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Division of Forestry  
500 Lafayette Road  
St. Paul, Minnesota 55155-4044

MINNESOTA FOREST RESOURCES PLAN  
PROGRAM DIRECTION, 1987-1991

Prepared Pursuant to  
Minnesota Statutes, Sect. 89.011  
Subdivision 3

DIVISION OF FORESTRY  
MINNESOTA DEPARTMENT OF NATURAL RESOURCES  
ST. PAUL, MINNESOTA 55155-4044

April 1987

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	
Planning Purpose and Process .....	2
Basic Assumptions .....	2
Plan Implementation and Monitoring .....	2
Format and Content .....	3
EXECUTIVE SUMMARY .....	5
SECTION I. ASSESSMENT	
Population, Income and Employment: State and Regional Trends in Minnesota .....	13
Population and Age Distribution .....	13
Household Numbers and Size .....	14
Unemployment .....	14
Overview of Minnesota's Timber-Based Industry .....	16
Forest Industry Outlook .....	16
SECTION II. FUTURE DIRECTION FOR THE DIVISION OF FORESTRY	
Preferred Future .....	21
Vision and Mission Statements .....	21
Goals and Strategies .....	21
SECTION III. PROGRAM DIRECTION, 1987-1991	
State Forest Land Management Program .....	23
Land Administration .....	23
State Forest Recreation .....	25
State Forest Roads .....	25
Timber Management .....	26
Timber Sales .....	27
Fish and Wildlife Habitat Management .....	28
Nursery and Tree Improvement Program .....	29
Cooperative Forest Land Management Program .....	31
Private Forest Management .....	31
Urban Forestry .....	32
Cooperative County Forest Management .....	33
Forest Pest Management .....	34
Forest Soils .....	35
Forest Resource Assessment Program .....	35
Forest Resource Assessment and Analysis .....	35
Forest Products Utilization and Marketing .....	36
Fire Management Program .....	38
Technical and Administrative Support Services Program .....	39
Management Information Systems .....	39
Forest Resource Planning .....	39
Public Affairs .....	41
Human Resources Development .....	41
Law Enforcement .....	42
Maintenance and Administration .....	42
SECTION IV. SUMMARY OF RESEARCH, INFORMATION AND CONTINUING EDUCATION NEEDS .....	43
GLOSSARY .....	46

LIST OF TABLES

Table 1. Budget Needs by Program, F.Y. 1987-1991 .....	7
Table 2. Staff Needs by Program, F.Y. 1987-1991 .....	8
Table 3. Wood Resource Use in Minnesota, Current and Projected .....	19

LIST OF FIGURES

Figure 1. Map of DNR, Division of Forestry Administered Lands .....	1
Figure 2. Distribution of Commercial Forest Land by Ownership Class in Minnesota .....	2
Figure 3. Division of Forestry, Sources of Funding, F.Y. 1986-1989 .....	6
Figure 4. Minnesota Projected Population Growth, 1980-2000 .....	13
Figure 5. Employment Growth by Region, 1975-1984 .....	15
Figure 6. Minnesota's Larger Forest Products Producers .....	17
Figure 7. Division of Forestry, Administrative Boundaries and Office Locations .....	48

ERRATA

P. 7 FOOTNOTE D SHOULD READ "...proposed to spend \$2.2 million annually...".

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## Minnesota Forest Resources Plan

# Introduction

### INTRODUCTION

The Commissioner of the Department of Natural Resources is required to "manage the forest resources of state forest lands under the authority of the commissioner according to multiple-use and sustained-yield" (1982 Forest Management Act, Minnesota Statutes Section 89.011 Subd. 3). Administration of the forest management programs is the responsibility of the Director of the Division of Forestry and are carried out, for the most part, by the Division of Forestry. Therefore, the Division of Forestry, as the managing agent of most State-administered forest resources, is responsible for maintaining the comprehensive forest resource management plan called for in the 1982 Forest Management Act. This plan is written from the perspective of the managing division for the Division of Forestry programs.

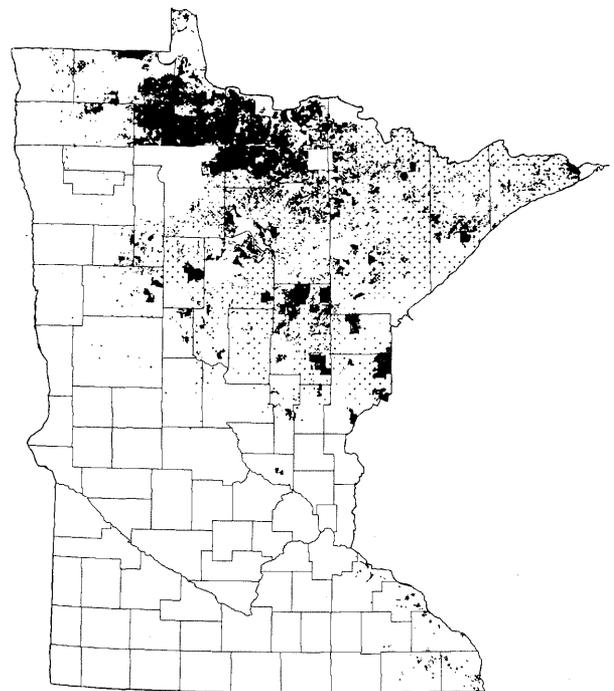
The Division of Forestry is charged with the protection and multiple-use management of 4.6 million acres of state forest and other state-owned lands (Figure 1). The Division seeks to maintain and enhance forest resources for the benefit of present and future generations. In so doing, it is also responsible for forest fire protection on 22.8 million acres, insect and disease protection on 16 million acres of forest lands, annual production of some 30 million tree seedlings annually from two state tree nurseries, and for assisting private forest landowners in managing their lands.

Ownership of Minnesota's commercial forest land is nearly equally divided between the public (53%) and private sectors (47%) (Figure 2). Agricultural interests own 3.4 million acres or about one-quarter of the state's commercial forest land. Other private owners, including private non-forest industry corporations, hold almost 2.2 million acres of commercial forest land. More than one-third of this land is owned by individuals or corporations having at least 100 acres of commercial forest land. This indicates a potential for significant forest management and production on these lands. Forest industry owns over 770,000 acres of commercial forest land.

The state of Minnesota administers 2.7 million acres of commercial forest land, and counties and municipal agencies administer an additional 2.3 million acres. Federal agencies also administer 2.3 million acres.

Figure 1

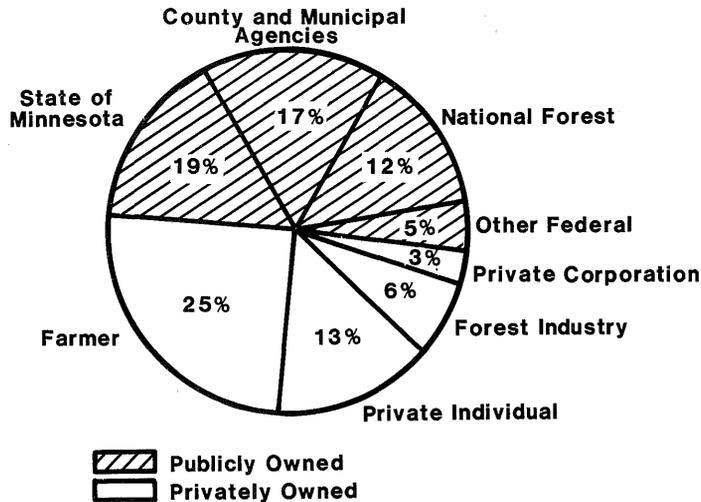
### Minnesota Department of Natural Resources Division of Forestry Administered Lands



Source: Minnesota Land Management Information Center. 1984.

Figure 2

## Distribution of Commercial Forest Land by Ownership Class in Minnesota



Source: Jakes, Pamela. 1980. Minnesota Forest Statistics, 1977. Bulletin NC-53. USDA Forest Service. St. Paul, MN.

### PLANNING PURPOSE AND PROCESS

The Division completed the first Minnesota Forest Resources Plan (MFRP) in June 1983. The MFRP includes an assessment of Minnesota's forest resources and a recommended program for managing them. The assessment portion describes and evaluates the past, present and prospective forest resource conditions of Minnesota. It analyzes the demands for Minnesota's forest resources and the capabilities of the resources to meet those demands. The program part of the plan contains the goals, strategies, and recommended actions to resolve the important forest management issues identified in the assessment portion of the plan.

This document updates the program portion of the MFRP. It presents a recommended "program" and budget for the Division of Forestry for fiscal years 1987-1991 (July 1, 1986 - June 30, 1991). The program is responsive to the Division's preferred future direction, to an analysis of the current issues facing each program and subprogram, and to the Division's ongoing responsibilities. Two major efforts undertaken to complete this update were (1) to develop a preferred future for the organization and (2) to develop individual action plans for each of the Division's 6 programs and 21 subprograms. The material in this document presents the results of both efforts.

### BASIC ASSUMPTIONS

This document is based on a series of basic assumptions that significantly affect the Division's concept of its future direction. These assumptions, which serve to describe the Division and its perspective on the environment in which it operates, have helped shape goals, strategies, targets and future directions of the Division's programs.

For example, the Division of Forestry wishes to maintain a leadership position within both the state and national forestry communities. Attaining this goal requires a highly trained and skilled professional staff with a diversity of talents and expertise, as well as a commitment to continued professional development, and the ability to adapt to periods of rapid change.

The direction proposed in this document is also based on the realization that government is in the midst of an extended period of contraction. Times are becoming increasingly competitive. At a time when public demands are continually increasing, the Division of Forestry must become more efficient and innovative in meeting its targets.

To deal effectively with changing conditions, the Division must substantially broaden and diversify its management strategy to provide for a diversity of public needs and land uses, while maintaining the basic integrity of forest resources. One of the challenges to the organization will be to balance competing public needs with sound resource management principles.

### PLAN IMPLEMENTATION AND MONITORING

The Division is implementing its MFRP through an improved management system which links the plan to various management processes such as budgeting, work planning, accomplishment reporting and program analysis. Program supervisors will have the primary responsibility to assure that the plan is implemented by providing oversight and direction through the above mentioned processes. Field staff then will have the primary responsibility for carrying out individual tasks.

Work plans are the primary tool used to communicate to the Division what is expected and to guide the operations of the Division. The Division develops annual work plans at the beginning of each fiscal year to set specific objectives and targets for the year, including staff and budget requirements. Annual work plans are guided by the direction established in the MFRP.

## FORMAT AND CONTENT

Accomplishment reports are the primary tool used to determine how well the Division is meeting its goals and objectives. The Division develops an accomplishment report at the end of each fiscal year which compares actual accomplishments with the objectives established in the annual work plan. Reports explain differences between objectives and accomplishments. The accomplishment report is used as a base when setting the next year's targets.

A variety of factors, most beyond the control of the Division of Forestry, will almost certainly and significantly affect the proposed focus, direction and implementation of this plan for the years 1987-1991. External forces capable of exerting such an influence may stem from social, economic, political or technological changes. For example, rapid growth in Minnesota's forest products industrial activity would likely increase substantially the demand for and the price of timber stumpage. This would result in an increased workload in the areas of timber sales, timber management, forest inventory and utilization and marketing. Division staff time and effort would need to be reallocated accordingly.

Similarly, the level of funding for new state and federal initiatives, such as the Reinvest in Minnesota Program, or the federal Conservation Reserve Program will, in large part, determine the level of emphasis and effort directed towards these activities by the Division. Tax law changes, state or federal, could also trigger major changes in the approach to providing assistance to private forest landowners and would thereby have a major impact on the Division's workload.

Considerable flexibility will be needed in applying the proposed program and policy direction, and in targeting the ongoing activities of the organization. If unforeseen circumstances arise, program emphasis and the requisite resources may need to be shifted temporarily. The Division, through its annual work planning process, will attempt to predict external influences and accommodate them in developing its targets and allocating resources for the following year.

This summary of the Minnesota Forest Resource Plan contains four major sections: Assessment; Future Division Direction; Program Direction, 1987-1991; and Summary of Research, Information and Continuing Education Needs. An Executive Summary outlines projected budget and staffing needs for each subprogram for fiscal years 1987-1991, and contains selected program highlights that show major shifts in Division direction or emphasis. A glossary of terms can be found in the rear of the document.

The Assessment section of the plan provides a brief overview of selected demographic features including population and age distribution, household numbers and size, and income and employment trends for Minnesota. It also includes an overview of Minnesota's wood-based industrial activity and the outlook for future industrial growth. This section is intended to supplement earlier assessment information presented in Volume Three of the 1983 Minnesota Forest Resource Plan.

The Future Division Direction Section summarizes the preferred future for the Division. In addition to a preferred future and a Division vision, this section includes major goals and strategies for the Division as a whole for the next five years. This preferred future is reflected in the action plans for each program.

The Program Direction section lays out an action plan for each of the Division's 21 subprograms which describes specific actions to be taken to address findings from the 1983 Assessment, an issue analysis and policies contained in the Forest Management Act of 1982. These plans include a brief description of program activities, a statement of the program goal, a summary of statewide direction, and a list of major strategies and objectives for fiscal years 1987-1991. Budget and staffing needs for this same period are contained in the Executive Summary.

The Summary of Research, Information and Continuing Education Needs summarizes the research, information and continuing education needs of the Division as identified throughout the plan. It is organized by major program area.





## Minnesota Forest Resources Plan

# Executive Summary

### EXECUTIVE SUMMARY

#### BUDGET AND STAFFING SUMMARY

A number of important developments over the past four years have resulted in significant changes in the programs, policies and management direction of the Division of Forestry. Chief among these developments have been a series of deep, and largely unanticipated, budget cuts. The Division's budget from all sources has decreased an average of \$1.9 million per year since fiscal year 1985. Budget reductions have affected nearly every aspect of Division operations.

The following section briefly describes the sources of funds that comprise the Division's budget, and summarizes, by program, the budget and staffing needs for fiscal years 1987-1991. Figure 3 shows the Division's budget by source of funds for fiscal years 1986-1989. These figures are actual dollars that were appropriated during that period. Table 1 is a summary of the Division's budget needs, by program, for fiscal years 1987-1991. Table 2 is a summary of the Division's staffing needs, by program, for fiscal years 1987-1991. These figures are realistic projections of the budget and staffing needed to meet ongoing responsibilities of the Division and to address the issues identified in the planning process. The projections are not "pie-in-the-sky" but are based on what is reasonable to expect given recent funding trends.

#### IMPACT OF LOSS OF FEDERAL FUNDS

Authorized by the U.S. Congress in 1978, the Boundary Waters Canoe Area Wilderness Act (PL 95-495) provides \$3 million annually (about 15% of the Division's budget) in federal funds for forestry intensification projects on state and county lands from 1980-1990. The program's purpose is to reduce the impact of timberland withdrawals resulting from the designation of the BWCAW as a wilderness area by intensifying softwood regeneration and hardwood utilization on forested lands outside of the wilderness area. Subject to

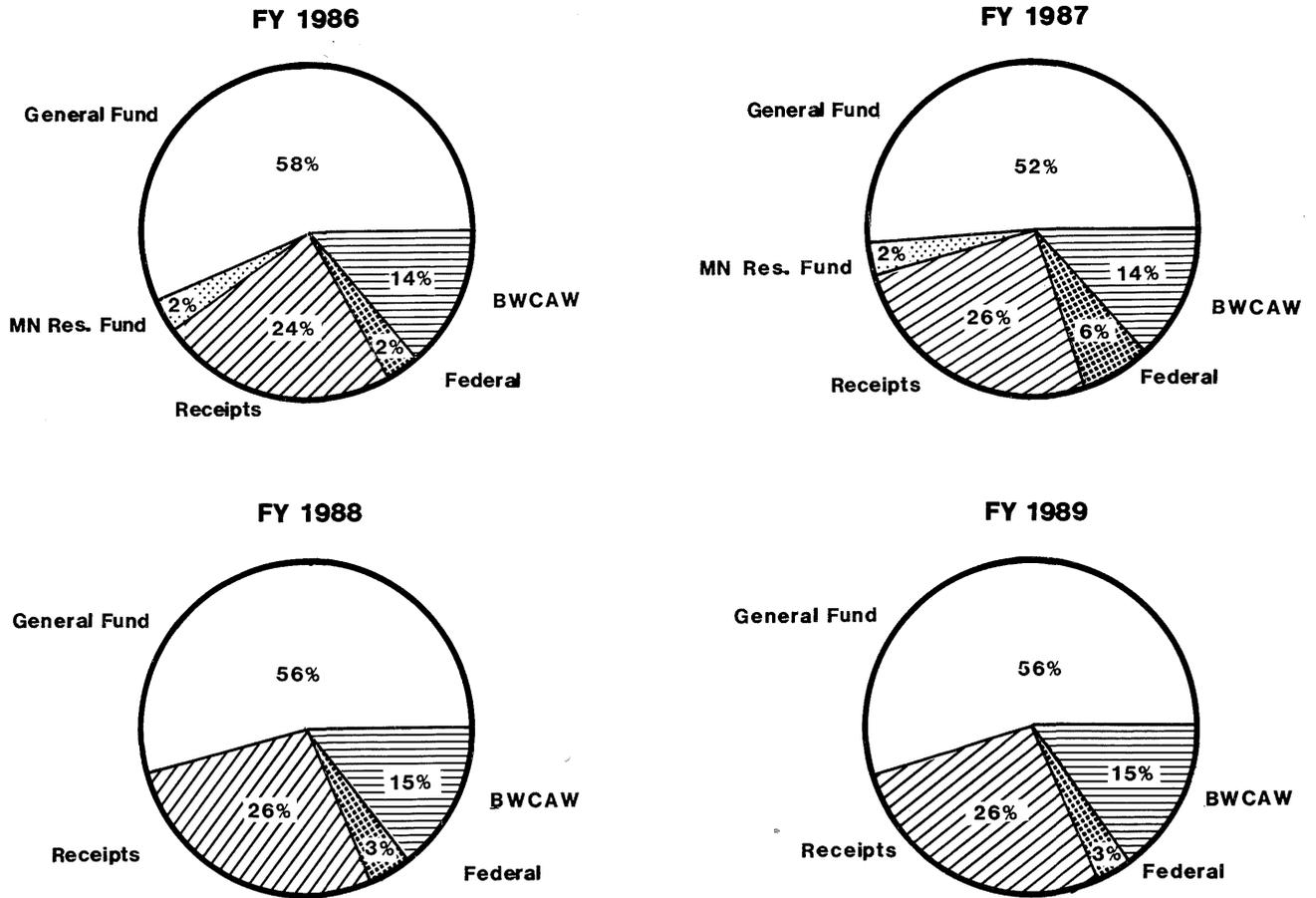
annual appropriation and a 20% state matching fund appropriation, the program has been successfully used to fund a variety of programs, staff and activities since its beginning.

