in red, and shall be looked to as a part of the agreement by and between the parties in the event of any dispute or controversy whatsoever.

It is expressly understood that the number and gender of the Grantor when used in the context hereof shall be and conform to the name or names of the Grantor as set forth in the first paragraph hereof.

IN TESTIMONY WHEREOF, the Grantor has hereunto set his hand and seal on the day and date first above written.

Robert Hayes

Aileen T. Hayes

STATE OF TENNESSEE)
)
COUNTY OF HUMPHREYS)

Personally appeared before me, the undersigned Notary Public in and for the County and State aforesaid, the within named ROBERT HAYES and wife, AILEEN T. HAYES, the bargainors, with whom I am personally acquainted, and who acknowledged that they executed the foregoing Timber Deed for the purposes therein contained.

Witness my hand and official seal at office in Waverly, Humphreys County, Tennessee, on this the 24th day of May, 1974.

Sue M. Alsobrook
Notary Public

TIMBER CONVEYANCE

THIS CONVEYANCE, the day and date hereinafter set out, by CHARLES C. KERWIN, of Lake Forest, Illinois, hereinafter called the Vendor, to ALBERT HARDIN, of Camden, Tennessee, hereinafter called the Vendee, WITNESSETH:

That the Vendor hereby bargains, sells and conveys, at and for the price and consideration of Eight Thousand Dollars ($8000.00) cash in hand paid, the receipt of which is hereby acknowledged, unto the said Vendee, all of the timber and the right to cut and remove the same situate on the following described lands in Humphreys County, in the State of Tennessee, to-wit:

(REVENUE STAMPS $8.80)

I Certify that State Tax is Paid
State Tax $12.00
Certificate .50
Total $12.50
W. E. Webb /s/ Clerk

Beginning at a forked sycamore on the west bank of Buffalo River, running thence west one hundred seventy-three (173) poles to a post oak, thence south seventy-seven (77) poles to a hickory, thence west two hundred sixty (260) poles to a stake, thence south on the west boundary of said tract to a point four hundred eleven and eighty-four-hundredths (411.84) poles north of the southwest corner of said tract, thence east four hundred seventy-one (471) poles to the east line of said tract, thence north fifty-four and sixteen-hundredths (54.16) poles to a small hickory on a ridge, thence west eighty-six (86) poles to a stake in the road, thence north one hundred thirty (130) poles to a blazed dogwood,

thence east one hundred twenty-nine (129) poles to a sourwood, thence north forty-four (44) poles to a black walnut, thence north thirty (30) degrees west, twenty (20) poles, thence northeast one hundred twenty-nine (129) poles to a sourwood, thence north forty-four (44) poles to a black walnut, thence north, thirty (30) degrees west, twenty (20) poles, thence north, twenty (20) degrees west, seventy-five (75) poles, thence north fourteen (14) degrees west, fourteen (14) poles, thence north fifteen (15) degrees west, twenty (20) poles, thence north seventeen (17) degrees and ten (10) minutes west, one hundred fifty-nine (159) poles to beginning corner, containing one thousand seventy (1,070) acres, more or less.

There is also granted to the Vendee the right to enter in and upon all the above described lands and to remove the timber therefrom, and to use log loaders, teams, wagons, trucks and other ways to cut, haul and remove the timber therefrom. And the Vendee shall have the rull right of ingress and egress, and the privilege of building mill sheds and temporary houses, and to place saw mills on the said land, and shall remove all of the same upon the termination hereof.

The Vendee will proceed with all due expedition to cut and remove the same timber at the earliest possible date, but the term of this grant shall be for the period of four (4) years from the date of the within conveyance, at which time the Vendee shall deliver the immediate and peaceful possession of the said real estate to the Vendor.

The Vendee agrees that as soon as the timber herein-conveyed has been removed under this conveyance, he will notify the Vendor, in

writing, and the rights of the Vendee hereunder shall thereupon cease and terminate.