When federal dollars for BWCAW forestry intensification are lost, at least an 80% reduction in program accomplishments can be expected. This reduction would lower the Division of Forestry's overall accomplishments in various program areas by as much as 25 to 50 percent.

Efforts are now underway to secure a stable long-term source of funding to replace federal BWCAW dollars due to end in 1990. Efforts are also being made to shift key positions to the State General Fund and other funding sources to avoid the potential loss of these positions as federal funds dwindle. Success in converting these positions is essential to attaining the goals and objectives set forth in this plan.

Figure 3

## DIVISION OF FORESTRY SOURCES OF FUNDING 1986-1989



Source: DNR, Division of Forestry. 1987.

TABLE 1  
BUDGET NEEDS BY PROGRAM (A)  
Fiscal Years 1987-1991  
(000's, 1987 dollars)  
Division of Forestry

	1987	1988	1989	1990	1991
<u>State Forest Land Management</u>					
Land Administration (B)	735.0	1,175.0	1,175.0	1,175.0	1,175.0
State Forest Recreation (C)	1,171.0	1,455.0	1,455.0	1,455.0	1,455.0
State Forest Roads (D)	1,820.0	1,325.0	1,325.0	1,325.0	1,325.0
Timber Management	4,411.0	4,381.0	4,250.0	4,266.0	4,377.0
Timber Sales	2,722.8	2,756.4	2,782.6	2,808.7	2,834.9
Fish and Wildlife Habitat	747.0	1,313.0	1,313.0	1,476.0	1,476.0
<b>SUBTOTAL</b>	<b>11,606.8</b>	<b>12,405.4</b>	<b>12,300.6</b>	<b>12,505.7</b>	<b>12,642.9</b>
<u>Nursery and Tree Improvement (E)</u>					
Nursery and Tree Improvement	2,119.3	2,222.1	2,309.6	2,414.8	2,512.3
<u>Cooperative Forest Land Management</u>					
Private Forest Management (F)	1,848.8	2,116.4	2,075.4	2,020.1	1,879.0
Urban Forestry	149.6	371.1	371.1	313.8	313.8
County Cooperative	1,209.4	1,153.4	1,153.4	1,153.4	343.4
Forest Pest Management	246.6	271.5	271.5	271.5	271.5
Forest Soils	133.3	143.3	123.3	123.3	123.3
<b>SUBTOTAL</b>	<b>3,587.7</b>	<b>4,055.7</b>	<b>3,994.7</b>	<b>3,882.1</b>	<b>2,931.0</b>
<u>Forest Resource Assessment</u>					
Forest Resource Assessment and Analysis (G)	1,327.5	1,450.0	1,450.0	1,450.0	1,450.0
Utilization and Marketing	320.0	325.0	325.0	325.0	325.0
<b>SUBTOTAL</b>	<b>1,647.5</b>	<b>1,775.0</b>	<b>1,775.0</b>	<b>1,775.0</b>	<b>1,775.0</b>
<u>Fire Management</u>					
Wildfire Protection and Management	2,685.2	3,200.0	3,275.0	3,900.0	3,985.0
<u>Administrative and Technical Support</u>					
Management Information Systems	690.0	690.0	690.0	690.0	690.0
Forest Resource Planning	541.6	496.8	496.8	496.8	496.8
Public Affairs	373.5	412.2	485.2	623.9	628.9
Human Resources Development	489.3	489.3	489.3	489.3	489.3
Law Enforcement	132.0	178.0	209.0	240.0	286.0
Maintenance and Administration	1,680.0	1,680.0	1,680.0	1,680.0	1,680.0
<b>SUBTOTAL</b>	<b>3,907.2</b>	<b>3,947.1</b>	<b>3,978.1</b>	<b>4,220.8</b>	<b>4,271.8</b>
<b>TOTAL</b>	<b>25,553.7</b>	<b>27,605.3</b>	<b>27,633.0</b>	<b>28,698.4</b>	<b>28,117.3</b>

(A) The program budgets in this table are the resources to be allocated throughout the organization to carry out the activities of a given program, regardless of organizational location. As contrasted with a line-item budget which is developed for an organizational unit, a program budget is built from parts of each organizational unit's budget. The program budgets were calculated using the following formula:

$$\text{Budget} = \# \text{ fte's} \times \$30,000/\text{fte} \times 1.245 + \text{project dollars, or} \\ \text{(full time equivalents)} \times \text{(salary and benefits)} \times \text{(supplies and expenses)} + \text{(contract services)}$$

- (B) Projected increases in the Land Administration budget are due primarily to an expected increase in capital bonding for land acquisition. No increases in staff are expected.
- (C) The increase in recreation funding reflects increased efforts to promote dispersed forms of recreation and the need to implement completed recreation area plans.
- (D) The drop in funding for forest roads is due to anticipated declines in road project dollars. The Division has, however, forwarded a change level request for an additional \$425,000 annually for FY 1988 and beyond, as well as a bonding request for \$750,000 annually for FY 1988-1993 and a proposal to spend \$22 million annually of RIM funding on forest road projects. If approved, forest road targets for road construction, reconstruction and bridge repair would be substantially increased.
- (E) The Division of Forestry tree nurseries were funded through the State General Fund until FY 1985 when they began operating on a self-supporting basis as directed by the Forest Resource Management Act of 1982. Budget increases are primarily due to increased support from the dedicated revenues of the Forest Management Fund to replace bonding dollars and reduced Tree Improvement Cooperative funding.
- (F) The increase in PFM funding is due to increased cost share funding for wildlife enhancement through the RIM and CRP programs.
- (G) The FY 1988 budget increase is largely due to a proposed increase in funding for 9x9 aerial photography.

TABLE 2  
STAFF NEEDS BY PROGRAM (A)  
Fiscal Years 1987-1991  
(full-time equivalents)  
Division of Forestry

	1987	1988	1989	1990	1991
<u>State Forest Land Management</u>					
Land Administration	7.0	7.0	7.0	7.0	7.0
State Forest Recreation	21.0	22.0	22.0	22.0	22.0
State Forest Roads	13.0	13.0	13.0	13.0	13.0
Timber Management	53.3	52.0	50.5	51.8	53.5
Timber Sales	72.9	73.8	74.5	75.2	75.9
Fish and Wildlife Habitat	6.5	11.8	11.8	12.9	12.9
SUBTOTAL	173.7	179.6	178.8	181.9	184.3
<u>Nursery and Tree Improvement</u>					
Nursery and Tree Improvement (B)	60.0	60.0	60.0	60.0	60.0
<u>Cooperative Forest Land Management</u>					
Private Forest Management	42.0	42.0	40.0	39.0	37.0
Urban Forestry	3.0	8.0	8.0	8.0	8.0
County Cooperative (C)	4.0	2.5	2.5	2.5	2.5
Forest Pest Management	6.2	7.0	7.0	7.0	7.0
Forest Soils (E)	3.3	3.3	3.3	3.3	3.3
SUBTOTAL	58.5	62.8	60.8	59.8	57.8
<u>Forest Resource Assessment</u>					
Forest Resource Assessment and Analysis (D)	32.0	29.0	29.0	29.0	29.0
Utilization and Marketing	8.0	9.0	9.0	9.0	9.0
SUBTOTAL	40.0	38.0	38.0	38.0	38.0
<u>Fire Management</u>					
Wildfire Protection and Management	57.3	59.0	61.0	64.5	64.5
<u>Administrative and Technical Support</u>					
Management Information Systems (E)	17.0	17.0	17.0	17.0	17.0
Forest Resource Planning	14.5	13.3	13.3	13.3	13.3
Public Affairs	10.0	10.5	12.0	12.5	12.5
Human Resources Development	13.1	13.1	13.1	13.1	13.1
Law Enforcement	4.2	5.7	6.7	7.7	9.2
Maintenance and Administration	45.0	45.0	45.0	45.0	45.0
SUBTOTAL	103.8	104.6	107.1	108.6	110.1
TOTAL (F)	493.3	504.0	505.7	512.8	514.7

(A) Staff needs by program include all time throughout the organization to be allocated to carry out the activities of a given program, regardless of organizational location. One full-time equivalent (fte) is equal to 1730 hours.

(B) Includes seasonal and non-tenured laborers. No staffing changes are anticipated despite increased production levels over the next five years.

(C) No staffing changes are anticipated despite the loss of BWCAW forest intensification dollars in FY 1991. These dollars are phased through the DNR and are earmarked for county forestry projects.

(D) This figure includes St. Paul and field staff time spent on inventory activities. The FY 1988 staffing figure reflects the projected loss of three field inventory positions.

(E) Time is not specifically reported for these activities. It is allocated to other programs depending upon the nature of the services performed. Therefore, time spent in these program areas may not be as accurate as estimated time allocations shown for other programs and represents double counting of fte's.

(F) This figure includes overtime, work performed by student workers, seasonal and non-tenured labor, and 90% positions.

## PROGRAM HIGHLIGHTS

Passage of the Federal Food Security Act of 1985 (commonly called the "farm bill"), with its provisions for idling the nation's marginally productive or highly erodible farm lands, has placed an additional workload on the Division's personnel, who provide assistance to non-industrial private landowners. This initiative, in part, is in contrast to the general trend of declining federal cost-share dollars.

The Reinvest in Minnesota (RIM) bill, enacted by the Minnesota State Legislature in 1986, also promises to have a great impact on resource management programs in Minnesota for an extended period. The bill is intended to protect and enhance the state's fish and wildlife resources. Although some provisions of the bill have not yet been fully funded, others such as the Aspen Recycling portion, are already underway. The major responsibility for habitat manipulation will be the Division of Forestry's.

In light of these and other developments the Division of Forestry has modified its approach, and has tailored its programs to better fit this changed environment. Listed below are just a few selected examples of Division subprograms which have changed significantly, either in their approach to meeting future needs, or in the relative emphasis placed on these subprograms and activities. Other subprograms, although equally important, are less likely to undergo significant changes in direction or emphasis.

### STATE FOREST LAND MANAGEMENT PROGRAM

#### State Forest Recreation

Tremendous growth in the demand for non-consumptive forest uses is expected over the next 5-10 years. Consistent with public desires for increased non-timber forest outputs, the Division of Forestry will place more emphasis on producing dispersed recreation, fish and wildlife habitat, and scenic amenities.

The State Forest Recreation subprogram seeks to fulfill the outdoor recreation potential of Minnesota's state forest lands by providing both developed recreational areas, and greater opportunity for more dispersed forms of recreation. The program's major emphasis will be to provide forest users with the information they need to identify and enjoy recreational opportunities on state lands. Developed recreational facilities will continue to be a part of the program, but emphasis will be shifted to dispersed forms of recreation which require considerably less operations or maintenance funding.

This goal will be achieved by analyzing the market for dispersed recreation on state lands, and then targeting the appropriate

management strategy. Meanwhile, the program will shift from a planning phase to an operational phase with more time being spent on implementing planned improvements to recreational facilities and on actively promoting state forest recreation opportunities.

#### Fish and Wildlife Habitat Management

The goal of the Fish and Wildlife Habitat Management subprogram is to provide forest habitats conducive to managing and protecting a variety of fish, wildlife and native plant resources compatible with forestry and fish and wildlife management objectives, site capabilities and adjacent land uses. The Division of Forestry will work in cooperation with the Division of Fish and Wildlife to improve the integration of forest management activities, such as timber harvest, reforestation, construction of forest roads and trails, wildfire control and the use of prescribed fire, to accomplish habitat goals.

The Conservation Reserve Program (CRP) provided for in the federal farm bill and provisions of the Reinvest in Minnesota (RIM) legislation will focus increased attention on the DNR's forestry-wildlife activities, especially those affecting private lands. Efforts to better coordinate these activities will receive high priority. Additional time will be devoted to forest development activities that address fish and wildlife concerns.

#### Timber Sales

The goal of the Division's Timber Sales subprogram is to continue to supply the agency's market share of timber commensurate with the amount of commercial forest land administered by the state (about 18 percent). This production level must remain flexible enough to adjust to current markets, economic trends, and differing timber demand in different regions of the state. It will also reflect biological characteristics of the timber resource itself (e.g., aspen age class imbalance). A major emphasis over the next five years will be to implement revised timber sale procedures to improve their administrative efficiency and to make the state's timber sales more competitive.

## COOPERATIVE FOREST LAND MANAGEMENT PROGRAM

### Private Forest Management

The Private Forest Management subprogram will concentrate on promoting sound forest management practices on privately-owned forest lands through landowner education activities, personal contacts and technical assistance, and use of the media. Efforts will shift to those activities that produce the greatest net result per unit expenditure of time and dollars. The Division of Forestry will continue to assist in private timber sales, but will encourage increased participation by private forestry consultants.

The CRP and RIM programs are expected to have a major effect on the Division's Private Forest Management subprogram for years to come. In its first year, CRP enrolled about 660,000 acres of erodible cropland in Minnesota with nearly 15,000 acres of this to be planted into trees. RIM has similarly begun to grow in popularity.

State and federal tax legislation will also affect private forest landowners and their investments in resource management. Recent federal tax changes include the elimination of capital gains treatment for timber and various changes to the annual expensing of forest management costs. Although these federal changes are expected to have little effect, a recently proposed forest tax provision of the Governor's Tax Plan, if passed, would create a new tax classification which would reduce by two-thirds the tax rates of qualified forest parcels. This could have an enormous effect on Minnesota's nearly 120,000 private forest landowners and their interest in resource management.

### Urban and Community Forestry

The Division of Forestry, long a provider of urban forestry advice and assistance, plans to significantly increase its efforts in cooperation with the Minnesota Department of Agriculture, the University Extension Service and other public and private providers of urban forestry services. A nine-month federally funded project is currently under way to develop a comprehensive information directory for use by urban forestry practitioners and those in need of their services.

Development of the directory is just the first step in efforts to define the appropriate role of the Division in providing urban forestry services. A plan and strategy for providing such services will follow to guide and direct future efforts.

### Cooperative County Forest Management

Continued evolution of the Division's Cooperative County Forest Management subprogram (CCFM), and in the nature of the relationship between the state and counties, will occur over the next five years. The CCFM subprogram (formerly the County Assistance

Program) focus has gradually shifted from providing direct, hands-on land management assistance to county forestry personnel to that of a cooperator providing technical advice and assistance upon request. Full-time county assistance staff will no longer be maintained in every county to directly assist county land managers.

The historical role of the Division in providing tree seedling production, pest protection and forest inventory information for the counties will continue. Statutory oversight and regulatory responsibilities will, however, be de-emphasized in favor of an advisory approach to ensuring sound resource management. These functions will also be decentralized to promote greater interaction between state and county field personnel.

## FOREST RESOURCE ASSESSMENT PROGRAM

### Forest Resource Assessment and Analysis

Forest Resource Assessment and Analysis, formerly called Forest Inventory, has been responsible for collecting and processing forest resource information since 1976. The subprogram has and will continue to change in response to diverse user needs, improved technology, budget fluctuations, personnel shifts and continuing demands on forest resources.

The subprogram is in a period of rapid transition. Originally, to guarantee consistency and quality, a specialized inventory unit was used to carry out inventory activities. Budget reductions and the need for stronger user commitment have resulted in phasing out large inventory field crews and relying more on line personnel and contractors. Survey Operations and Support, Remote Sensing and Geographic Information Systems personnel will have to interact strongly and actively with the regions, areas, counties and other users to maintain and improve the quality and utility of inventory information. Expanded applications of remote sensing and geographic information systems capabilities will also be examined.

## Forest Products Utilization and Marketing (FPU&M)

In 1984, total sales by Minnesota's forest products industry exceeded \$3.5 billion. Over 50,000 people are directly involved in forest products manufacturing, the state's third largest manufacturing industry. If persons employed in related service and trade industries were included, that number would likely double. During just the past decade, the industry has made capital expenditures in excess of \$700 million, directly creating over 1,000 new jobs in northeastern Minnesota.

The FPU&M staff has played a major role in this industrial development by providing resource information to the industries to aid in identifying development opportunities and to assure adequate resource supplies. A key role for the FPU&M staff over the next five years will be to help identify available supplies of wood resources to facilitate industrial development and expansion decisions. It is important that Minnesota maintain a competitive edge in attracting wood-using industries to forested regions of the state.

Increased emphasis will be placed on linking wood products producers and consumers by supplying each with pertinent data and technical assistance. The ultimate goal is to increase value added by forest products manufacturers and wood processors. The FPU&M staff will also continue to provide technical and business management assistance upon request to encourage business growth and retention within Minnesota.

### FIRE MANAGEMENT PROGRAM

#### Wildfire Protection and Management

The Division is charged with preventing and controlling wildfire on 22.8 million acres of public and private lands in Minnesota and with regulating the use of open fire. The goal of the Fire Management program is to protect against the loss of life, property and the state's natural resource values. The program also seeks to improve the DNR's ability to use controlled fire as a safe and effective vegetation management tool.

Fire prevention efforts will be substantially increased, focusing on specific causes of wildfire (e.g., arson) in cooperation with other states, local fire departments and resource management agencies. Increased problems due to the rural/urban interface will need to be addressed. Cooperative fire protection systems will also be strengthened by increasing investments in and cooperation with local fire departments to maximize fire protection capabilities.

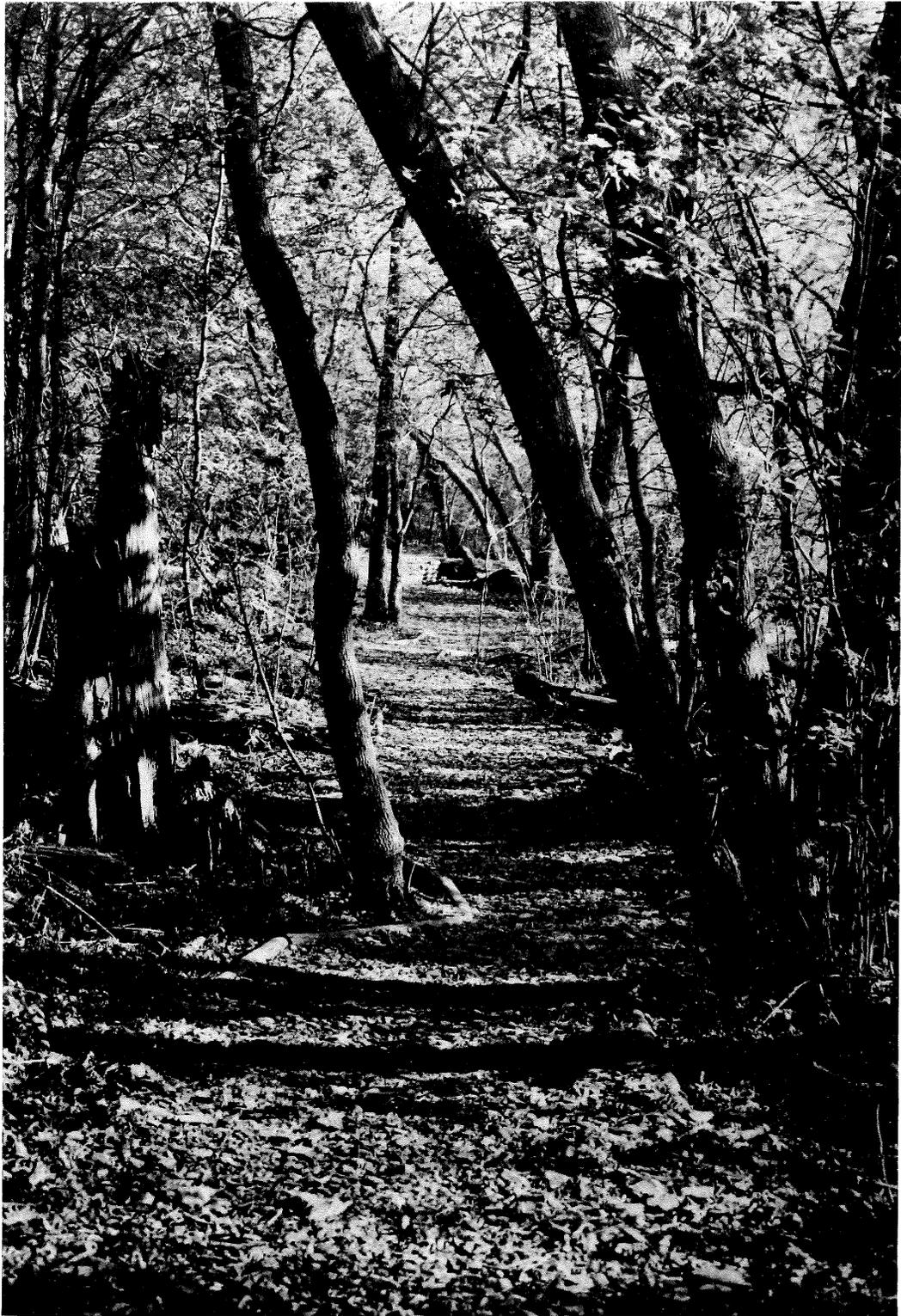
Controlled or prescribed fire will be used as a tool to manage high hazard fuel types and to improve site productivity for specific plant and animal species. Prescribed fire can also provide a valuable training opportunity. The Division will provide leadership in implementing the DNR's prescribed fire policy and assisting others in its use.

### TECHNICAL AND ADMINISTRATIVE SUPPORT SERVICES PROGRAM

#### Public Affairs

Finally, in an important effort to improve public awareness and understanding of the Division and its programs, products and services, the Division has launched a Public Affairs effort. This subprogram, arising from the need to better inform and involve the Division's various publics in resource management decisions, will coordinate the production and release of information to key groups, cooperators and the media. The Division's public affairs efforts are intended to complement those provided by the DNR's Information and Education Bureau. A special effort will be made to work closely with the regional information specialists located in Brainerd, Grand Rapids, Bemidji and St. Paul.

The roles and functions of the Division of Forestry require general public understanding and support for effective implementation. Public discussion of natural resource issues is essential. A new emphasis on providing public information on all facets of Division operations will bring about a better understanding of how and why various management actions are undertaken.



SECTION I  
ASSESSMENT

POPULATION, INCOME AND EMPLOYMENT  
State and Regional Trends in Minnesota

Future demand for and use of Minnesota's forest resources will be determined to a large degree by shifts in the location, size of and age distribution of the state's population. Changes in the economic well-being of the state's citizens will also strongly affect the level and types of recreational and timber demands placed on the state's forests in the future. Since the state's citizens are the primary recreational users of state forest lands and are major consumers of its timber products, state demographic, income and employment changes are key indicators of future forest resource demands.

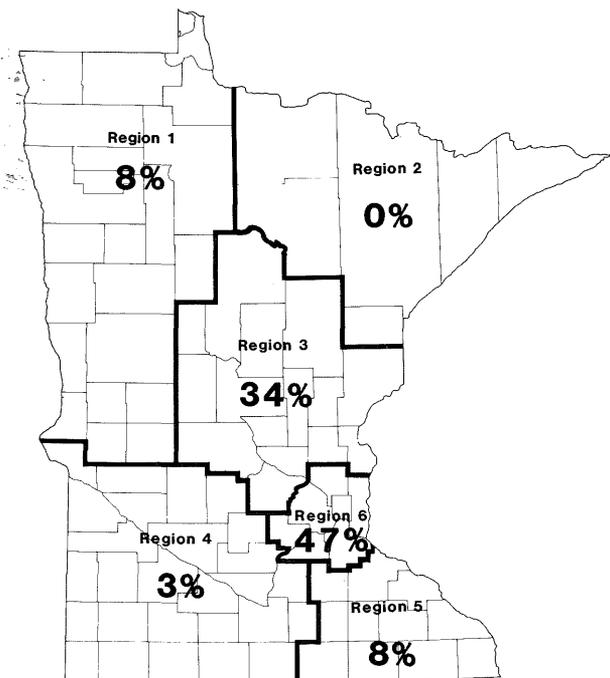
This section provides an update of selected demographic features for Minnesota. It is intended to supplement assessment information contained in Volume Three of the Minnesota Forest Resource Plan (DNR Forestry, 1983). Such information is helpful in developing and assessing the goals and direction contained in this plan for the Division of Forestry. For the first time, an effort was made to break down demographic information on a regional basis.

POPULATION

Minnesota's population continues to grow at a rate below that of the nation. Minnesota's population is projected to continue to grow at a slower rate than nationally. During the 1980s, state population is projected to grow by 5.2 percent versus 7.2 percent for the nation. If the projections are correct, Minnesota will add roughly 295,000 persons during the 1980s and another 230,000 persons during the 1990s.

Figure 4

**Projected Population Growth  
By DNR Region, 1980-2000**



Source: Minnesota State Planning Agency, Office of the State Demographer. 1983. Minnesota Population Projections: 1980-2020. St. Paul, MN.

Regional distribution of projected population growth is similar to past regional growth patterns. Regions which have in the past gained population will continue to experience the majority of future growth. Region 6, the Metro Region, and Region 3, which includes the St. Cloud area, experienced almost 90 percent of state's net population gain between 1960-1980 and 75 percent between 1970-1980. Eighty percent of population growth between 1980-2000 is projected to occur in these two regions. As a result, the state's population distribution will remain fairly constant through the year 2000 (see Figure 4).

Population in Region 3 is projected to increase by over 176,000 persons before the year 2000. By 2000, Region 3 is projected to account for 14 percent of the state's population, making it the fastest growing region. One implication of this growth is the probable decline in forest lands available for timber production. This may occur due to the set aside of forest lands for non-timber uses (i.e., parks, seasonal housing, commercial development), extensive subdivision of forest acres, or because of land management conflicts which restrict certain forest management practices (i.e., herbicide use). This will also include demands on wildfire protection systems.

Region 2, the northeast area of the state, is anticipated to grow the slowest. Population has declined moderately in this region since 1980. Continued out-migration is projected into the 1990s before the trend is reversed. Over the next 15 years, the Region's share of state population is projected to decline from 8.1 percent to 7.2 percent.

The regional share of state population in Region 4, the southwest part of the state, is also predicted to fall. The region's share is expected to fall from 12.9 percent in 1980 to 11.8 percent in 2000. Both Region 5, the southeast area of the state, and Region 1, the northwest part of the state, are projected to retain their share of the state's population, 9.7 percent and 8.8 percent respectively.

#### AGE DISTRIBUTION

While the growth rate and spatial distribution of Minnesota's population are not projected to vary substantially from recent past and current trends, the age distribution of the state's population will be changing significantly as the baby boom age group reaches mid-life and beyond. In 1960, 44.5 percent of the state's population was under 25 years old. By 1980, the percent of population younger than 25 years of age had fallen to 41.4 percent. This percentage will continue to decline, dropping to 34.5 percent by the year 2000.

Between 1980 and 1990 the number of persons in the state between 25-64 years of age will increase by 350,000 persons. This represents an increase of 20 percent in the number of

people who will be entering or have reached their peak earning and spending years. An additional net increase of 200,000 persons into the peak earning and spending ages will occur during the 1990's. The 45-64 year old population group will dominate the state's age structure in the 1990's much as members of this group did during their adolescent years in the 1960's and 1970's.

The number of persons over 65 in the state will also continue to increase during the 1980's and 1990's, an ongoing trend since 1960. The only age group which will decline between 1980 and 1990 is the 15-24 year old group. This age group will decrease in size by over 25 percent.

Recreational use and demand for timber products from Minnesota's forests will likely be affected more by the shift in the population age distribution than by population growth. Future recreational users will probably be on average older and have higher incomes than in the past. The Division of Forestry has responded to this trend by continuing to plan for and develop dispersed recreational facilities that offer a variety of recreational opportunities. Demand for timber products generated by Minnesota consumers should also increase faster than population because of the significant expansion of people in their prime earning and spending years.

#### HOUSEHOLD NUMBERS AND SIZE

The number and size of households in the state is another important demographic measure when projecting future forest product demand and recreational use. The rate of household formation partially determines demand for residential construction, which is a leading consumer of lumber products. Forest recreation use is also influenced by household growth since many recreational activities are organized at the household level.

Household size in Minnesota historically exceeded the U.S. average until 1980. The 1980 Minnesota household size estimate roughly equalled the national norm of 2.74 persons per household. The state's average household size is projected to continue to fall in both absolute terms and relative to the U.S. average, to about 2.35 persons per household. Average U.S. household size over the same period is projected to drop to 2.51.

Growth in the number of households in the state depends on population growth and on changes in average household size. Since population has been growing in the state and household size has been decreasing, the number of households in the state has been expanding faster than population. This trend could have a significant effect on the demand for new home construction and the overall demand for forest products in Minnesota.

## INCOME AND EMPLOYMENT

Average per capita income in Minnesota has exceeded the national average since the early 1970s. During the 1960's, per capita income in the state gradually increased from 94 percent of the national average in 1960 to 99 percent by 1970. Since 1970 state per capita income has increased to 2 percent above the national average in 1980, fallen to 1 percent above in 1983 and exceeded the national average by 5 percent in 1985.

Per capita income across regions of the state is uneven. Only the Metropolitan Region has exceeded the state per capita income average over the last 15 years. Per capita income in this region has consistently been 15-18 percent above the rest of the state.

Regions 2 and 4 have had falling per capita income levels relative to the state average since 1975 after having sharp regional per capita income growth between 1970-1975. Declining income in Region 2 can be traced to lower mining employment. Falling farm income resulting from depressed agricultural prices during the 1980's has negatively affected income in Region 4.

Region 3 has the state's lowest income level. However, the 12.4 percent per capita income increase in Region 3 since 1980 was the state's largest.

Region 1 has had a fairly constant per capita income level relative to the state average since 1975. Per capita income in the region has increased by 9.2 percent since 1980. In Region 5, per capita income has been increasing towards the state average since 1975. The expanding Rochester economy has stimulated income growth in this region. Since 1975, per capita income in this region has grown 30 percent faster than average income statewide.

Per capita income can be a strong indicator of the demand for recreational use of forest lands. Urban residents, for example, make up about 40 percent of the use at northern forest recreation sites. Rising per capita income will spur greater participation by urban recreationists, the single largest user group. Additional local demands could also be expected at forest recreation facilities.

## ECONOMIC DIVERSIFICATION

Employment growth in Minnesota during the 1980s has continued to follow the long-term structural shift away from natural resource based industries towards technologically intensive manufacturing and service producing industries. Employment in agriculture, food processing and mining continues to decline while durable goods manufacturing, retail and service related employment expands.

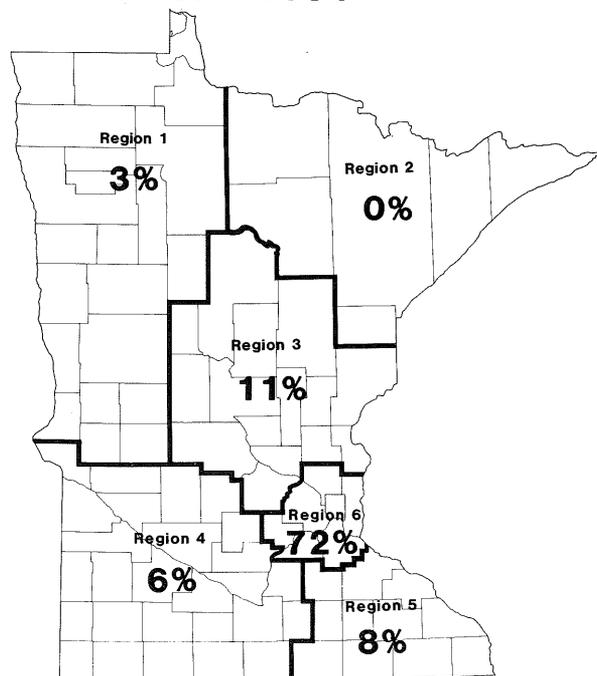
An important outcome of the state's economic diversification is the apparent increase in the state's sensitivity to the national business cycle. State employment now falls

and recovers quicker than U.S. employment during economic recessions and recoveries. Minnesota's economy has become more dependent on national and international trade as industries have expanded their markets beyond state and regional borders. In the future the state's economy will continue to become more dependent on national and international markets.

While state employment has increased above two million to an historical high, most of the growth has been concentrated in the Metropolitan Region (Figure 5). Employment in the metro area has generated 7 out of every 10 new jobs in the state since 1975. Region 3, which includes St. Cloud and many of the counties directly west and north of the metro area, has been the only region besides the Metro Region to increase its share of state employment.

Figure 5

## Employment Growth by DNR Region, 1975-1984



Source: Minnesota Department of Economic Security. Research and Statistical Service Office. 1985. St. Paul, MN.

A higher concentration of employment in slow growing or declining industries and a lower growth rate in service and trade employment relative to the metro region has resulted in low employment gains in most of the outstate regions.

#### UNEMPLOYMENT

The ability of the state's economy to create jobs at a rate faster than the national economy has kept state unemployment rates consistently below the U.S. average over the last twenty years. Relative to the national average, regional unemployment rates improved statewide during late 1960's and through the 1970's. Since then unemployment rates in all regions except Region 2 have remained stable or increased slightly when compared to the U.S. average. Unemployment in Region 2 has averaged almost twice that of the U.S. rate during the 1980's. Unemployment in Regions 1 and 3 also continues to exceed the national rate.

#### OVERVIEW OF MINNESOTA'S TIMBER-BASED INDUSTRY

Minnesota firms and workers involved with harvesting and processing the state's timber resources have always played an important role in the economic development of the state. While not a dominant industry like it was during the state's earliest years, the timber-based industry today is considered the 3rd largest manufacturing industry in Minnesota generating a payroll of \$1.3 billion for Minnesota citizens. Although located primarily in the northern forest covered section of the state and in the metro area, the industry is active across the state. Industry activity ranges from large pulp and paper mill operations down to independent loggers. Products of the industry vary from fuelwood and fence posts to high-quality paper used in book and magazine publishing.

Minnesota's larger wood products industries are indicated in Figure 6. The wood products industries in Minnesota have invested over \$700 million in expansion and modernization in the past 5 years. Another \$800 to \$900 million will be invested in plants within the next 5 years in Minnesota.

Approximately three-fourths of the state's annual harvest is commercially sold as pulpwood. The remainder is used for sawtimber and specialty products. A significant fraction of the state's pulpwood harvested is shipped out of state, mainly to Wisconsin or Ontario mills. Fuelwood for residential heating has increased to 1.4 million cords from a low of 250,000 cords in 1972. These activities form the core of the state's timber-based industry.

In 1984, total sales by the industry's primary and secondary segments approached \$3.5 billion. Over 50,000 people were directly involved in product manufacturing

--more than half in the Twin Cities metropolitan area. If persons employed in related trade and service industries are included, employment attributable to the industry probably exceeds 100,000. Based on late 1970s information, Minnesota's wood-based industry accounts for 13.5 percent of statewide manufacturing employment, 15 percent of personal income generated by such industries, 9 percent of gross sales, and 12 percent of the value added by manufacturing within the state.

The industry's importance as a source of employment and income increases at the regional level. Almost one-half of estimated 1984 timber-based employment in the state was located in the seven county metropolitan area. Logging employment is concentrated in Region 2, the northeast, where the majority of the timber harvested takes place. Region 4, the southern part of the state, although strongly agriculturally orientated, has over 8.0 percent of total state employment in the industry.