IN WITNESS WHEREOF, the Vendor has hereunto set his hand and seal this 22nd day of April, 1955.

Charles C. Kerwin /s/
VENDOR

STATE OF ILLINOIS)
)
COUNTY OF COOK)

Before me, the undersigned, a Notary Public, in and for said County and State, personally appeared the within named CHARLES C. KERWIN, who acknowledged the execution of the foregoing instrument to be his voluntary act and deed.

WITNESS, my hand and Notarial Seal this 22nd day of April, 1955.

Clara M. Franz /s/
Notary Public

STATE OF TENNESSEE)
)
COUNTY OF HUMPHREYS)

Received for record the 6th day of May, A.D., 1955 at 1:20 o'clock P.M., and entered in Note Book 6, Page 286; recorded in Deed Book 73, Pages 117-118.

WITNESS my hand

Anne P. Westbrook
REGISTER

TIMBER MANAGEMENT SALES CONTRACT & DEED

THIS CONTRACT AND DEED entered into on the 13 day of September, 1971, by and between FRANK LANGFORD and wife, ELAINE LANGFORD (hereinafter called Grantor, whether one or more), and INLAND CONTAINER CORPORATION (hereinafter called Grantee), an Indiana corporation with an office or place of business at New Johnsonville, Humphreys County, Tennessee; WITNESSETH:

That for and in consideration of the sum of $98,000.00, cash in hand paid, the receipt of which is hereby acknowledged, Grantor does hereby sell and convey unto said Grantee, its successors and assigns, all of the following described trees and timber, to-wit:

> All trees or timber that is 8 inches in diameter and up measured at the ground, except as follows:
>
> Grantee will leave certain trees for purposes of beautification as shall be designated by Grantor by paint on an area that is approximately 450 to 500 feet deep on either side of State Highway No. 13 and on either side of Stewart Branch and on either side of the top of the ridge lying behind Rice's Cemetery.
>
> Other trees and timber measuring 8 inches and up in diameter located on the foregoing areas will be harvested by the Grantee as follows:
>
> On the foregoing areas the trees not reserved and marked by paint that are 8" and up in diameter and as located on the portion that is actual building sites will be harvested by the Grantor causing the same to be pushed over with a dozer at the Grantor's expense and at such time as required by Grantee.

situated and being located on the following described property located in Humphreys County, State of Tennessee, to-wit:

Lying and being situated in the 4th Civil District of Humphreys County, Tennessee, more specifically described as follows:

TRACT NO. 1.

BEGINNING on a hickory, Osboy Potter's Southwest corner, runs thence West, 130 poles to an iron stake in James' field; thence North, 360 poles to a white oak with two sourwood pointers; thence North, 26° East, 152 poles to a walnut; thence North, 16° West, 10 poles to a stake in the road; thence North, 54° East, 70 poles to a branch; thence North, 10°, West, 90 poles to a stump; thence North, 20° West, 40 poles to a white oak; thence North, 24° West, 18 poles to an elm with white oak pointers; thence North, 70° West, 12 poles to a sweetgum; thence South, 28° East, 34 poles to a stake; thence South, 40° East, 56 poles to a stake; thence South, 55" East, 10 poles to a hickory; thence South, 80° East, 20 poles to a stake; thence 45° East, 42 poles to a white oak; thence North, 31° East, 20 poles to a hickory; thence North, 63° East, 38 poles to a white oak with hickory pointers; thence North, 94 poles to a sourwood, Lum Ruston's Southwest corner; thence East, 279 poles to a pile of stones; thence North, 4 poles to a pile of stones; thence East, 198 poles to a pile of stones; thence South, 140 poles to a pile of stones; thence East, 172 poles to a stake; thence South, 96 poles to a large chestnut; thence West, 212 poles to a pile of stones; thence South, 98 poles to a stake with hickory pointers; thence West, 72 poles to a stake; thence South, 168 poles to a stake; thence West, 35 poles to a stake with pointers; thence South, 210 poles to a large hickory; thence West, 77 poles to a hickory; thence South, 51 poles to a stake with hickory pointers; thence West, 102 poles to a stake; thence North, 37 poles to a stake with gum pointers; thence North, 22° East, 250 poles to a stake with dogwood pointers; thence West, 32 poles to a stake with hickory pointers; thence South, 23° West, 250 poles to a stake; thence West, 48 poles to a stake; thence South, 60 poles to a stake with beach pointers; thence West 45 poles to a hickory; thence North 215 poles to a stake; thence East, 20 poles to a red oak; thence North, 40 poles to a red oak; thence North, 15° East, 110 poles to a stake on the ridge; thence East, 138 poles to a stake; thence North, 60 poles to a rock; thence West, 170 poles to a stake with white oak pointers; thence North, 100 poles to a stake with white oak and chestnut pointers; thence West, 320 poles to a pile of stones; thence South, 410 poles to a set stone with rock pointers; thence West, 90 poles to a rock, Potter's Northwest corner; thence South, 90 poles to the beginning, containing by estimation, 2,470 acres, more or less, including and excluding approximately 25 acres heretofore conveyed to C. B. Jones