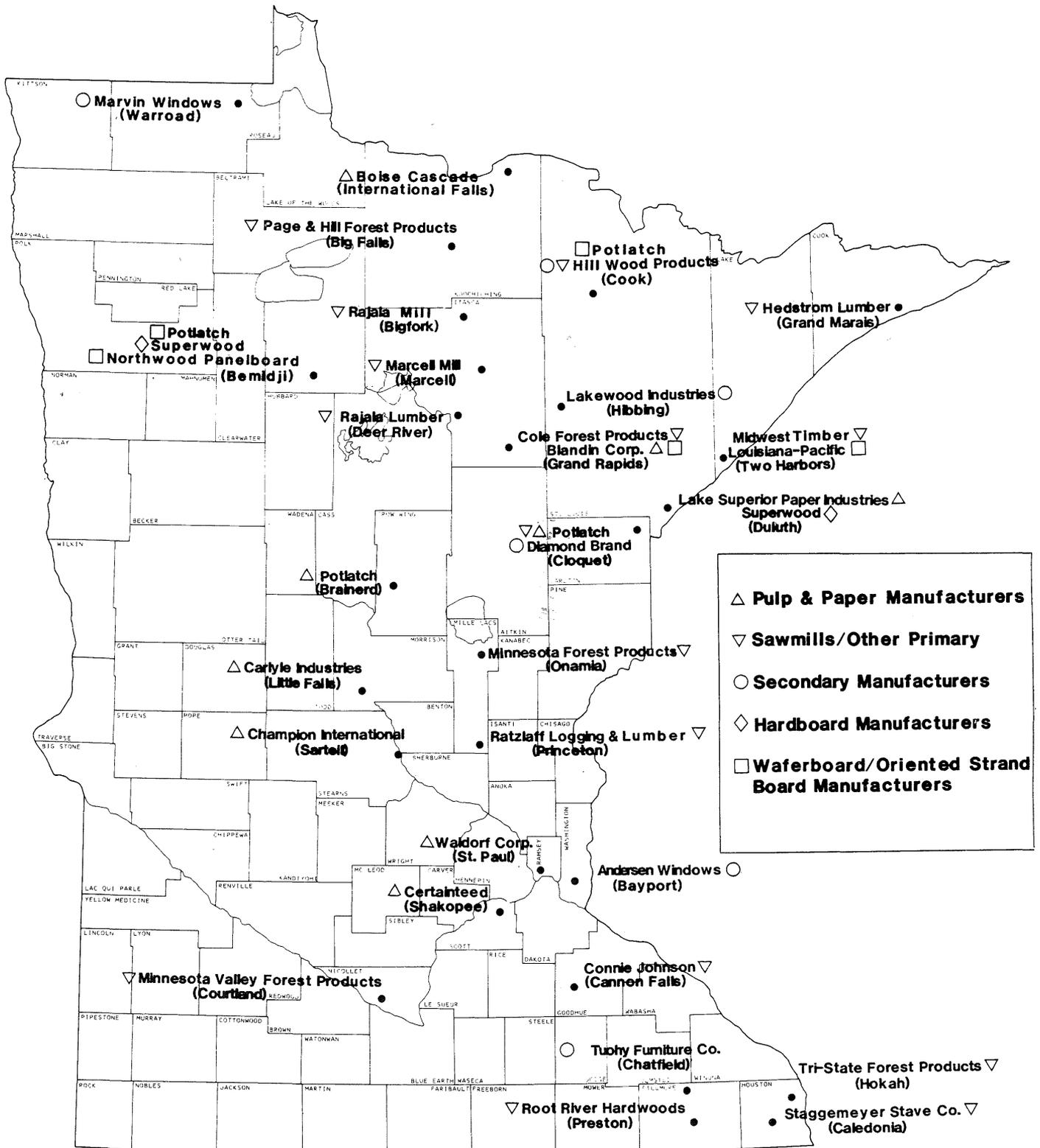
The increased annual harvest from Minnesota's forest lands in recent years points to an improving timber-based industry in the state. Pulpwood production continues to be the primary harvest component. The majority of pulpwood harvested is used by the state's paper and pulp mills for manufacturing paper, hardboard and composite board. Minnesota wood products are marketed primarily in the Midwest, although some specialized products, such as coated paper, are competitive nationally.

Secondary processing of some of the paper and board outputs of the mills also occurs in the state. Processing paper into envelopes, bags and boxes, or lumber used in furniture making are examples of the state's secondary timber-based manufacturing activities. Secondary wood processing in the state produces products such as cabinets, cabinet parts, furniture, pallets, trusses and flooring. Approximately 900 primary processors and between 700 to 800 secondary wood processing firms were identified in the state in 1986.

Two major factors in future timber-based employment are future national economic conditions and the degree of success in current economic development efforts in the industry. The timber-based industry will remain sensitive to national business swings, so employment growth in the industry will likely fluctuate also. Realistic opportunities for expanding the state's wood related secondary processing industry have been identified and are being promoted. Employment gains through successful economic development efforts may not be significant statewide, but will greatly affect local economies.

Figure 6

# Minnesota's Largest Forest Products Producers 1987



Source: DNR, Division of Forestry. 1987.

## MINNESOTA FOREST INDUSTRY OUTLOOK\*

About 4.4 million cords of wood were harvested in Minnesota in 1985. By 1995 the annual harvest is expected to be 5.8 million cords. This increase will be needed to furnish raw material for expected industrial expansion. Table 3 summarizes current Minnesota wood resource use and expected wood use in 1995.

Minnesota's pulp and paper industry used 800,000 cords of wood in 1985. The expected 1988 completion of the Lake Superior Paper Industries paper mill at Duluth and a major expansion of an existing paper mill are likely to increase wood needs within this industry to 1.15 million cords annually by 1995.

Minnesota leads the nation in production of waferboard and oriented strand board (OSB). This industry used 750,000 cords of Minnesota aspen in 1985. The industry continues to be attracted to Minnesota because of its aspen surplus and proximity to Midwest markets. It is expected that one or two new waferboard plants and expansions of several existing plants will take place within the next 10 years, increasing aspen consumption within this industry to 1.15 million cords annually by 1995.

The sheathing board industry, and possibly the addition to Minnesota of a particle board or medium density fiber board facility is expected to create a new demand for up to 120,000 cords annually by 1995. International Bilprite, Inc., a sheathing board producer, will open a new plant in International Falls in 1987. This plant will have an initial wood consumption of 60,000 cords annually.

Minnesota sawmills processed 540,000 cords of wood in 1985. By 1995 this will increase to 600,000 cords annually. The increase in lumber production will be due primarily to the increased output of industrial wood products such as pallets, blocking and crating.

About 110,000 cords of wood were harvested for specialty products (treated posts, poles, landscape ties, dowels, chopsticks, etc.) in 1985. The continuing growth of the treated wood products industry as well as new product development is expected to increase wood demand for specialty products to 120,000 cords annually by 1995.

Minnesota exported 147,000 cords of wood in 1985. Most of these exports were in the form of pulpwood to Canada and Wisconsin. Expansion of the paper industry in Wisconsin is expected to drive exports up to 170,000 cords annually by 1995.

Over 2 million cords of wood were used for energy in 1985. Homeowners burned 1.4 million cords. The equivalent of 650,000 cords were used for commercial energy. Residential wood energy use is not expected to increase significantly in the next 10 years. The use of wood energy in commercial and industrial applications will continue to increase, however. One reason is that all new wood industry development will incorporate wood residue burning energy systems. By 1995 the equivalent of 1 million cords of wood will be used for commercial energy.

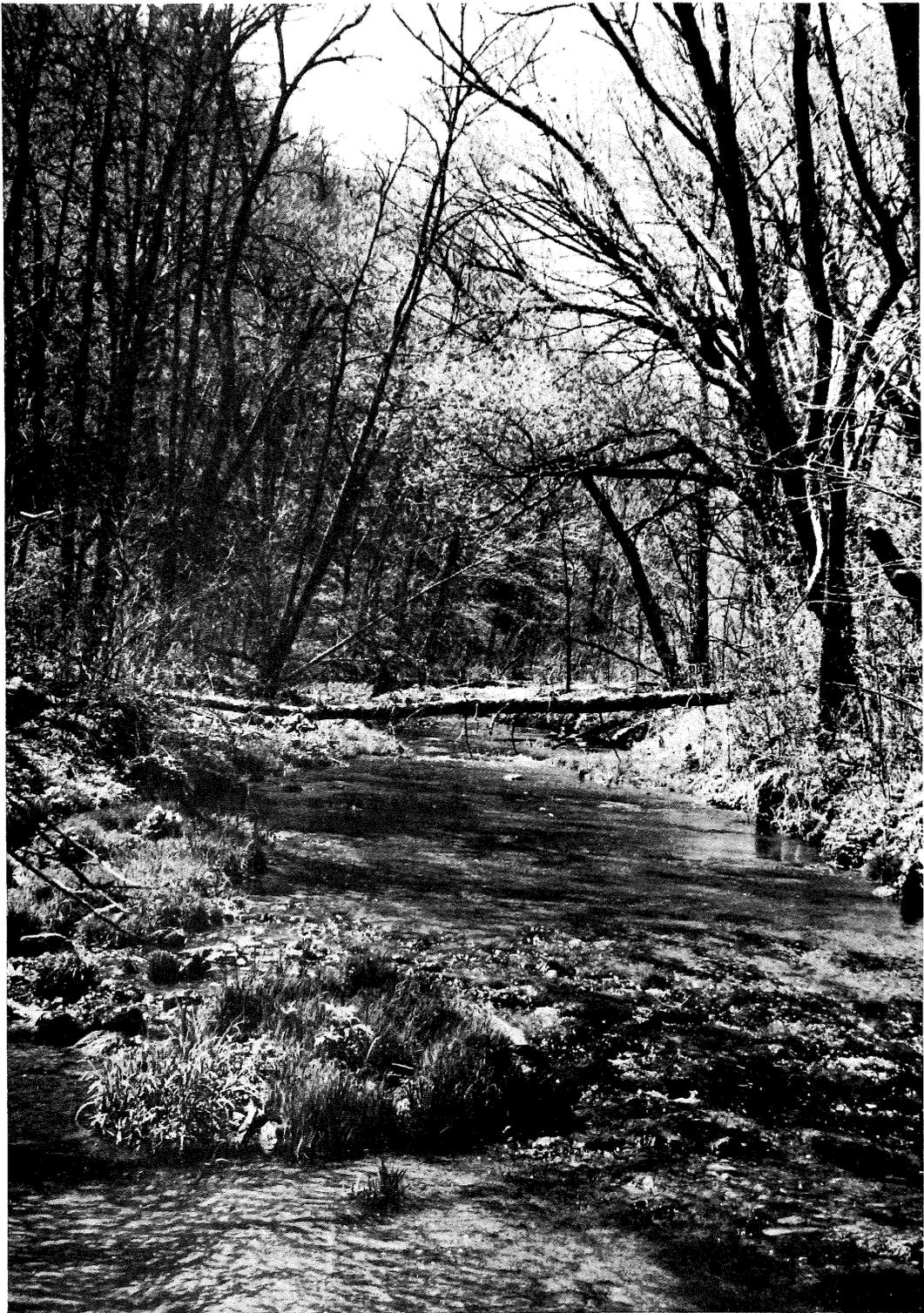
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\* For definition of technical terms see Glossary.

TABLE 3  
WOOD RESOURCE USE IN MINNESOTA - CURRENT AND PROJECTED

Industry Segment	1985 Wood Consumption	Estimated 1995 Wood Consumption	Primary Species
Pulp and Paper	800,000 cords	1,150,000 cords	Aspen, Pine, Balsam, Spruce
Waferboard/OSB	750,000 cords	1,150,000 cords	Aspen
Particleboard/Sheathing/MDF	0 cords	120,000 cords	Aspen, Pine, Hardwoods
Lumber	540,000 cords	600,000 cords	Aspen, Dense Hardwoods, Pine
Specialty Products (posts, poles, landscape ties, dowels, chop- sticks, etc.)	110,000 cords	120,000 cords	Aspen, Pine
Export	147,000 cords	170,000 cords	Aspen, Pine, Spruce, Balsam
Residential Fuel	1,400,000 cords	1,500,000 cords	Dense Hardwoods
Commercial Fuel	600,000 cord equivalents	1,000,000 cord equivalents	Hardwood Chips, Wood Industry Residue
<b>TOTAL</b>	<b>4,397,000 cords</b>	<b>5,810,000 cords</b>	

Source: Minnesota DNR, Division of Forestry, 1987.





## Minnesota Forest Resources Plan

# Section 2

### SECTION 11 FUTURE DIRECTION FOR THE DIVISION OF FORESTRY

#### VISION STATEMENT

The Minnesota Division of Forestry's vision is to provide quality forest resources for the people of Minnesota by balancing public needs with sound natural resource management principles. The Division will cooperate with other organizations and individuals in an attempt to promote a holistic view of forest resources and forest benefits.

#### MISSION STATEMENT

The Division of Forestry's mission is to work with public and private entities to promote the conservation, protection and enjoyment of Minnesota's forest resources through multiple use management, wildfire and pest protection, and technical forestry assistance.

The Forest Resource Management Act of 1982 directs the Commissioner of Natural Resources to protect and "manage the forest resources of state forest lands under his authority according to the principles of multiple use and sustained yield." These principles will also be promoted on other ownerships through technical assistance programs.

Forest resources requiring management and protection include timber and other forest crops, recreation, fish and wildlife habitat, wilderness, rare and distinctive flora and fauna, air, water, soil, and educational, aesthetic, and historical values. A primary objective of the Division is to provide a sustained yield of the various products and renewable resources of state forests to benefit the greatest possible number of citizens.

The goals and objectives for management of state lands and for the Division's technical assistance programs for other ownerships are identified in this plan.

#### PREFERRED FUTURE

For the future, the Division of Forestry envisions a more efficient, effective organization; one closer to the public it serves, more interactive with its customers and more responsive to public needs. The organization will spend considerably less time on administrative details and more time managing the state's vast forest resources. More stable budget and staffing levels would enable a more consistent effort over time and would, therefore, foster successful plan implementation.

An improved marketing approach will be needed to inform key clientele of Division activities and services. It is particularly important that citizens understand and appreciate the Division's key role in wildfire prevention and in actively managing 4.6 million acres of land. Additional emphasis will be placed on better use of these lands to produce diverse commodities and amenities.

#### DIVISION GOALS

- Increase the productivity of forest lands to achieve higher levels of both commodities and amenities to strengthen Minnesota's forest products and tourism economies.
- Improve the ability to protect life, property and natural resources from wildfire.
- Improve the coordination of public/private forestry programs to more effectively achieve shared goals.
- Improve the dissemination of forest resources information to better meet user needs.

- Intensify efforts to enhance water quality, fish and wildlife habitat, plant communities, preserve biological diversity, and improve the quality of the state's forest resources.
- Maintain a close alliance with the state's agricultural community to ensure the effective design and implementation of forestry programs affecting agricultural lands and landowners (e.g., CRP, RIM).
- Maintain close communications with forest user groups in order to remain sensitive to the broad range of public needs and expectations.
- Continue efforts to preserve biological diversity by identifying and designating Scientific and Natural Areas and Natural Heritage registry sites through area planning.

#### STRATEGIES AND OBJECTIVES

- Promote wood products industry expansion and new industrial development by ensuring the availability of an adequate supply of raw materials.
- Intensify efforts to produce goods and services in addition to timber (i.e., dispersed recreation, non-game wildlife).
- Increase investments in and cooperation with rural fire departments and other agencies to improve rural forest fire protection.
- Develop, refine and direct cooperative fire prevention efforts toward informing the public of the dangers of wildfire and methods to prevent them.
- Seek new opportunities to share the Division's technical knowledge and expertise with other organizations and individuals to better meet the public's needs.
- Share with other agencies and organizations the responsibility for pursuing joint opportunities and solving shared problems.
- Develop more and better resource information, information systems and information coordination mechanisms.
- Increase efforts to detect and evaluate the symptoms, extent, distribution and location of resource degradation.
- Modify forest management practices to enhance the forest resource and to arrest resource degradation.
- Showcase the Division's environmental protection efforts (e.g., acid rain research, air and water protection projects, and hazardous waste clean up).
- Interact more with local communities to develop stronger local support and to increase the Division's visibility with the public.
- Develop a marketing plan for the Division to bring increased visibility to the Division's programs and activities.
- Promote a better public understanding of the Division, its programs and services.
- Reduce technical assistance where the Division gets a low return on the time invested.
- Better anticipate and respond to new markets and new demands for forest resources.
- Recruit, train, select and maintain qualified forestry personnel.
- Provide coordination and technical assistance to other division's, agencies, and organizations to encourage a cooperative approach to the management and protection of fish and wildlife habitat, wilderness, rare and distinctive flora and fauna, air, water and soil.
- Conduct mobility assignments within the Division and reassign personnel temporarily between the Division and other divisions on an annual basis to provide training in other divisions' operations.
- Assure that the costs of providing various forest resources on trust fund lands will be borne as much as possible by the revenue generated by the use of those resources.
- Manage trust fund lands in a way that will maximize the long-term economic return while using sound natural resource management principles.
- Augment the efforts of the DNR, Bureau of Information and Education by dedicating more Division staff time to information and education activities.



## Minnesota Forest Resources Plan

# Section 3

### SECTION III DIVISION OF FORESTRY PROGRAM DIRECTION 1987 - 1991

The Division of Forestry's ongoing resource management activities are grouped into six program areas:

1. State Forest Land Management
2. Nursery and Tree Improvement
3. Cooperative Forest Land Management
4. Forest Resources Assessment
5. Fire Protection and Management
6. Technical and Administrative Support Services

Each program is composed of one or more related program elements or subprograms, each of which shares certain similarities. For example, Cooperative Forest Management activities take place on all forest ownerships, such as county and private forest lands. They typically involve providing technical expertise and assistance to forest landowners. State Forest Land Management, on the other hand, deals almost exclusively with activities involving state-owned forest lands. Technical and Administrative Support Services assist in carrying out each of the other programs by providing basic management support and administrative services.

This section describes an action plan for each of the Division's 21 subprograms. It outlines specific actions to be taken to address the needs and issues contained in the 1983 MFRP Assessment, as well as policies contained in the Forest Management Act of 1982. The plans include a brief description of program activities, a statement of the program goal, a summary of statewide direction, and a list of major strategies and objectives for fiscal years 1987-1991. Budget and staffing information for this period are contained in the Executive Summary.

### STATE FOREST LAND MANAGEMENT PROGRAM

#### Mission

To protect and manage state-owned forest lands according to the principles of multiple use and sustained yield in order to provide forest resources which can be used in such a manner that best meets the needs of Minnesota citizens.