sometime about the year 1938, by deed from Mary A. Anderson, of record in Book ___, Page ___, Register's Office for Humphreys County, Tennessee.

BEING the same property conveyed to W. H. Mason by deed from John W. Anderson and wife, Clara W. Anderson, on the 25th day of January, 1947, of record in Book 62, pages 161-162, Register's Office for Humphreys County, Tennessee.

TRACT NO. 2.

BEGINNING at a stake with chestnut and sasafras pointers, in James Reece's N.B.L. and on the East side of said Reece hollow and a hillside, runs thence North, 23° East, 250 poles to a stake with blackgum, dogwood and hickory pointers, at the foot of the hill, on the east side of said hollow; thence West, 32 poles to a hickory, with hickory pointers, on the hillside on the west side of said hollow; thence South, 23° West, 250 poles to a stake with two black oak, two hickory and white oak pointers, in said Reece's N.B.L.; thence East with said line, 32 poles to the beginning, containing by estimation, 50 acres, more or less, being the same land conveyed by the Lucy Larkin heirs in the year 1925, by deed of record in Book 12, Page 226, Register's Office for Humphreys County, Tennessee.

BEING the same property conveyed to W. H. Mason by deed from J. P. Oliphant and wife, Mattie Oliphant, on the 23rd day of November, 1948, of record in Book 64, Page 170, Register's Office for Humphreys County, Tennessee.

TRACT NO. 3.

BEGINNING on a white oak at the end of the lane on the side of the road leading up Stewart hollow; thence North, 45 poles to a stake with red oak pointers; thence South, 48 1/2° West, 14 poles to a stake with ash and dogwood pointers; thence South, 28-1/2° West, 9 1/5 poles to a red oak with red oak and persimmon pointers; thence West, 69 1/3 poles to a white oak; thence North, 4 poles to a small sugar tree; thence North, 41 1/2° West, crossing a spring branch at 36 poles, in all 62 poles to a stake, formerly a sugar tree on the south side of Hurricane Creek, the same being the corner of a tract of land conveyed to A. Baker by W. O. Pickard; thence down said creek with its meanders 74 poles to an ironwood with hornbone and cataba pointers at the foot of the bluff; thence South, 45° West, 63 poles to a stake with persimmon pointers; thence East, 4 poles to a stake on the north side of the Stewart spring branch; thence South, 12° West, 18 poles to a stake in the center of the public road at the corner of the fence; thence

South, 28° West, 34 poles to a red oak with white oak pointers; thence South, 40° East, 56 poles to a small hickory with three white oak pointers; thence South, 55° East, 10 poles to a white oak with three white oak pointers; thence South, 80° East, 20 poles to a chestnut; thence South, 55° East, 46 poles to a chestnut; thence South, 45° East, 41 1/2 poles to a white oak with white oak and red oak pointers; thence North, 31° East, 20 poles to a hickory; thence North, 63° East, 25 poles to a white oak; thence South, 60° East, 38 poles to a white oak stump, the same being the Southeast corner of a tract of land sold to James Ashley; thence North, 1° West, 100 poles to a stake with sweetgum pointers, the same formerly being Rushton's S.W.C.; thence North, 29 poles to the end of the lane; thence North, 10° West, with the middle of the lane, 40 poles to a stone on the bank of the spring branch; thence North, 28 1/2° West, 17 poles and 14 links, to the beginning, containing 215 acres, more or less, it being intended to convey the lands in their entirety embraced within the boundaries of a deed from J. T. Anderson, of record in Book 27, Page 499, Register's Office for Humphreys County, Tennessee, except that there is reserved in the above boundaries a graveyard on the south side of Hurricane Creek road and on the east side of the Denslow lands and north and west of the lands herein conveyed, which is known as the Rice Graveyard, and which is not herein conveyed.

BEING the same property conveyed to W. H. Mason by deed from R. T. Rice and A. W. Rice, on the 13th day of March, 1951, of record in Book 68, Pages 232-233, Register's Office for Humphreys County, Tennessee.

The deed conveying Tract No. 3 has written therein a certain clause, which reads as follows: "and conveyed subject to the following considerations, that is, upon the condition and subject to the restriction and limitation, that on no part of the above described premises shall any mercantile business of any kind or character or commissary for the distribution of supplies be ever kept or carried on by anyone.

In order to set aside the foregoing restrictions, an instrument was executed by the heirs of the said J. T. Anderson, on the 4th day of January, 1952, remising, releasing and forever discharging any lien or right of restriction, created by the foregoing clause, setting out fully, their reasons therefor, and making specific reference to the said clause as contained in deed from the said J. T. Anderson to R. T. and A. W. Rice, which deed was executed on the 8th day of May, 1912, of record in Book 27, Page 499, Register's Office for Humphreys County, Tennessee. The said instrument executed by the heirs

of the said J. T. Anderson, remising, releasing and discharging the said restrictions on the subject property, is of record in Book 70, Pages 30-31, Register's Office for Humphreys County, Tennessee.

The said three (3) tracts of land, being the same property conveyed to Will E. Mason by will of his late father, W. H. Mason, executed on the 19th day of September, 1951, which will was probated on the 23rd day of September, 1954, and which will is of record in Will Book 67, Page 361, County Court Clerk's Office, for Davidson County, Tennessee. A certified copy of the said will is of record in Book 117, page 1056, Register's Office for Humphreys County, Tennessee.

There is an easement existing on the lands heretofore described, covering a transmission line, sold, transferred and conveyed to the United States of America, by W. H. Mason, of record in Book 68, Pages 223-224, Register's Office for Humphreys County, Tennessee.

BEING same property conveyed to Grantor by Deed Book 112, page 1060, Register's Office of Humphreys County, Tennessee.

It is the express intention of the parties hereto that the trees and timber hereinabove described are hereby granted and conveyed as real estate, irrespective of the length of the cutting period hereinafter specified, and that this deed shall be recorded with the land records of the above named county or counties.

The Grantor hereby grants to the Grantee, its successors and assigns, the right to go in, upon and over the real estate hereinabove described for the purpose of cutting and manufacturing said timber and trees hereby conveyed in such manner and by such methods as Grantee may choose to adopt, and to use such machinery and/or equipment therefor as said Grantee may choose to adopt, and for the purpose of removing the same, of such parts thereof as Grantee may desire, from said real estate. The Grantee, its successors and assigns, are hereby given the right to go in, upon and over any other real estate belonging to said

Grantor, including any rights-of-way belonging to Grantor or vested in Grantor, for the purpose of performing any of the aforesaid acts on the land hereinabove described.