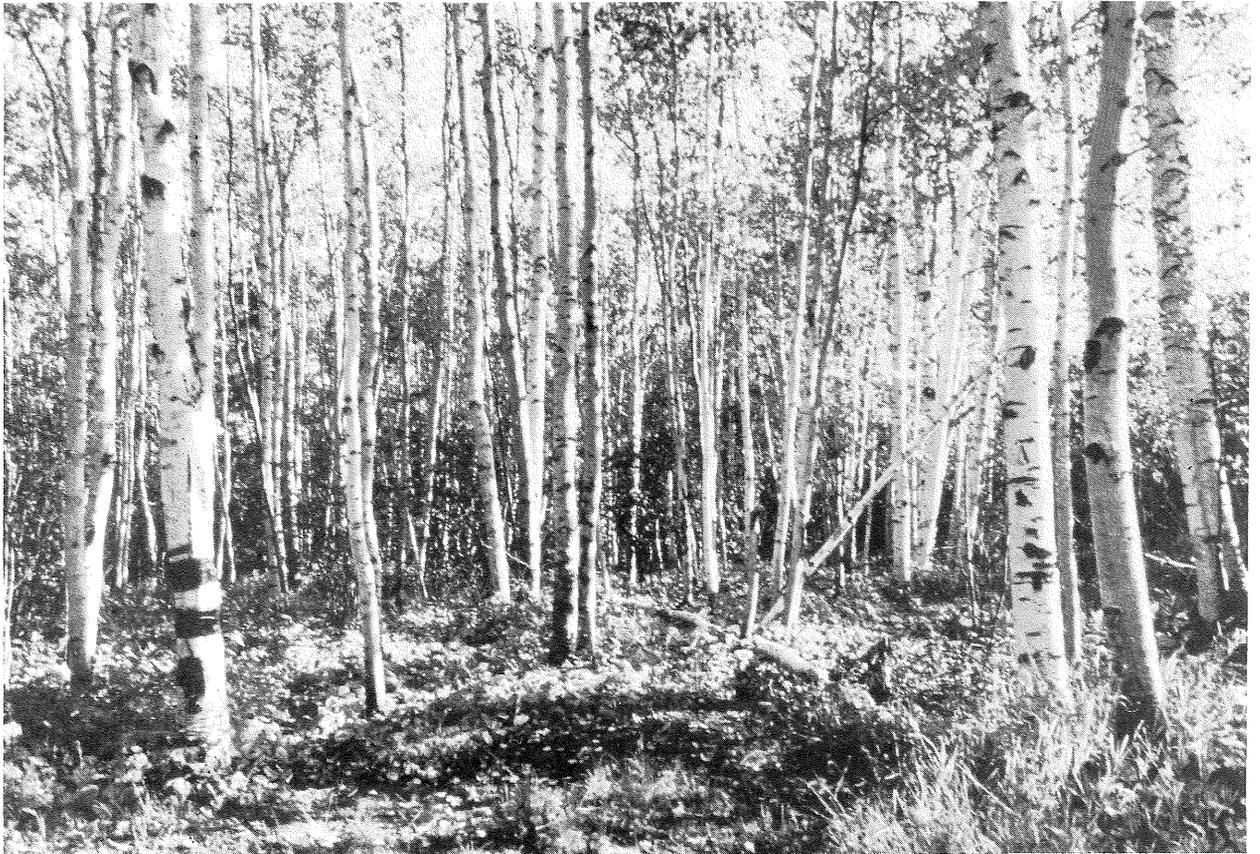
#### LAND ADMINISTRATION

#### Goal

Achieve the optimum pattern of forest land ownership for the management of forest resources to best serve the needs of Minnesota's citizens. Maximize long-term resource and economic benefits through efficient resource management, land acquisition, leasing, sales and exchange.

The Department of Natural Resources is the major state land management agency in Minnesota. The Division of Forestry administers nearly 4.6 million acres of the roughly 5.3 million acres of DNR-administered land. The Division's land administration activities include acquiring, exchanging, selling and leasing lands. Field staff are involved in identifying proposed acquisitions, sales, leases or exchanges, inspecting leases, and maintaining contacts with other agencies and landowners. The DNR Land Bureau assumes follow-up responsibilities for actual negotiations, land appraisals, record keeping and other support services.

The Forest Resource Management Act of 1982 requires that the forest resources of state forest lands be managed in the combinations that will best meet the needs of the people of the state, but not necessarily the



combination of uses resulting in the greatest economic return. On the other hand, lands with trust status must be managed to maximize the long-term economic return while using sound natural resource management principles.

#### Statewide Direction

The Division's lands include a mix of large contiguous blocks as well as many small isolated parcels. The checkerboard pattern of public land ownership is inefficient to manage for some purposes such as timber development. Dispersed ownership increases the costs of locating property corners, surveying property lines, providing road access, preventing trespass and for a wide range of management activities that require on-site inspection. Consolidation of public ownership can reduce these costs. Therefore, one objective of the Division's land administration activities is to consolidate the scattered lands into larger, more contiguous units for more efficient management. However, the Division recognizes that the optimal land ownership patterns vary by resource management objectives and that some scattered parcels have significant mineral, wildlife and other resource values and therefore should not be consolidated.

#### Strategies and Objectives

- Develop a coordinated, comprehensive land classification and adjustment program.
- Better define and communicate to the public the Division's role in land management and the associated public benefits.
- Actively pursue a more consolidated state land-ownership pattern consistent with multiple-use management goals and public benefits through acquisition and exchanges.
- Streamline land transactions wherever possible.
- Take a more active role in leasing at the area level.
- Redirect the Division's land exchange efforts from small, costly and inefficient exchanges to larger exchanges with other public agencies, timber companies and other large landowners.
- Transfer trust fund land status, while retaining current administrative status, from lands in state parks, wildlife management areas, Scientific and Natural Areas and non-revenue producing lands to state forest lands which consolidate blocks of trust fund lands within state forests to make management more efficient and to maximize revenues to the trust.
- Identify lands that can generate revenues to the Forest Management Fund through innovative lease management, taking into consideration natural resource values and public benefits through the area planning process.
- Insure that lakeshore leasing rules are adopted and uniformly enforced.

## STATE FOREST RECREATION

### Goal

Fulfill the outdoor recreation potential of Minnesota's state forest lands by providing developed recreational areas and opportunities for dispersed recreational activities compatible with other forest uses and consistent with user demands.

Recreation facilities on the state's forest lands evolved over a period of many years. The building of logging roads and fire break construction in the late 1800's and early 1900's greatly expanded the opportunities for recreational pursuits by providing access to forested and lake areas. Much of the recreation development on public land was done by the Civilian Conservation Corps (CCC) during the depression of the 1930's. Many of these facilities are still in use, some with little modification. Similar efforts, most notably in 1958 and 1963, provided for additional recreational development on state forest lands.

The Division of Forestry currently administers 46 campgrounds, 44 day-use areas, 1,200 miles of trail, 142 water accesses and 17 canoe and boating route campsites. Since 1983, the Division has rehabilitated 17 campgrounds, 2 day-use areas and 56 miles of trail. Other forest recreation management activities include planning, developing and maintaining facilities, enforcing rules and regulations, and distributing maps and other interpretive materials. The Division also works with other recreation providers within and outside the DNR to keep pace with constantly changing recreation demand.



### Statewide Direction

The 1985 State Comprehensive Outdoor Recreation Plan predicts that demand for most recreational activities will increase on state forest lands. The Division will work with other units of the Department to analyze the recreation market for state forests and develop a management strategy that seeks to satisfy the needs of the identified market. Efforts then will be targeted to areas with highest need and return to the user.

The major emphasis of the State Forest Recreation subprogram will be to provide recreational users of state forests with enough information so that they can easily use state forest lands for the activities that they desire to participate in. Developed recreational facilities will continue to be a part of the program, but emphasis will shift to dispersed forms of recreation that require little development or maintenance funding.

### Strategies and Objectives

- Conduct a state forest recreation user needs analysis.
- Maintain cooperative relations with other public and private recreation providers.
- Evaluate use of all recreation sites and adjust the capacity to fit the need.
- Work to secure adequate funds for recreation management, including rehabilitation and new development.
- Develop an interpretive program for state forests including interpretive trails, driving tours and informational brochures.
- Intensify promotion of state forest recreation through public distribution of maps, brochures and interpretive and educational resource information.
- Work with wildlife and fisheries managers to enhance wildlife and fisheries related recreation opportunities on state forest lands.

## STATE FOREST ROADS

### Goal

Identify, develop, and maintain a safe, efficient forest transportation system that provides access to protect, manage and use Minnesota's forest resources.

The Division of Forestry maintains just over 2000 miles of road which provide access to the 4.6 million acres of state forest lands. These roads also serve several million acres of county, federal and private forest lands. Much of the existing forest road system was constructed by the Civilian Conservation Corps (CCC) in the 1930's and later was improved and expanded through timber harvesting and fire protection activities. Today some 2500 loggers, 15 major wood-based industries, and 600,000 to 800,000 Minnesotans who use state forests each year directly benefit from state forest roads.

## Statewide Direction

Increasingly heavy use of state forest roads has placed added demands on the existing transportation system. Insufficient funding for forest road construction, reconstruction and ongoing maintenance programs has added to this problem, making forest access difficult in many cases. Multiple ownership and use of forest roads presents additional problems in operating and maintaining this system of roads.

Transportation planning on the area and Division scale will be the major portion of the work under this program. The key portions of the plans will be based on knowledge and projected use of all resources and will include coordination with other resource managers at field levels. An analysis of needs based on existing facilities, resource use, costs and available funding will be completed for each project. Road training will be directed at specific groups and will provide the knowledge which is most useful for the people involved.

## Strategies and Objectives

- Analyze regional program needs (structure replacement, maintenance) within restrictions of budget allotments to best manage the statewide access network.
- Develop policies for cooperative road maintenance agreements and easement exchanges with other divisions, agencies, corporations and interest groups.
- Work with other divisions, agencies and groups to develop policies to address issues of road densities and access in roadless areas.
- Develop a detailed access plan as part of each area plan which considers specific resource needs and specific access needs for the 10-year period.
- Develop management guidelines for state forest access corridors.
- Examine the access network to determine opportunities to cooperate or turn over roads to other agencies. Follow up with the appropriate actions in a timely manner.
- Propose and follow legislation to provide better funding and control of forest access.
- Integrate access information with other resource information through the Division's Geographic Information System in a manner that is easily accessible to the area and region offices.

## TIMBER MANAGEMENT

### Goal

Efficiently apply sound silvicultural practices to regenerate and improve productivity of state-owned forest lands while providing a sustained yield of forest resources for Minnesota citizens.

It is the responsibility of the Division of Forestry to manage state-owned forest lands so they are used to best meet the needs of Minnesota's citizens. This requires coordinated management of the forest resources to attain the optimum mix of public benefits.

The Timber Management subprogram includes two major functions: timber stand regeneration and regulation of the timber harvest. The basic function of timber stand regeneration is to coordinate timber harvest and regeneration plans to assure that state lands are maintained in appropriate cover types to meet future multiple-use demands. The basic function of regulating harvests is to ensure sustained yields of forest products. These functions are accomplished through coordination of various aspects of timber scaling, sales, timber harvest, stand regeneration and stand maintenance activities.\*

\* For definition of technical terms see Glossary.

## Statewide Direction

Reforestation enjoys broad support. Still, there is a need to promote an information exchange between foresters, other resource managers, and recreational users about the multiple benefits which can be obtained from conifer and hardwood reforestation activities. There is also a need to expand the availability of wildlife tree and shrub species from the state nurseries and to successfully incorporate the planting of these species in the field.

A reassessment of the Division's expectations of "good" plantation management and future market conditions may result in a need to shift to more mixed stands and away from even-aged, single species stands, and move to planting more non-timber tree and shrub species.



## Strategies and Objectives

- Develop silvicultural systems which accomplish acceptable stand establishment and vegetation management while reducing physical and visual impacts on the environment.
- Reevaluate reforestation targets and standards.
- Build non-timber species targets into reforestation goals.
- Plant new plantations at reduced numbers of trees per acre and accept mixed stands without early thinning needs.
- Classify brush ecosystems as to potential timber productivity and wood fiber need, and coordinate management plans and regeneration activities with the DNR Section of Wildlife.
- Implement timber sale and regeneration policies which support the economic regeneration of all stands harvested, and promote regeneration of sites to the most suitable species.
- Expand the aspen recycling program in the northern regions of the state.
- Implement intensified management of the aspen species through clone management, hybrid poplar/aspen planting, and field analysis of exceptional aspen stands and recycling results.

## TIMBER SALES

### Goal

Supply the Division's market share of timber proportionate to the amount of commercial forest land the state owns (18 percent), adjusting sales efforts to reflect current economic trends, market demand and biological conditions in different regions of the state.

Timber harvest is an important tool available for forest management. To carry out this management function the Division is authorized to sell timber from public lands. Timber sales activities include: the appraisal, sale and supervision of timber harvest on state lands; field inspections to check timber permit compliance; scale or measurement of timber volumes removed; and maintaining the timber sales data processing system.

Issues surrounding the sale of state timber include the costs of administering timber sales relative to sale values; how best to balance timber sales workload and fluctuating market demand; and the increased use of timber harvest regulations to achieve silvicultural objectives. Some question also exists as to the appropriate market share to be met by state timber sales.

## Statewide Direction

The Timber Sales subprogram will reexamine the Division's overall strategy for offering timber for sale statewide. Integrated timber harvest goals will be developed for geographic locations in coordination with county, federal, and private landowners. This will be done by better integrating the Division's timber sale and timber management planning efforts, and by taking into consideration the full array of land management activities (i.e., recreation, wildlife, roads) when setting up sales. Timber sales practices will be integrated with wildlife habitat needs through application of the Department's Forestry/Wildlife policy and guidelines.

Increased costs of administering timber sales are, in part, attributable to using timber sales to achieve multiple-use management goals. Even though non-timber values are a legitimate benefit of a timber sale, administrative efficiency could be improved. A major emphasis of the program over the next five years will be to implement new and/or revised timber sale procedures to improve administrative efficiency and to make the state's timber sales more competitive.



## Strategies and Objectives

- Conduct a thorough evaluation of the current timber sales operations to make the program more cost effective and better able to meet market demand.
- Meet regularly with industry representatives to better coordinate state timber sales to meet their needs, including timing, size, species and location.
- Implement new or revised timber sale procedures as necessary to improve administrative efficiency (e.g., computerize cost accounting system, revise timber appraisal standards, reduce sale and cutting restrictions, update price guide factors, simplify consumer scaling, and increase size of sales).
- Reduce timber sale and cutting regulations. Post-sale treatment may have to be charged to site preparation costs and paid for accordingly.
- Study and propose legislation that will improve the marketability of state timber.
- Consider wildlife and other resource values when planning and conducting timber sales.

training or planning assistance to and coordination with the DNR Division of Fish and Wildlife.

## FISH AND WILDLIFE HABITAT MANAGEMENT

### Goal

Provide forest habitats conducive to managing and protecting a variety of fish, wildlife and native plant resources compatible with forestry and fish and wildlife management objectives, site capabilities and adjacent land uses.

Forests and associated waters on Division-administered lands provide habitat for a wide variety of fish and wildlife species. Manipulation of forest vegetation is one method of managing for wildlife as well as timber products. Successful management for these purposes depends upon achieving the desired combination and distribution of timber age classes by forest types.

In an effort to improve integration of DNR management practices, a Wildlife/Forestry Coordination Policy and Forestry/Wildlife Guidelines to Habitat Management were developed.

In response to the DNR policy directive, the Division has modified forestry practices (e.g., timber harvest, reforestation, timber stand improvement) on lands under its jurisdiction to assure that fish and wildlife habitat is maintained or improved. Other activities the Division conducts that improve wildlife habitat are: constructing openings, roads and trails; managing shrub and grass habitat; conducting prescribed burns; coordinating the Division's land administration activities to enhance fish, wildlife and native plant habitat; participating in fish and wildlife improvement activities by providing personnel or other forms of support; and providing



### Statewide Direction

Passage of the Conservation Reserve Program has placed an additional workload on the Division's foresters who provide assistance to non-industrial private landowners. Implementation of this program is a cooperative effort between the divisions of Forestry and Fish and Wildlife. The Division of Forestry is responsible for tree planting and the Division of Fish and Wildlife is responsible for other wildlife food and cover plantings. Approximately 15,000 acres of trees will be planted annually for the duration of the program.

The Reinvest in Minnesota (RIM) bill, enacted by the Minnesota State Legislature in 1986 is intended to protect and enhance the state's fish and wildlife resources. Although some provisions of the bill have not yet been fully funded, others such as the Aspen Recycling portion are already underway. The major responsibility for habitat manipulation will be the Division of Forestry's. Approximately 7,000 acres of aspen will be recycled annually through this program.

The long-term protection of the biological diversity found on state forest lands requires the early identification and protection of rare, endangered, or unique plant and animal species habitats and sites. In response to this need, the Division is increasing its cooperative efforts with the Section of Wildlife to identify these sites. Specific fish and wildlife management objectives may vary geographically and will be targeted at producing or protecting specific fish, wildlife and plant communities associated with particular forest habitats. These objectives will be established in the Division's area plans.

Similarly, the Division is increasing its efforts to establish such habitats and sites as Scientific and Natural Areas or registry sites to assure their long-term protection. The Division is also committed to retaining a diversity of forest community types in the forest land base in recognition of the varied habitat requirements of all plant and animal species found on this land base. As rare plant communities or important geologic features are identified, the Division will take steps to protect them. When conflicts in management exist the Division will consider transferring administrative control of lands to the appropriate Division.

#### Strategies and Objectives

- Cooperate in establishing Scientific and Natural Areas and registry sites where rare resources and plant communities worthy of protection have been identified.
- Designate, in the Division's area plans, wildlife, fish and plant communities to be managed on a geographic basis. Coordinate this with the Division of Fish and Wildlife's planning efforts and with local resource managers.
- Develop brochures, slide shows and other media to inform the public concerning forestry's role in wildlife management.
- Continue to implement the Forestry/Wildlife Coordination Policy and Guidelines in all areas of the state.
- Work with the Forestry/Wildlife Task Force and other interested groups to develop an old growth policy which defines old growth, establishes site selection criteria and defines the amount and distribution of old growth to be retained.
- Encourage joint forestry and wildlife research and planning efforts to explore ways to improve wildlife habitat while minimizing depredation problems.