The Grantor hereby covenants with the Grantee, its successors and assigns, that he is the owner of the land on which said timber and trees are situated; that he is seized and possessed of the same, and has a good right to sell and convey the same; that the title to such timber and trees as hereby sold and conveyed is free, clear and unincumbered; that he will pay all taxes and assessments on said land and on said trees and timber and keep the same free from all liens and incumbrances during the period herein granted; tht he, his heirs and assigns, will warrant and defend unto the Grantee, its successors and assigns, the title and quiet possession to said timber and trees and to the land whereon they are located, against the claims of all persons whomsoever.

The Grantor hereby grants to said Grantee, its successors and assigns, the right, during the period herein granted, to use any water on said land hereinabove described; to set sawmills in such places as Grantee may desire on said land for the purpose of sawing the timber and trees herein sold and conveyed or otherwise handle or process the same; to remove at the termination of the period herein granted all machinery, equipment, and buildings and structures constructed, erected or placed on such land, and to exercise any and all other rights and privileges which may be appropriate for the cutting, manufacture and removal of said timber and trees.

The Grantee, its successors and assigns, are hereby granted the period of seven (7) years from the date hereof within which said timber and trees herein sold and conveyed must be cut and removed.

At the expiration of such period or periods of time the rights, title and interest herein sold and conveyed to the Grantee shall revert to and reinvest in said Grantor, his heirs and assigns, and all rights and privileges herein granted, sold and conveyed to the Grantee shall cease and determine.

It is expressly understood that the number and gender of the Grantor when used in the context hereof shall be and conform to the name or names of the Grantor as set forth in the first paragraph hereof.

It is expressly understood and agreed that Grantee will have sufficient access by way of ingress and egress across the area hereinbefore reserved as to timber to be harvested and that such sufficient access will be established by Grantor in conjunction with and by agreement with the Grantee.

Grantors agree that they will guarantee all land lines as surveyed and marked by them to be accurate and correct and will hold the Grantee harmless for any encroachments thereover.

Grantee will leave roads in a condition so that they may be used for the purposes that they are being used now, for example, fire fighting protection.

IN TESTIMONY WHEREOF, the Grantor has hereunto set his hand and seal on the day and date first above written.

Elaine M. Langford

Frank M. Langford

APPENDIX E

APPENDIX E

TABLE XXXI

HUMPHREYS COUNTY FOREST LANDOWNERS

Names	Addresses	Acres	
		Total	Forest
Allen, Dr. James T.	Waverly	1350	1250
Allison, Mrs. A. A.	Route 2, Waverly	600	500
Anderson, Dave H.	Bakerville	1639	1200
Anderson, John W.	Hurricane Mills	772	600
Anderson & Voorhees	Hurricane Mills	1400	1000
Artis, C. F.	Waverly	753	650
Averitt, Eugene	Erin	1600	1600
Baker, Vincent	Bold Springs	649	600
Biggs, Elizabeth B.	McEwen	648	500
Bone, Mrs. G. C.	Bakerville	1300	800
Bradley, Lawrence	Waverly	1882	1200
Carter, R. G. & L. E.	Route 4, Waverly	985	985
Clayborn, Brown	Hurricane Mills	1442	600
Cloud, Thomas	Bold Springs	1809	1600
Daniel, B. R.	Route 3, Waverly	660	550
Dotson, Herman	Route 3, McEwen	930	800
Dreaden, Neely	Sycamore	1017	800
Dupont, E. J. & Co.	Denver	1500	1200
Ganier, Albert	Nashville	2400	1200
Gould, Annie	Waverly	1700	1300
Haley, W. L. & Co.	Brentwood	6290	5500
Harris, Cloud	Nashville	1135	1100
Harrison & Charles French	Route 1, Newbern	4550	4550
Hemley, M. R.	Route 2, Waverly	827	625
Hetzel, George	Nashville	1015	1015

TABLE XXXI (continued)

Names	Addresses	Acres	
		Total	Forest
Hicks, Ferbis	Waverly	750	500
Hughes & Stasser	Nashville	600	600
Jackson, Dr. Jimmy	Dickson	2107	2000
Jackson, Dr. L. C.	Dickson	1338	1050
Johnson, C.	Tennessee City	578	530
Johnson, Reece	Route 2, Waverly	745	600
Koppers Company, Inc.	Pittsburgh, Pennsylvania	11357	11357
Latture, Dr. J. E.	Dickson	800	750
Leath, J. B. & James L.	Bold Springs	876	800
Lucas, A. W.	Waverly	1448	900
Luten, Paul H.	Waverly	1620	1500
May, Ray	Hurricane Mills	965	500
McKeel, R. H. & Ruby (Heirs)	Bakerville	1330	1200
Minor, Gerald	Nashville	1200	1100
Moss Tie Company	St. Louis, Missouri	7939	7939
Patterson, J. H.	McEwen	540	500
Perkins, Mrs. T. O.	Waverly	2600	2000
Porch, Scott, et al.	Waverly	2005	1900
Reeves, J. E.	Waverly	500	500
Romer, J. L.	Route 1, McEwen	619	500
Roschell, Roscoe	Buffalo	1379	750
Rumsey, Bob	Route 3, McEwen	599	500
Spann, E. R.	Hurricane Mills	1209	1000
Standard Oil Company	No address	1315	1100
Turner (Estate)	McEwen	6830	6000
Waggoner, G. M.	Denver	665	500

TABLE XXXI (continued)

Names	Addresses	Acres	
		Total	Forest
Work, Mrs. Haley & Heirs	Tennessee City	1315	1000
Young, J. H.	Waverly	912	800
TOTALS		93034	80101

Source: Department of Conservation, Division of Forestry, 1975.

TABLE XXXII

HUMPHREYS COUNTY NONINDUSTRIAL PRIVATE LANDOWNERS

Owner's Name*	Address	Acres Owned		No. Tracts
		Total	Forestland	
Allen, James T.	Sulphur Springs Murfreesboro, TN 37130	1047	1000	1
Allen, William B. (Neely A. Dreaden)	Columbia, TN 38401	743	562	1
Heirs of Mrs. A. Allison	c/o C. A. Allison Route 4 Waverly, TN 37185	806	726 726	1
Anderson, Dave H.	Route 3 Waverly, TN 37185	1134	814 814	1
Anderson, John W.	Route 3 Waverly, TN 37185	804	804 1661	1
Bradley, Danny R.	312 East Main Waverly, TN 37185	513	513	1
Bradley, Lawrence	Route 1 Waverly, TN 37185	500	500	1
Burch, Jr., John C. (Dr. J. C. Burch, Sr.)	Tyne Boulevard Nashville, TN 37215	754	704	1
Cavalier Group, Inc.	8625 Biscayne Blvd. Miami, FL 33138	1234	1213 1234	1

TABLE XXXII (continued)

Owner's Name*	Address	Acres Owned Total	Acres Owned Forestland	No. Tracts
Collins, William R.	Ashentree Drive Chamblee, GA 30341	678	678	1
Connelly, Aileen J. (S. D. Johnson)	c/o E. P. Johnson Powell Valley Bank Jonesville, VA	503	503 503	1
Dupont, E. I. & Co.	New Johnsonville, TN 37134	1500	1200	1
Heirs of W. L. Hailey & T. C. Summers Co. Inc. (W. L. Hailey & Co.)	408 Craighead St. Nashville, TN 37204	4558	4339 4364	1
Hayes, Robert F.	1054 Lynwood Blvd. Nashville, TN 37215	1073	942 987	1
Hickman Enterprises	508 Ford Building Detroit, MI 46226	1847	1645	1
Imperial Land Investment Company (Charles French & Harrison)	1900 Century Blvd. Suite 8 Atlanta, GA 30345	4884	4799 4839	1
Jackson, Dr. Jimmy	201 Hillman Drive Dickson, TN 37055	2525	2225 2225	1
Jackson, William M.	111 Highway 70 East Dickson, TN 37055	1481	1315	1
Johnson, L. L.	Route 3 McEwen, TN 37101	599	571	1