- Coordinate Forestry and Fisheries and Wildlife planning at all levels to assure compatible programs and activities.

#### NURSERY AND TREE IMPROVEMENT PROGRAM

##### Mission

To produce or procure forest regeneration material for public and private land in Minnesota in a self-supporting manner.

##### Goal

Economically produce forest regeneration material of the highest genetic and biologic quality in the quantity needed for environmental programs.

The Division of Forestry is one of the largest producers of forest tree and shrub seedlings in the Upper Midwest. Since the Division provides the bulk of the planting stock used on lands in Minnesota, it is responsible for distributing the best possible planting materials to insure the effectiveness of the various planting programs. This requires an aggressive genetic tree improvement program. Genetic improvement of forest trees is a widely accepted, economical, and effective tool for increasing the survival of seedlings and the productivity and quality of plantings.

The Forest Resource Management Act also required submission of a Nursery and Tree Improvement Plan to the State Legislature describing the benefits and costs of making the Nursery and Tree Improvement Program self-supporting. This plan was completed and submitted to the Legislature in early 1983. The nurseries became self-supporting in F.Y. 1985.

Primary activities of the Nursery subprogram include production and distribution of bareroot seedlings. Major activities in the Tree Improvement subprogram include seed source selection; seedling distribution; seed production area development; and seed orchard development.



#### Statewide Direction

The Nursery and Tree Improvement Program will address the issues of containerized seedling contracts, regeneration material distribution, special environmental program impacts, selected hardwood species quantities and quality, and white spruce quality. Efforts will be made to meet changing demands for forest regeneration materials by continually improving nursery operations, by increasing coordination with and education of user groups, and by improving cultural tree management.

#### Strategies and Objectives

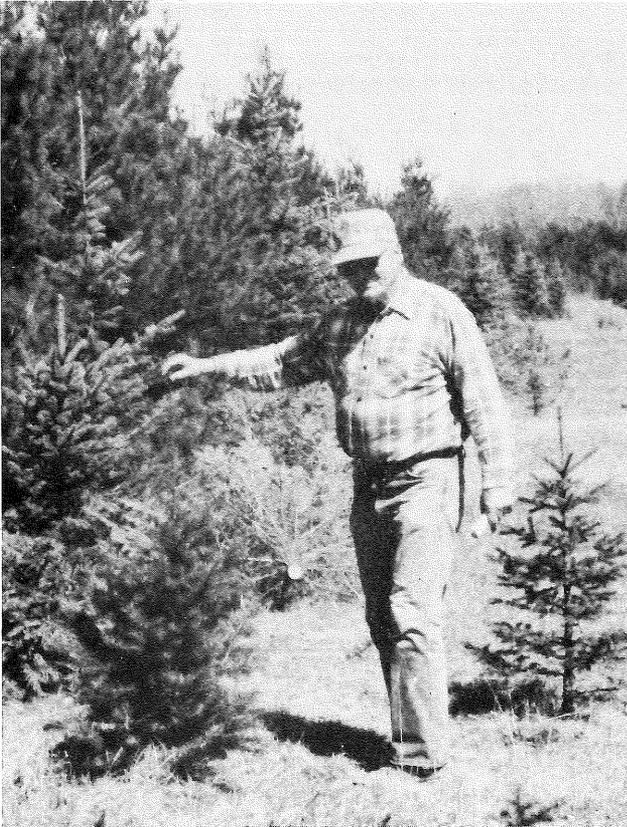
Program activities during the next five years will focus on the following:

- Seeding and cultural changes necessary to meet the demands of the Conservation Reserve Program. This includes determining needs, and ordering and distributing seedlings.
- Implementing economical methods of stock production, lifting, packing and shipping.
- Completing the nursery computer management information system.
- Completing the revised DNR tree improvement plan for Minnesota and acquiring a tract of land to serve as a tree improvement center.
- Expanding distribution of nursery information.

## COOPERATIVE FOREST LAND MANAGEMENT PROGRAM

### Mission

To provide technical forestry advice and assistance to individuals, communities and governmental subdivisions in the management of their woodlands or trees.



## PRIVATE FOREST MANAGEMENT (PFM)

### Goal

Improve the multiple-use management of non-industrial private forest lands in a way that is cost-effective to the Division, consistent with Departmental policies, and complementary to other public and private efforts.

About 5.6 million acres (41 percent) of all of Minnesota's commercial forest land is privately owned. These acres are owned by almost 130,000 individuals who have widely varied land management interests and objectives. The potential productivity of private lands is usually greater than the average for other forest ownerships in Minnesota.

Typical PFM activities include: 1) Promoting forest management on non-industrial private forest lands through personal contacts with landowners and the use of the media; 2) Providing landowner education through activities such as workshops, adult education classes, tree planting clinics, and forestry field days; 3) Developing multiple-use management plans for individual landowners; 4) Providing technical assistance for specific recommended practices such as tree planting and timber stand improvement; and 5) Providing utilization and marketing assistance associated with timber harvesting.

### Statewide Direction

The Federal Conservation Reserve Program and the state's Reinvest in Minnesota Program have increased demands for private landowner assistance. They are expected to result in over 15,000 acres of additional tree planting and about 7,000 acres of aspen recycling annually. If proposed tax law changes are implemented a significantly increased management planning workload would result. Careful planning and close inter-agency cooperation will be needed to ensure the effective implementation of these new initiatives.

The Division will continue to assist in private timber sales, but will encourage increased participation by consultants. Additional work with sportsman's and citizen conservation groups will be conducted to expand support for Division programs and to ensure local input into program development.

### Strategies and Objectives

- Establish a statewide policy pertaining to the involvement of the DNR Section of Wildlife in the preparation of private forest management plans and other aspects of the PFM program.
- Provide the information and support necessary to facilitate national and state CRP rules and regulation changes which will result in increased tree and shrub planting.
- Facilitate the establishment of local agreements between soil and water conservation districts and the area forestry offices.
- Target assistance to landowners who are committed to managing their lands.
- Promote the use of consulting, industrial and other private foresters in managing private forestlands.
- Coordinate PFM services so they complement those provided by other DNR divisions, industry, consulting foresters and forestry vendors.
- Promote changes in the current property tax system to encourage increased forest management in non-industrial private forest lands.

## URBAN FORESTRY

### Goal

Assist Minnesota communities in managing their urban vegetation through cooperation with other governmental agencies and private citizens, so that the physical, social and economic well-being of these communities is enhanced.

The Division of Forestry has provided urban forestry assistance for many years. In the early 1960's the federal Dutch Elm Disease Demonstration Program was initiated in Minnesota and administered by the Division. However, it was not until the late 1970's that a formal Urban Forestry Program was established. At that time, Dutch Elm Disease was a serious threat and was the nucleus around which various local and state programs were formed. Among them were the State Shade Tree Advisory Program administered by the Department of Agriculture and the Urban Forestry Program administered by the DNR, Division of Forestry.

As Dutch Elm Disease declined in much of Minnesota, so did the federal and state funding for the programs. The Division's Urban Forestry Program, however, was regarded as a necessary component of the Division's operations and, therefore, was retained in spite of substantial budget reductions. Throughout the 1980's, the Division has continued to provide technical forestry assistance, primarily insect and disease related, to urban individuals and communities. Also, the Division has continued to extensively promote Arbor Day in many Minnesota communities, recognizing the importance that this day has in increasing public awareness and appreciation of trees and conservation.

### Statewide Direction

The Division plans to increase its efforts in urban forestry through a cooperative and intensified program with the Minnesota Department of Agriculture, University of Minnesota and others. Planning for the future of the Division's urban forestry efforts will continue in cooperation with key actors and agencies involved in urban and community forestry activities statewide. Efforts will be made to identify the appropriate role and responsibilities of the Division in relation to other public and private sector providers of urban forestry services.

In September 1986 a nine-month federally funded project began to develop an information directory for use by urban foresters and others seeking information pertaining to urban forestry in Minnesota. The directory will contain a comprehensive listing of urban forestry practitioners by location, various sources of advice and assistance, and a current bibliography of reference materials.



## Strategies and Objectives

- Prepare an urban forestry directory that will facilitate increased communication between urban forestry professionals.
- Provide communities with assistance in developing tree inventories, management plans, ordinances and forestry program budgets.
- Advise communities on tree maintenance, planting and utilization or disposal methods.
- Provide Division personnel in the metro area with the training and information they need to direct individual assists.
- Participate in Arbor Day efforts with other governmental agencies in the metro area.
- Work with other agencies to develop informational materials such as planting guides, newsletters and brochures that can be distributed to interested persons.

## COOPERATIVE COUNTY FOREST MANAGEMENT

### Goal

Provide professional forest management support to counties to complement their efforts to intensify the multiple-use, sustained-yield management of county forest lands.

The Cooperative County Forest Management (CCFM) subprogram (formerly County Assistance Program) was established in the 1940's under the Iron Range Resources and Rehabilitation Board to assist counties in managing large acreages of tax-forfeited land. In 1978 CCFM was transferred by Executive Order to the DNR. Its primary function was to assist county land departments with administrative and management support on approximately 2.8 million acres of tax-forfeited forest lands.

The major activities of CCFM today include:

- Administer state and federal grants earmarked for county resource management and development.
- Provide counties with specialized technical and advisory support upon request (e.g., aerial photo interpretation, insect and disease assistance, forest inventory and mapping).
- Provide statutorily required review of county timber sales, sale of tax-forfeited lands and use of Timber Development Funds and/or Memorial Forest Receipts.
- Assist in determining Tree Growth tax rates.
- Provide forest inventory maps and information.
- Identify and implement cooperative training opportunities.
- Provide a source of nursery stock and seed for county reforestation programs.

## Statewide Direction

Until 1985, 10 county assistance foresters provided direct assistance to eight counties under a cost sharing agreement. Direct assistance (staff) has been discontinued in favor of a cooperative approach to assisting counties. No full-time staff will remain active in the program. In the future, assistance will be provided upon request by region, area and district forestry personnel at the local level. Assistance to county programs by the Division will concentrate on providing financial support or complementary services through ongoing Division programs.

Where possible under existing law the Division's regulatory role in relation to county programs will be de-emphasized in favor of an advisory role. Statutory oversight responsibilities have also been decentralized to allow greater interaction between county and state field staff. The historical role of the Division in providing seed and seedling production, insect and disease control and forest inventory for county programs will be maintained. Identification of new interactions or means of assisting counties in managing forest lands will be actively pursued.

## Strategies and Objectives

- Conduct joint state/county meetings (i.e., stumpage price review) and training to exchange expertise and information.
- Encourage active involvement of county land departments in the Division's area planning process.
- Support development of more stable funding for county land management.
- Clarify or restructure, as necessary, laws governing the relationships between the Division and county land departments.
- Provide direct assistance to those counties without an organized land department.
- Help counties effectively use and maintain Phase I and Phase II forest inventory information.
- Work with the counties cooperatively in resolving problem areas and provide specialized expertise as available from the area, region, and St. Paul staff.
- Develop cooperative agreements with individual counties as necessary to meet the needs of both agencies, including coordination of timber volume offered for sale.

## FOREST PEST MANAGEMENT

### Goal

Provide efficient forest resource protection from insects, diseases and competing vegetation to increase productivity and reduce pest losses.

Insects, disease and weed competition are the major causes of growth loss and mortality in Minnesota forests. The activities of pests such as the spruce and jack pine budworms, white pine blister rust, dwarf mistletoe, oak wilt, Dutch elm Disease and wood decay fungi result in loss of about one-half of the annual forest growth in the state. Weed competition in forest plantations restricts establishing forest stands following harvest, hampering forest management intensification efforts.

The Division of Forestry is charged by state law with controlling forest pests on public, municipal and private lands within Minnesota. The Division provides forest protection assistance to nursery, Christmas tree, non-industrial, industrial, urban, municipal, county and state forest managers or land-owners. The past emphasis of the program has been on state land management. Greater emphasis is needed on nursery, urban, private and county forest pest management. Implementation of pest management techniques must be practical, economical and efficient. To insure this, the Division must expand its efforts in risk rating and evaluating pest management options, including the use of pesticides.

### Statewide Direction

The Forest Pest subprogram during the next five years will concentrate on assisting the Division's regeneration programs from seed to plantation. The combined activities of pest survey, risk rating of stands, developing management guidelines and training will be used to provide public and private foresters with the tools to implement integrated pest management programs. Current staffing limitations will, however, require a greater reliance upon field foresters for basic survey information.

Pest control practices on DNR-administered lands will employ integrated pest management techniques and priority will be given to non-chemical management alternatives. The Division needs to continue evaluating its use of herbicides, develop better application systems and assess onsite effectiveness in relation to its management goals.

### Strategies and Objectives

- Develop a permanent plot system for pest survey and evaluation in conjunction with the remeasurement of permanent inventory plots.
- Develop and promote management techniques which reduce the need for broadcast chemical application.
- Transfer increased herbicide program responsibilities to the administrative areas.
- Conduct an analysis of program effectiveness and develop a quantitative, field-oriented system for determining the need for herbicide use.
- Integrate forest pest management techniques into forest nursery production and forest management practices from site preparation to harvest.
- Provide management guidelines, standards, examples and risk evaluation systems for addressing pest management on Minnesota's public and private lands.
- Provide training and maintain cooperative relationships with public and private agencies to ensure the open exchange of pest management information.
- Assess the impacts of major forest pests and evaluate the effectiveness of prescribed pest management techniques and control strategies.
- Implement a pesticide use policy that is administered consistently throughout the DNR.

## FOREST SOILS

### Goal

Enhance forest resource management and maintain site productivity through the application of technical landform, soil and vegetation information.

The amount and quality of yield from forest lands depends on the productive capacity of the land. Obtaining a better understanding of the relationships between forest soils and forest yield is a major benefit of Forest Soils activities. Understanding these relationships is essential to concentrating intensive timber management on the most productive forest lands.

Typical forest soils activities include: conducting field examinations of specific sites to identify and interpret the impact that different landforms and associated soils have on forest production and management activities; working with staff specialists to integrate soil management principles into silvicultural practices; working cooperatively with other agencies to develop soil surveys in forested areas; providing soils information to forestry and engineering staff for road construction and reconstruction projects; training field foresters in the use of soil surveys and field identification of soils; and providing technical soils information to planners so that forest management can be concentrated on productive areas and the forest environment can be protected.

### Statewide Direction

Over the next five years the Forest Soils Program will continue to provide forest soil interpretations to land managers to assist in statewide forest regeneration activities. The subprogram will be administered to obtain the dual objectives of multiple-use management and protection of soil and water resources. Major emphasis will be on evaluating site productivity based on landform/soil/vegetation relationships; and then on applying this information to site management decisions.

Site-specific soil evaluations, identification of productive landforms and soils, use of integrated soil surveys, training and information transfer to field foresters will be used to facilitate land use decision making in the forest area planning process (see page 52 for discussion of area planning). These activities will aid in evaluating the suitability of forest land for other purposes. Development and use of soil surveys in the forested parts of the state will be enhanced by continued participation in the Minnesota Cooperative Soil Survey.

### Strategies and Objectives

- Develop methods to evaluate the productivity of lowland sites.

- Assist public and private forest managers in focusing resource management efforts and targeting investments to the most productive sites.
- Standardize and automate soil/landform/vegetation data collection methods and reporting procedures.
- Provide training, guides and keys for forest managers to assess site characteristics to aid in making management decisions.
- Maintain activities with the Minnesota Cooperative Soil Survey to enhance the quality, accuracy and utility of soils information as it relates to forest management.

## FOREST RESOURCE ASSESSMENT PROGRAM

### Mission

To monitor and evaluate Minnesota's forest resources to enable increased use of these resources for state economic development.

## FOREST RESOURCE ASSESSMENT AND ANALYSIS

### Goal

Integrate all inventory activities into a comprehensive assessment program that provides accurate information in response to changing user needs and expanded applications.

Forest Resource Assessment and Analysis, formerly called Forest Inventory, has been responsible for collecting and processing forest resource information since 1976. Such information, detailing the extent, character and current condition of Minnesota's forests, serves as an important inducement to economic activity and to enhanced productivity by prompting management actions needed to improve the resource.

This program is in a period of transition. Originally, to guarantee compatibility and quality, a specialized inventory unit was used to carry out inventory activities. Budget reductions and the need for stronger user commitment have resulted in phasing out large inventory field crews and relying more on line personnel and contractors. Remaining inventory personnel will have to interact strongly and actively with the regions, areas, counties and other users to maintain and improve the quality and utility of inventory information.

FOREST PRODUCTS UTILIZATION  
AND MARKETING (FPU&M)

Statewide Direction

Forest survey efforts will focus on the cooperative DNR-U.S. Forest Service Forest Inventory update. This survey was last completed in 1977. The Aspen-Birch Unit (Northeastern Minnesota) will be reinventoried in 1986 and 1987. The Northern Pine Unit (North-Central Minnesota) will be reinventoried in 1988 and 1989. Federal crews will enter the state in 1990 to start work on the Central Hardwood (Central and Southeast Minnesota) and Prairie (Southwestern and extreme Western Minnesota) units.

The resource analysis group also seeks to expand and modify survey efforts to capture new (non-traditional) data, and to incorporate developing technologies. Remote sensing and Geographic Information Systems are two examples of technologies that provide for collecting, synthesizing and analyzing diverse, site-specific data. Such methods promise to improve land management capabilities by making data more readily accessible in a useful format.

Strategies and Objectives

- Conduct ongoing and cyclic updates of forest inventory data in conjunction with expanded remote sensing capabilities and the development of a Division geographic information system.
- Maintain a qualified field survey team in Grand Rapids to set standards for, write contracts for and direct and check quality of the cooperators' field survey efforts.
- Expand the use of biometric analysis and improve the utility of the continuous inventory data bases for multiple-use forestry development in the state.
- Continue to expand and develop the remote sensing program.
- Provide for a timely update of high altitude photography, 35mm and 9x9 aerial photography.
- Provide continuing education for the Division inventory specialists in field survey, remote sensing, biometric and GIS applications.

Goal

Increase the use of Minnesota's wood resources; increase the economic benefits derived from the production of forest products within the state; and increase the wood using efficiency of Minnesota's forest products industry.