TABLE XXXII (continued)

Owner's Name*	Address	Acres Owned		No. Tracts
		Total	Forestland	
Johnson, Reese	Route 4 Waverly, TN 37185	680	606	1
Koscot Interplantery, Inc.	Sand Lake Road Orlando, FL 32809	1024	1005 1024	1
Langford, Mark G. & Frank M.	P. O. Box 110 Waverly, TN 37185	937	937 937	1
Lowe, Franklin K. (J. B. Leath & L. James)	Route 1 Bold Springs, TN 37024	1253	971	1
Lynn, Jr., Oliver V. & Loretta (Brown Clayborn)	Hurricane Mills Rd. Hurricane Mills, TN 37078	1086	640 640	1
Marion, Jr., G. W.	P. O. Box 618 Dobson, NC 27017	1685	1454	1
Maxwell Company	2118 West End Avenue Nashville, TN 37203	947	947 947	1
May, Ray	Route 1 Hurricane Mills, TN 37078	898	560	1
Napier, Mary C. & A. F. Ganier, Jr.	Route 2, River Road Nashville, TN 37209	2290	1830 1830	1
Randolph, Thomas J.	2400 SW 112th St. Ft. Lauderdale, FL 33314	1339	1171	1
Romer, J. L.	Route 3 McEwen, TN 37101	657	500	1

TABLE XXXII (continued)

Owner's Name*	Address	Acres Owned Total	Acres Owned Forestland	No. Tracts
Roschell, Roscoe	Squeeze Bottom Rd. Waverly, TN 37185	1259	1068 1068	1
Smith, C. E. & O. B. Langford, Je. (Paul H. Luten)	18 Crogan Street Lawrenceville, GA 30245	2336	2327 3963	1 3**
Spann, E. R.	Hurricane Mills, TN 37078	542	533	1
Heirs of C. W. Turner	Route 2 Waverly, TN 37185	2447	2409 1388	1
Heirs of J. W. Turner	c/o Christine Baraga Route 2 McEwen, TN 37101	2426	2415 2476	1 (2)
Vise, Guy T.	Route 3 Waverly, TN 37185	1307	1259 1259	1
Waggoner, G. M.	Route 1 Denver, TN 37054	665	500	1
Wright, Jr., F. M.	c/o J. L. McDonald 907 Southern Securities Building Evansville, IN 47708	2054	2021 3169	1 2**
Koppers Company, Inc.	Koppers Building Pittsburgh, PA 15219	11357	11357 10700	1 4
Moss Tie Company	St. Louis, MO	7939	7939 8293	1 5

TABLE XXXII (continued)

*Names appearing in parentheses below owner's name are former owners as listed in Forest Landowners in Tennessee—500 Acres or More by Counties, March 1966.

**One tract probably sold.

Source: Department of Conservation, Division of Forestry, 1975.

APPENDIX F

APPENDIX F

TABLE XXXIII

CHI-SQUARE TABLE FOR AVERAGE NUMBER OF SALES PER YEAR OF EACH PARCEL VERSUS FRAGMENTED

Annual Sales	-1	1	Totals
0.03-0.08	6.00	6.00	11.00
	4.35	6.65	11.00
	0.62	0.41	1.03
0.09-0.5	6.00	0.0	6.00
	2.38	3.63	6.00
	5.53	3.63	9.16
0.60-1.0	3.00	1.00	4.00
	1.58	2.42	4.00
	1.27	0.83	2.10
1.01-1.10	1.00	18.00	19.00
	7.52	11.48	19.00
	5.65	3.70	9.36
1.11-1.2	2.00	4.00	6.00
	2.38	3.63	6.00
	0.06	0.04	0.10
1.21-1.5	0.0	1.00	1.00
	0.40	0.60	1.00
	0.40	0.26	0.66
1.51-2.5	1.00	0.0	1.00
	0.40	0.60	1.00
	0.92	0.60	1.53
TOTALS	19.00	29.00	48.00
	19.00	29.00	48.00
	14.45	9.47	23.92

Total Chi-square = 23.92310 with 6 D.F. Probability > ChiSq = 0.0006.

TABLE XXXIV

CHI-SQUARE TABLE FOR ASSESSED VALUE PER ACRE IN 1975 VERSUS FRAGMENTED

1975 Value	-1	1	Totals
$4.00-$10.00	0.0	7.00	7.00
	2.77	4.23	7.00
	2.77	1.82	4.59
$10.01-$15.00	5.00	13.00	18.00
	7.13	10.88	18.00
	0.63	0.42	1.05
$15.01-$20.00	6.00	1.00	7.00
	2.77	4.23	7.00
	3.76	2.47	6.23
$25.01-$30.00	5.00	2.00	7.00
	2.77	4.23	7.00
	1.79	1.17	2.97
$30.01-$35.00	0.0	1.00	1.00
	0.40	0.60	1.00
	0.40	0.26	0.66
$35.01-$40.00	3.00	0.0	3.00
	1.19	1.81	3.00
	2.77	1.81	4.58
$40.01-$45.00	0.0	1.00	1.00
	0.40	0.60	1.00
	0.40	0.26	0.66
$50.01-$55.00	0.0	1.00	1.00
	0.40	0.60	1.00
	0.40	0.26	0.66
$55.01-$60.00	0.0	2.00	2.00
	0.79	1.21	2.00
	0.79	0.52	1.31

TABLE XXIV (continued)

1975 Value	-1	1	Totals
$60.01-$70.00	0.0	1.00	1.00
	0.40	0.60	1.00
	0.40	0.26	0.66
TOTALS	19.00	29.00	48.00
	19.00	29.00	48.00
	14.10	9.24	23.34

Total Chi-square = 23.34249 with 9 D.F. Probability > ChiSQ = 0.0056.

TABLE XXXV

CHI-SQUARE TABLE FOR PERCENTAGE OF WOODLAND VERSUS FRAGMENTED

Percentage Woodland	-1	1	Totals
00	0.0	3.00	3.00
	1.19	1.81	3.00
	1.19	0.78	1.97
33%-66%	0.0	15.00	15.00
	5.94	9.06	15.00
	5.94	3.89	9.83
67%-90%	13.00	11.00	24.00
	9.50	14.50	24.00
	1.29	0.84	2.13
91%-100%	6.00	0.0	6.00
	2.38	3.63	6.00
	5.53	3.63	9.16
TOTALS	19.00	29.00	48.00
	19.00	29.00	48.00
	13.95	9.14	23.09

Total Chi-square = 23.08530 with 3 D.F. Probability > ChiSQ = 0.0001.

VITA

Thomas Allan Meredith was born November 24, 1942, in Bristol, Virginia.

He was educated at St. Dominics Catholic Elementary School in Kingsport, Tennessee. High school work was completed at Dobyns Bennett High School in Kingsport, Tennessee.

In September, 1962, he entered The University of Tennessee at Knoxville, Tennessee, and matriculated in August, 1966, with a Bachelor of Science Degree in Forestry.

In August, 1967, he entered the United States Air Force, and served as a Captain with a tour of duty in the Republic of South Vietnam.

In September, 1974, he entered The University of Tennessee Graduate School at Knoxville, Tennessee, working for a Master's degree in Forest Resources Management.

He has four sisters, two of whom attend The University of Tennessee.