Funding and technical assistance from the U.S. Forest Service provided the initial impetus for developing Minnesota's FPU&M subprogram. The Division has participated in the program since its inception in 1966. The seven-member FPU&M staff work cooperatively with the other agencies and organizations involved in developing Minnesota's wood resources.

FPU&M activities fall within four broad categories:

1. Forest Products Industrial Development

Industrial development activity is centered around identifying and promoting wood resource-based development opportunities. This activity is closely coordinated with economic development agencies. Industrial development assistance is the area of highest demand and widest interest outside of the Division.

2. Wood Energy Development

Wood energy development activity is focused on identifying wood for energy resources and actively promoting wood for commercial and institutional energy use. Resolving conflicts between energy and industrial demand for wood resources is also a part of the wood energy focus.

3. Forest Products Marketing

Forest products marketing is aimed at bringing wood products producers and consumers together. Marketing activities include publishing a comprehensive forest industry directory, a bimonthly newsletter (3500 circulation), a semi-annual forest products price report, and a periodic roundwood market outlook, and servicing numerous individual marketing assistance cases annually.

4. Forest Products Processing

Technical and business management assistance provided to forest products manufacturing businesses is aimed at improving the stability and growth potential of Minnesota's existing forest industry.



#### Statewide Direction

A key role of Industrial Development activities will be to identify available wood resources using the most current data and adopt a more proactive approach to wood resource analysis. An aggressive industrial development campaign can help Minnesota maintain its competitive edge in attracting wood-using industries to the state. The DNR will work with other agencies to assure the orderly growth of new and expanding wood-using industries in Minnesota.

Increased emphasis will also be placed on directly linking wood products producers and consumers by supplying each with pertinent data and technical assistance. One additional full-time staff position for marketing assistance will be sought to handle the increased workload. The ultimate goal is to increase value added by forest products manufacturers and wood processors. The FPU&M staff will continue to provide about the same level of technical and business management assistance as it has in the past to encourage business growth and retention within the state.

Although interest in alternative energy sources seems to have stabilized, there is still a need to identify wood resources available for commercial and industrial energy use. The FPU&M staff will work cooperatively with other agencies to develop a more practical approach to fuelwood marketing, and will continue assembling resource data and distributing wood energy information to users.

#### Strategies and Objectives

- Assess the availability of wood for energy and promote the use of wood energy in commercial and industrial applications.
- Promote the economic importance of Minnesota's wood resources and forest products industry.
- Identify and promote market opportunities for Minnesota forest products.
- Increase the flow of market information within the forest products industry.
- Provide wood products manufacturers with technical and processing assistance.

## FIRE MANAGEMENT PROGRAM

### Mission

To prevent and suppress wildfire on public and private land in the forested counties of Minnesota (this includes all but 13 counties in the southwest).



## WILDFIRE PROTECTION AND MANAGEMENT

### Goal

Provide wildfire protection to the level necessary to avoid loss of life and, considering values at risk, minimize the potential for loss of property and natural resources on public and private land. Improve the Department's ability to use controlled fire as a safe and effective vegetative management technique.

The Division is charged with preventing and controlling wildfire on 22.8 million acres of public and private lands in Minnesota. To provide this service, wildfire protection functions can be divided into three major categories: 1) prevention, 2) presuppression, and 3) suppression.

**PREVENTION** activities are designed to reduce the possibility of fires or to minimize damage from fires. They include such things as public education, law enforcement, and fuels modification.

**PRESUPPRESSION** activities involve detecting fires and training suppression forces to deal effectively with fires. Activities include training crews, developing and maintaining inter- and intra-state agreements for sharing personnel and equipment, developing fire action plans, maintaining dispatching plans, monitoring

weather and associated fire danger, maintaining equipment in a state of readiness, and contracting for the use of private equipment. Fires are detected through a network of lookout towers, aerial surveillance, and citizen and agency reports.

**SUPPRESSION** activities are aimed at minimizing fire size and duration through a balanced application of suppression forces, including trained crews; crawler, tractor, dozer, and plow units; fire trucks; pumps and hoses; handtools; airtankers; retardants; and helicopters equipped for carrying water.

Fire management includes the safe, effective use of controlled fire for a specific purpose. Controlled or prescribed fire is a management tool used to manage high hazard fuel types and to improve land capabilities for specific plant and associated wildlife species. In addition, prescribed fires can provide valuable training for suppression personnel.

### Statewide Direction

Efforts will be made to intensify cooperative and Division efforts in fire prevention by informing the public of the dangers of and methods to prevent wildfires. The Division will also actively support and participate in the national mobility of fire suppression resources, and strive to improve Division personnel's understanding of fire weather systems and the associated impacts of fire suppression preparedness levels. The Division will encourage and assist other DNR divisions in the use of prescribed burning according to Operational Order 47.

### Strategies and Objectives

- Increase efforts in fire prevention by increasing time commitments, focusing on specific causes of wildfire, and coordinating with other states, agencies and fire departments.
- Continue fire training, increasing emphasis on basics and on cooperative fire training opportunities.
- Continue to refine area fire plans and their application to fire activities.
- Improve ground fire suppression equipment to prevent further deterioration and to maintain a balance between aerial and ground resources.
- Share fire protection resources and abilities with other agencies, fire departments and states to improve abilities and cost effectiveness.
- Continue to provide Department leadership in implementing the DNR's prescribed fire policy focusing on developing abilities in other DNR divisions and implementation of Operational Order 47.

- Strengthen cooperative wildfire protection systems by increasing investments and cooperation with fire departments and other agencies to maximize fire protection opportunities.
- Strive to maintain a balanced suppression force. Improve abilities and increase standards of ground resources.

#### TECHNICAL AND ADMINISTRATIVE SUPPORT SERVICES PROGRAM

##### Mission

To provide the basic maintenance and administrative support required to achieve the goals of other Division programs.

#### MANAGEMENT INFORMATION SYSTEMS

##### Goal

Coordinate, provide direction, and bear responsibility for processing of the Division of Forestry's information.

In 1982, with funding provided by the Legislative Commission on Minnesota Resources, the Division of Forestry completed its first plan to guide development of a Management Information System (MIS). Since that time a number of significant changes have occurred in the Division's operations, including the introduction of microcomputers to all the Division's region and area offices.

The 1982 Forestry MIS Plan identified new systems to be developed and recommended computer equipment to be acquired. During the last three years equipment has been acquired, new systems have been developed, and the general focus on resource information systems has been maintained.

##### Statewide Direction

The main emphasis of this program will continue to be the development of systems and tools for Divisionwide information handling and analysis with the eventual integration of these systems as a primary objective. Existing tools such as the Division's Geographic Information System (GIS) need to be further explored as a means for providing management information to all levels of the Division. During the next five years, Systems development efforts will be prioritized and restricted to fewer projects. Emphasis will be on completing current projects prior to beginning new efforts.

Support services will be prioritized and made more available to the Division. The MIS program will recommend and coordinate necessary MIS training for the Division, but will not necessarily provide it directly. Training will be provided by sources outside the MIS unit whenever it is feasible to do so.

The program will stress coordination of MIS activities among all programs in the Division and with data processing facilities outside of the Division to improve compatibility, increase use of existing capabilities and decrease duplication of efforts. The program will explore options in office automation, Divisionwide equipment upgrading and use of field staff in developing programs and applications. Efforts will also be made to explore the use of the Division's GIS as a potential link between its varied data gathering processes. Meanwhile, contacts with Division personnel will be increased to provide information about MIS program roles, goals, products and services, and to improve the MIS program staff's understanding of Division operations.

Management areas targeted for development work over the next five are Timber Sales, Inventory, Fire Protection, Nursery Management, Forest Development and Accomplishment Reporting. Various enhancements to existing systems are also anticipated.

##### Strategies and Objectives

- Establish systems development standards and guidelines.
- Coordinate data processing activities within the Division, and with those of the Department of Natural Resources.
- Improve the availability of support services and training to Division personnel.
- Participate in MIS user groups with other professional and resource-related data processing organizations.
- Update a long range information systems strategy for the Division.
- Establish a framework for equipment purchases and linkages to other computer centers such as LMIC, IMB, the U of M, and the Department hardware in order to meet the Division's information needs.
- Maintain operational computer work stations and communications linkages at area and regional offices.
- Explore further decentralization of data entry and analysis activities while maintaining centralized quality control.

#### FOREST RESOURCE PLANNING

##### Goal

Provide strategic and land management planning assistance for the Division of Forestry and for the Department of Natural Resources.

Forest Resource Planning is designed to provide integrated coordination for the Division's six major programs and management functions. Information developed through the planning program is also used to make decisions on matters that involve more than one DNR discipline (e.g., state land allocation).

Major planning activities include: development and update of the Minnesota Forest Resource Plan; area plan development and implementation; annual work planning and accomplishment reporting; and a wide variety of special project assignments.

The Minnesota Forest Resource Plan lays out statewide goals and direction for the Division of Forestry, as well as providing recommended actions for other public and private forest managers. Area resource management plans tailor this direction for each of the Division's 19 administrative areas and guide program activities on a local level. Special projects involve providing graphics and mapping assistance, environmental review, administrative and legislative support, policy and manual review and revision, meeting design and facilitation, conference planning, and staff support to the Director and his management team.

#### Statewide Direction

After completion of the 1987 MFRP program update, less time will be devoted to statewide planning until 1989, when work will begin on the 1991 MFRP. Additional time will be spent on area planning and assisting in plan implementation. Annual workshops will be held in each region to assist in regional work planning and plan implementation. Limited time and attention will also be devoted to assisting the Division's program supervisors with policy review, revision and updates. Somewhat less time will be spent on special projects.

By 1989, eight area plans are due to be completed, with another four in progress. By 1991, 16 area plans out of a total of 19 will be completed or in some state of development. These plans will form an important part of the information base used to develop the second generation MFRP.

#### Strategies and Objectives

- Maintain the MFRP Assessment and Program so that they are up-to-date and provide clear statewide and regional direction for Minnesota forestry programs.
- Develop and maintain plans for each Division of Forestry administrative area that are consistent with the MFRP and that provide clear program and land management direction for the areas.
- Complete recreational sub-area plan development and implementation and transfer recreational sub-area planning staff and responsibilities to the Forest Management Section by the end of FY 1987.
- Develop and maintain annual accomplishment reports and work plans to assure that statewide and regional objectives outlined in the MFRP are being met for each program. Develop area accomplishment reports and work plans on an annual basis as area plans are completed.
- Develop a schedule for revising Division of Forestry policies and manuals in cooperation with program staff and managers.
- Provide general planning services and support for the Division of Forestry and Department of Natural Resources in a way that is responsive to the organization's changing needs.

## PUBLIC AFFAIRS

### Goal

Achieve increased public awareness and understanding of Division of Forestry programs, products and services.

The Division of Forestry's Public Affairs efforts are intended to inform and advise various publics and clientele of the Division's programs and services. They will supplement those of the DNR's Bureau of Information and Education, and serve to cultivate public appreciation for natural resource management, protection, and development. An effective public affairs program can also provide a feedback mechanism for DNR Forestry to collect input from key clientele, cooperators, and the public.

### Statewide Direction

Over the next five years, additional public affairs staff will be sought to supplement time currently dedicated to the program. Resources already available to the program through the St. Paul and region field offices must also be assessed, and efforts must be coordinated with those of the Department's Information and Education Bureau. An annual "focus" for public affairs activities will be selected each year to provide a unifying theme for the various efforts.

### Strategies and Objectives

- Dedicate and refocus staff time to I&E activities.
- Strengthen public affairs skills and abilities.
- Allocate financial resources to high priority opportunities.
- Establish and maintain media contacts.
- Develop a Public Affairs Plan, and distribute for broad review and comment.
- Establish an interagency coordinating committee composed of public affairs specialists representing the state's forestry community.
- Include public affairs elements in all ongoing management planning and decision-making.
- Sponsor the Project Learning Tree (PLT) program in cooperation with the Department of Education and organize statewide PLT workshops.
- Develop and annually update a marketing plan to determine the direction the Division should take to promote its programs, target the audiences it wishes to reach, and assess what types of printed materials it needs (recreation maps, brochures, etc).

## HUMAN RESOURCES DEVELOPMENT

### Goal

Obtain the best possible productivity from the Division's staff by implementing human resource planning strategies designed to put the right numbers and kinds of people in the right places, at the right time, thereby assisting the Division in accomplishing its goals and objectives.

Managing the human resources of the Division is becoming just as important and as challenging as managing natural resources. The state's personnel management function is conducted within a framework of laws, rules, bargaining unit agreements and generally accepted practices. Within DNR it is complicated further by the complexity of the Department and the dynamic nature of its activities. In addition, pressures from the "outside" affect the DNR system, such as an aging workforce, baby boom bulge, early retirement options, and so on.

The Division is taking positive steps to adapt to a changing workforce and changing clientele needs/demands through its Human Resources Development Program. By doing so it can establish a climate that enables its employees to be successful. The major activities of the program include recruitment, selection, orientation, training and continuing education of all Division personnel.

Through this program the Division seeks to appoint the best available candidates to vacant positions within the guidelines established by statute, policy, and procedure (including Affirmative Action). The program also provides personnel with training to improve and/or increase the knowledge, skills and abilities necessary to effectively perform in their current position and to provide continuing education opportunities to prepare them to effectively deal with an ever-changing environment. Career development assistance is provided to all employees where it is determined to benefit both the individual employee and the State.

### Statewide Direction

Division employees are not receiving all the training needed to function effectively in today's social and political environment. The Division needs to further develop and refine its in-service training and continuing education efforts to help solve this problem. The strategy includes strengthening in-house course offerings, and taking advantage of course offerings of other academic and continuing education organizations. Emphasis will be on increased supervisory training and on implementing methods of keeping current employees satisfied and motivated within their present jobs.

### Strategies and Objectives

- Develop and strengthen in-service technical skills, training and continuing education programs, especially in the area of management and supervisory training.
- Use mobility assignments throughout the Division and Department to strengthen and diversify Division employees' knowledge, abilities, skills and experience base.
- Complete a classification study of all Division field professional and technical positions, as well as selected staff positions.

- Incorporate human resource planning into the routine daily planning functions of Division Management.
- Use various training and continuing education methods (i.e., audio tapes, video tapes, books, periodicals, public and custom design seminars, and local and community colleges) to strengthen and diversify the program and improve cost efficiency.
- Reinstate the trainee program and expand it to a full 12-month mobility assignment for all entry level professionals.

## LAW ENFORCEMENT

### Goal

Provide compliance with state statutes to prevent wildfires, to protect the public's interest in state land and its assets and to ensure that the public can safely enjoy the Division's recreational facilities.

The Division of Forestry was first charged with enforcing statutes which were enacted to protect life and property from forest fires. These statutes resulted from the large losses of life and property which occurred around the turn of the century.

Over the years, the Division has been given responsibility for enforcing laws relating to state nurseries, cutting and transporting Christmas trees, regulating woodlot management and school forests, land management and recreation. Today, the major areas of Division involvement in law enforcement include: 1) Fire investigation and fire-related law enforcement; 2) State land timber trespass investigation and enforcement; and 3) Enforcement of Division of Forestry recreational area rules and regulations.

### Statewide Direction

The enforcement of statutes, for which the Division is responsible, will continue to be a cooperative effort with the Division of Enforcement. The program will be guided by standards established in the Department's law enforcement policies and the Division's Law Enforcement manual.

Enforcement of statutes relating to wildfire and collection of costs resulting from fire suppression will be stepped up consistent with efforts to promote fire prevention. Training will also be emphasized in order to familiarize foresters with information contained in the Division's Law Enforcement Manual.

### Strategies and Objectives

- Continue to strengthen cooperative efforts with the Division of Enforcement.
- Increase enforcement of statutes relating to wildfire and collection of fire fighting costs for the purpose of fire prevention.

- Seek methods to acquire the necessary equipment for forest officers to carry out their responsibilities.
- Comply with training standards established in the Department's law enforcement policy.
- Provide general Division training on policies and information in the Division Law Enforcement manual.
- Develop a method of public reporting of wildfire statute violations similar to the Turn-in-Poachers concept. This may include development of an arson hotline.
- Implement a method of radio communications with Conservation Officers.
- Review and update the Division's agreement with the Pollution Control Agency. Lines of communications and mutual understanding of agency objectives and statutes need to be reviewed or reestablished.

## MAINTENANCE AND ADMINISTRATION

### Goal

Administer fiscal and personnel matters to achieve the goals of the Division's programs; to maintain property and equipment; to ensure employees' safety; and to ensure that Division stations present a pleasing appearance.

Maintenance and Administration covers the overhead costs that cannot be easily allocated to the Division's other programs. The major activities included in the program are building and equipment maintenance, and fiscal and personnel services. The Division maintains some 297 buildings and 800 motorized vehicles and heavy equipment.

The time and expenses of administering worker's compensation and unemployment claims are accounted for through this program, as are capital improvement expenditures. Efforts are underway to improve replacement and maintenance schedules for equipment and facilities, consistent with the development of Division programs and responsibilities.

Major objectives include the need to administer union contracts fairly across work units, assure consistency in fiscal matters, and to develop budgets and spending plans, including a long-range capital improvement budget. Equipment and buildings must be well maintained, and the safety of every employee must be ensured.

The maintenance and administration unit is also charged with developing new legislative initiatives and monitoring the ongoing legislative process. The Division's Legislative Committee conducts periodic meetings, assembles and distributes legislative fact sheets, and staffs a rotating legislative liaison officer position during legislative sessions to serve as a key contact and source of information.



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## Minnesota Forest Resources Plan

# Section 4

### SECTION IV SUMMARY OF RESEARCH, INFORMATION AND CONTINUING EDUCATION NEEDS

The Forest Resource Management Act of 1982 requires that the Minnesota Forest Resource Plan address "...the development of a forest resources data base capable of continuous updating and usable as a tool in effectively managing forest resources." Section 18 of the act requires development and implementation of a continuing education program for forestry professionals. Section 19 authorizes the University of Minnesota's Agricultural Experiment Station and the Minnesota Extension Service to conduct forestry research and extension programs.

In response to these provisions, this section of the plan lists the information, continuing education and research needs of the Division of Forestry.

#### A. STATE FOREST LAND MANAGEMENT

- Increase research and monitoring to detect and evaluate the symptoms, extent, distribution and location of natural resource degradation.
- Evaluate alternative options to increase land lease revenues from state-owned lands, consistent with sound natural resource management principles.
- Assess current state policy regarding the provision of outdoor recreation facilities, and compatibility of facilities with those of other recreation providers.
- Evaluate alternative sources of long-term funding for forest development projects and programs (i.e., recreation, fish and wildlife habitat management, road construction).
- Analyze existing uses of state forest lands for recreational purposes and conduct a state forest recreation user needs analysis.
- Examine the impact of forest road construction and densities on forest wildlife.
- Continue to evaluate herbicide use, herbicide application systems, and onsite effectiveness in relation to management goals.
- Continue to develop timber harvesting systems which reduce subsequent site preparation and planting costs.
- Develop summer timber harvest systems which do not cause deterioration of site quality or regeneration potential.
- Develop effective silvicultural systems that accomplish stand establishment goals while reducing physical and visual impacts on the environment.
- Support research efforts aimed at successful regeneration of Northern White Cedar.

- Provide interagency field research focusing on forest regeneration problems.
- Sponsor and/or participate in statewide silvicultural and forest development workshops to facilitate information exchange.
- Study and propose methods of improving the marketability of state timber stumpage.
- Explore ways of improving wildlife habitat, while minimizing wildlife depredation of timber regeneration and agricultural crops.
- Develop a hierarchical land classification system based on climate, landform, soils and vegetation.
- Develop methods of evaluating the productivity of lowland sites.

#### B. NURSERY AND TREE IMPROVEMENT

- Develop improved nursery techniques.
- Investigate containerized seedling systems.
- Study grading standards for tree seedlings.
- Explore the potential for producing rooted cuttings for tree species with chronic seed supply problems.
- Conduct research in the areas of cultivation, site enhancement and regeneration techniques that will enable White Cedar, fine hardwoods, hybrid poplar and woody prairie species to be regenerated in an economical fashion by artificial means.
- Develop cultural practices to ensure the survival and growth of Red Oak and White Ash species.
- Select and establish hybrid poplar clones that are matched to particular soil types and climatic conditions.

#### C. COOPERATIVE FOREST LAND MANAGEMENT

- Examine and clarify the respective roles and authorities of the DNR and County Land Commissioners in protecting and managing tax-forfeited forest lands.
- Examine and recommend changes in the current property tax system to encourage forest management on non-industrial private forest lands.

- Identify the appropriate role and responsibilities of the Division of Forestry in relation to other public and private sector providers of urban forestry services.
- Examine alternative ways of securing a stable, long-term source of funding for managing county tax-forfeited forest lands.
- Assist in conducting surveys and investigations to determine the presence of forest pests, and evaluate the damage or potential for damage that these pests pose.
- Develop pest management guidelines and control strategies for each major timber type in Minnesota.
- Develop estimates of the intrinsic value of urban forest vegetation.
- Provide training for public, private, industry and urban foresters in pest management techniques and practices.
- Assist in developing a permanent plot system for forest pest survey and evaluation.
- Develop alternatives to the use of broadcast chemical application.
- Provide training in identifying forest pests and integrating pest management practices into other aspects of forest management.
- Develop methods of standardizing and automating soil landform and vegetation data collection methods and reporting practices.
- Provide training and develop guidelines for use by forest managers to help assess site characteristics as an aid in management decisionmaking.

#### D. FOREST RESOURCES ASSESSMENT

- Provide continuing education opportunities in the areas of field survey, remote sensing, forest biometry, and applying geographic information systems techniques.
- Identify and promote native wood products and market opportunities for Minnesota forest products.
- Assist in developing wood fuels for energy production.

#### E. FOREST FIRE PROTECTION AND MANAGEMENT

- Research is needed on the use of controlled fire as a safe and effective vegetative management tool.
- Identify short and long-term fire effects.
- Provide continuing education in the understanding and use of fire weather systems and the associated levels of fire suppression preparedness.

#### F. SUPPORT SERVICES

- Provide introductory and advanced computer training to supplement in-house training opportunities.
- Develop applications of econometric and/or input/output models for use in the Division of Forestry's strategic planning process.
- Provide continuing education opportunities in public affairs techniques.
- Conduct periodic forest user surveys to assess public needs, attitudes and expectations.
- Strengthen course offerings in the social and management sciences to better prepare resource professionals to deal effectively with a rapidly changing socio-political environment.

Additional continuing education, extension and research needs are outlined in the Minnesota Forest Resource Plan, Volume 3, 1983 (pp. 201-215). These include recommendations made and research initiatives identified by various joint working groups and research cooperators. For an update on progress made on these initiatives see the Minnesota Forest Resource Plan, Implementation Report and Issue Update (1987).

## GLOSSARY

**AREA.** A Division of Forestry administrative unit determined on the basis of workload, geography, resource characteristics and socio-political boundaries. There are currently 19 Forestry areas statewide. See map inside rear cover.

**ASPEN RECYCLING.** A process where overmature, diseased, decaying or poorly stocked aspen stands are sheared to encourage regrowth of younger, healthy aspen stands capable of supporting increased wildlife populations.

**COMMERCIAL FOREST LAND.** Forest land that is producing or is capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation.

**CORD.** A pile of stacked wood with standard dimensions of 4 by 4 by 8 feet. A stacked cord contains 128 cubic feet of wood (including air space), which is equivalent to approximately 79 cubic feet of solid wood.

**COUNTY TAX-FORFEITED LAND.** Lands forfeited to the state for non-payment of taxes, to which the state holds title impressed with a trust in favor of counties and local taxing districts. These lands are administered by the counties with certain oversight functions assigned to the state.

**DEVELOPED (or Concentrated) RECREATION.** Outdoor recreation requiring significant capital investment in facilities to handle a concentration of visitors on a relatively small area (see Dispersed Recreation).

**DISPERSED RECREATION.** Outdoor recreation in which visitors are diffused over relatively large areas. Where facilities or developments are provided, they are more for access and protection of the environment than for the comfort or convenience of the people.

**FLAKEBOARD.** A general term usually referring to waferboard or oriented strand board.

**FUELWOOD.** Wood or wood energy products used to generate heat energy for commercial or residential purposes.

**HARDBOARD.** A generic term for a panel product manufactured from wood fibers and resins under heat and pressure.

**INTENSIFIED FOREST MANAGEMENT.** A forest management regime under which wood fiber production and other forest outputs (i.e., water, wildlife, fish, recreation) are maximized through the application of scientific forest management techniques.

**MDF.** Medium Density Fiberboard.

**MIXED STANDS.** Forest stands composed of more than one commercial or non-commercial tree species.

**MULTIPLE-USE.** The principle of forest management by which forest resources are used in the combinations that will best meet the needs of the people of the state; including the harmonious and coordinated management of the forest resources, each with the other, without impairment of the productivity of the land and with consideration of the relative values of the resources, and not necessarily the combination of uses resulting in the greatest economic return or unit output (Forest Resource Management Act of 1982; Minn. Laws 1982, Chapter 511).

**ORIENTED STRAND BOARD (OSB).** A panel product made from wood flakes or wafers aligned in layers and bonded with resins under heat and pressure. The linear alignment of the wafers in layers of opposing direction increases the strength of the product.

**PARTICLEBOARD.** A generic term for a panel product made from discrete particles of wood rather than from fibers. The wood particles are mixed with resins and formed into a solid board under heat and pressure.

**SCIENTIFIC AND NATURAL AREAS (SNA).** An administrative designation applied to preserve and protect Minnesota's rare and unique natural resources for preservation, observation, education and research.

**SEED ORCHARD.** Plantation of genetically superior trees isolated to reduce pollination from genetically inferior outside sources, and intensively managed to produce frequent, abundant, easily harvested seed crops. A clonal seed orchard is a seed orchard established using clones through the use of grafting or rooted cuttings.

**SHEATHINGBOARD.** A generic term for lumber or panel products used to cover the exterior frame of a building. Siding or finish material is then applied over the sheathing.

**SILVICULTURE.** The theory and practice of controlling the establishment, composition, constitution and growth of forests.

**SITE PREPARATION.** Any means used to prepare a forest site for natural or artificial regeneration (i.e., fire, mechanical, chemical). Usually involves the exposure of mineral soil and the elimination or reduction of competing vegetation.

**STATE FORESTS.** State forests are legislatively established units managed by the Division of Forestry on a multiple-use, sustained-yield basis. There are 55 state forests. (Minn. Statutes, Chapter 89). Not all Division-administered lands are within state forest boundaries.

**SUSTAINED YIELD.** The principle of forest management for the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of forest resources without impairment of the productivity of the land; allowing for periods of intensification of management to enhance the current or anticipated output of one or more of the resources.

**TIMBER SCALING.** The practice of measuring quantities of timber stumpage to determine its volume, grade and value for forest products.

**TIMBER STAND IMPROVEMENT (TSI).** Timber stand cultural practices designed to produce improved forest crops, including thinning, pruning and the release of crop trees from competing (non-commercial) vegetation.

**TIMBER STAND REGENERATION.** The rejuvenation of forest trees by natural (i.e., seeded by nearby mature trees) or artificial (i.e., planting of tree seedlings) means.

**TMPIS.** The Division's Timber Management Planning Information System is an automated method of calculating and scheduling allowable timber harvest levels.

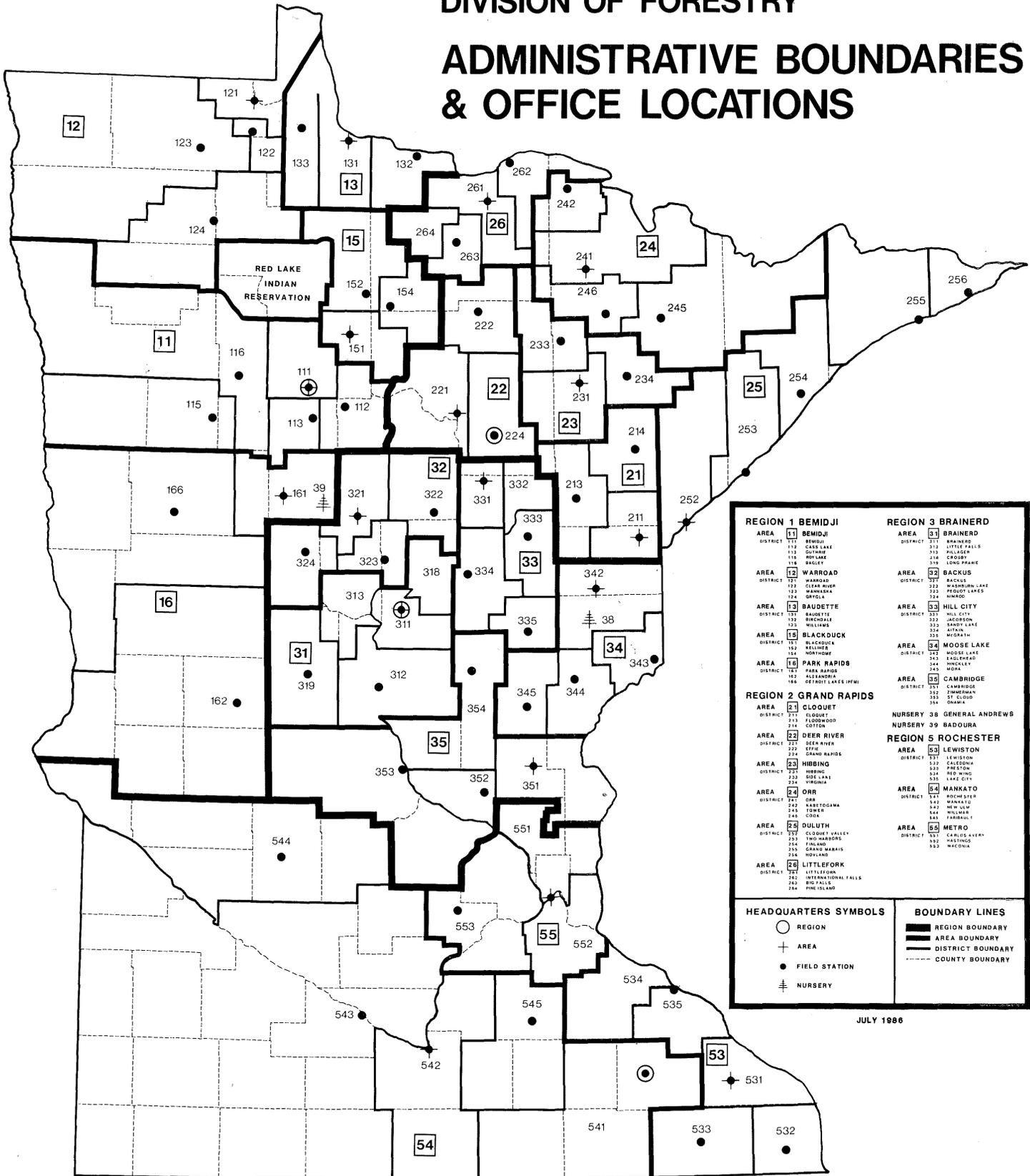
**TRUST FUND LANDS.** State-administered public lands received from the federal government upon statehood with the condition that receipts from them be permanently used for specified purposes.

**VALUE ADDED.** Sum of the dollar values added by each producer at each stage of the processing and production of manufactured goods.

**WAFERBOARD.** A panel product made from randomly aligned wood flakes or wafers bonded by resins under heat and pressure.

Figure 7

# DIVISION OF FORESTRY ADMINISTRATIVE BOUNDARIES & OFFICE LOCATIONS



<p><b>REGION 1 BEMIDJI</b></p> <p><b>AREA 11 BEMIDJI</b> DISTRICT 111 BEMIDJI 112 CLEAR LAKE 113 GUTHRIE 114 MIDDLE 115 BASILEY</p> <p><b>AREA 12 WARROAD</b> DISTRICT 121 WARROAD 122 CLEAR LAKE 123 WANDURA 124 GRIGGLA</p> <p><b>AREA 13 BAUDETTE</b> DISTRICT 131 BAUDETTE 132 JACKSON 133 SANDY LAKE 134 APTON 135 MCKINLEY</p> <p><b>AREA 15 BLACKDUCK</b> DISTRICT 151 BLACKDUCK 152 REELIER 153 NORTHMOPE</p> <p><b>AREA 16 PARK RAPIDS</b> DISTRICT 161 PARK RAPIDS 162 AUSTIN 163 DEER FALLS (FPM)</p> <p><b>REGION 2 GRAND RAPIDS</b></p> <p><b>AREA 21 CLOQUET</b> DISTRICT 211 CLOQUET 212 FLOODWOOD 213 COTTON</p> <p><b>AREA 22 DEER RIVER</b> DISTRICT 221 DEER RIVER 222 STIE 223 GRAND RAPIDS</p> <p><b>AREA 23 HIBBING</b> DISTRICT 231 HIBBING 232 SIDE LAKE 233 VERNONIA</p> <p><b>AREA 24 ORR</b> DISTRICT 241 ORR 242 BARTHOLOMA 243 FOWEN 244 COOK</p> <p><b>AREA 25 DULUTH</b> DISTRICT 251 CLOUDS VALLEY 252 TWIN LAKES 253 GRAND MARAIS 254 HOLLAND</p> <p><b>AREA 26 LITTLEFORK</b> DISTRICT 261 LITTLEFORK 262 INTERNATIONAL FALLS 263 BIG FALLS 264 HINE ISLAND</p>	<p><b>REGION 3 BRAINERD</b></p> <p><b>AREA 31 BRAINERD</b> DISTRICT 311 BRAINERD 312 LITTLE FALLS 313 PILLAGER 314 CROSBY 315 LONG PRAIRIE</p> <p><b>AREA 32 BACKUS</b> DISTRICT 321 BACKUS 322 WASHBURN LAKE 323 PIGEON LAKE 324 MARCO</p> <p><b>AREA 33 HILL CITY</b> DISTRICT 331 HILL CITY 332 JACKSON 333 SANDY LAKE 334 APTON 335 MCKINLEY</p> <p><b>AREA 34 MOOSE LAKE</b> DISTRICT 341 MOOSE LAKE 342 EASTFORD 343 MORA 344 HICKLEY</p> <p><b>AREA 35 CAMBRIDGE</b> DISTRICT 351 CAMBRIDGE 352 ZIMMERMAN 353 ST. CLOUD 354 OMAHA</p> <p><b>NURSERY 38 GENERAL ANDREWS</b></p> <p><b>NURSERY 39 BADOURA</b></p> <p><b>REGION 5 ROCHESTER</b></p> <p><b>AREA 53 LEWISTON</b> DISTRICT 531 LEWISTON 532 CALDWELL 533 PRESTON 534 RED WING 535 LAKE CITY</p> <p><b>AREA 54 MANKATO</b> DISTRICT 541 ROCHESTER 542 MANKATO 543 NEW LAM 544 WILBUR 545 FARBURG</p> <p><b>AREA 55 METRO</b> DISTRICT 551 CARLOS ALVAREZ 552 HASTINGS 553 WACONIA</p>
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<p><b>HEADQUARTERS SYMBOLS</b></p> <p>○ REGION</p> <p>+ FIELD</p> <p>★ AREA STATION</p> <p>⊕ NURSERY</p>	<p><b>BOUNDARY LINES</b></p> <p>— REGION BOUNDARY</p> <p>— AREA BOUNDARY</p> <p>— DISTRICT BOUNDARY</p> <p>--- COUNTY BOUNDARY</p>
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JULY 1986

Source: Minnesota Department of Natural Resources.

Minnesota Forest Resources Plan  
Program Direction 1987-1991

ERRATA SHEET

PAGE 7. Table 1., Footnote (D) should read "...a proposal to spend \$2.2 million annually..."

The wording of the following goals have been changed to reflect concerns expressed by public reviewers.

PAGE 9 and PAGE 27. The Timber Sales goal should read: "Administer the sale of timber stumpage from state-owned lands recognizing current economic trends, varying market demand and the diverse biological and resource conditions found in different regions of the state."

PAGE 33. The Cooperative County Forest Management goal should read: "Support and assist county efforts to intensify the multiple-use, sustained-yield management of county tax-forfeited forest lands."

