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Program
Direction
1987-1991**

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MINNESOTA FOREST RESOURCES PLAN
PROGRAM DIRECTION FISCAL YEARS 1987 - 1991
PRIMARY DOCUMENT

June 1987 ✓

Division of Forestry
Minnesota Department of Natural Resources
St. Paul, Minnesota 55155-4044

MINNESOTA FOREST RESOURCES PLAN
PROGRAM DIRECTION, 1987 - 1991

This plan has been prepared and approved pursuant to Minnesota Statutes, Section 89.011, Subdivision 3 which provides:

Subd. 3. **PROGRAM ELEMENTS.** The program shall be updated every four years and shall describe specific actions to address the assessment and to implement the forest resources management policy of Section 3, including but not limited to:

(a) Improvement of silvicultural practices and improved methods for harvesting and utilizing timber and timber residues;

(b) measures to improve reforestation practices;

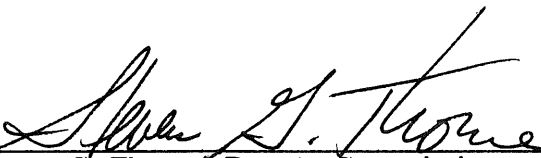
(c) Measures to enhance recreational opportunities and fish and wildlife habitat;

(d) The identification of "prime forest land" according to criteria developed by the Commissioner;

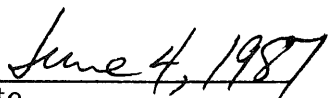
(e) Priorities for construction and improvement of forest roads to achieve the state forest road policy, including the development of alternative methods for financing forest road construction, improvement and maintenance, and for imposing a reasonable share of the costs of the forest road system on those who directly benefit from the availability and use of the system;

(f) A description of how the multiple use and sustained yield management policy will apply to decisions about other public and private uses of forest lands and resources.

(g) An estimate of the expenditures necessary to implement the elements of the program, along with the sources and amounts of revenue available or necessary to finance the estimated expenditures.



Steven G. Thorne, Deputy Commissioner
Minnesota Department of Natural Resources



Date

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PREFACE

The Minnesota Forest Resource Management Act of 1982 (Minnesota Statutes Section 89.011, Subd. 3) requires the program portion of the Minnesota Forest Resources Plan (MFRP) to be updated every four years and the assessment portion to be updated every ten years. The program is to describe specific actions to address the assessment and to implement the forest resources management policies laid out in section 3 of the Act. This document is an update of the MFRP program, originally released by the Department of Natural Resources, Division of Forestry on July 1, 1983. It addresses the April 1983 assessment and the following policies, as stated in the Forest Resource Management Act of 1982:

Forest Resource Management Policy. The commissioner shall manage the forest resources of the state forest lands under the authority of the commissioner according to the principles of multiple use and sustained yield.

Reforestation Policy. (a) The commissioner shall maintain all forest lands under the authority of the commissioner in appropriate forest cover with species of trees, degree of stocking, rate of growth and stand conditions designed to secure optimum public benefits according to multiple use, sustained yield principles and consistent with applicable forest management plans.

(b) Each year the commissioner shall strive to assure that (1) reforestation occurs annually on an acreage at least equal to the acreage harvested that year on all forest lands under the authority of the commissioner; (2) additional reforestation is accomplished on areas previously harvested but not adequately reforested so that the backlog of reforestation work can be eliminated; and (3) poorly stocked forest land, or forest land damaged by natural causes, shall be returned to a state of productivity.

Forest Road Policy. The commissioner shall provide a system of forest roads and trails which provides access to state forest land and other forest land under his authority which is adequate to permit the commissioner to manage, protect, and develop these lands and their forest resources consistent with the forest resource management policy, and to meet demands for forest resources.



Minnesota Forest Resources Plan

Introduction

INTRODUCTION

The Commissioner of the Department of Natural Resources is responsible, by law, 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 the 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.

PLANNING PURPOSE AND PROCESS

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.

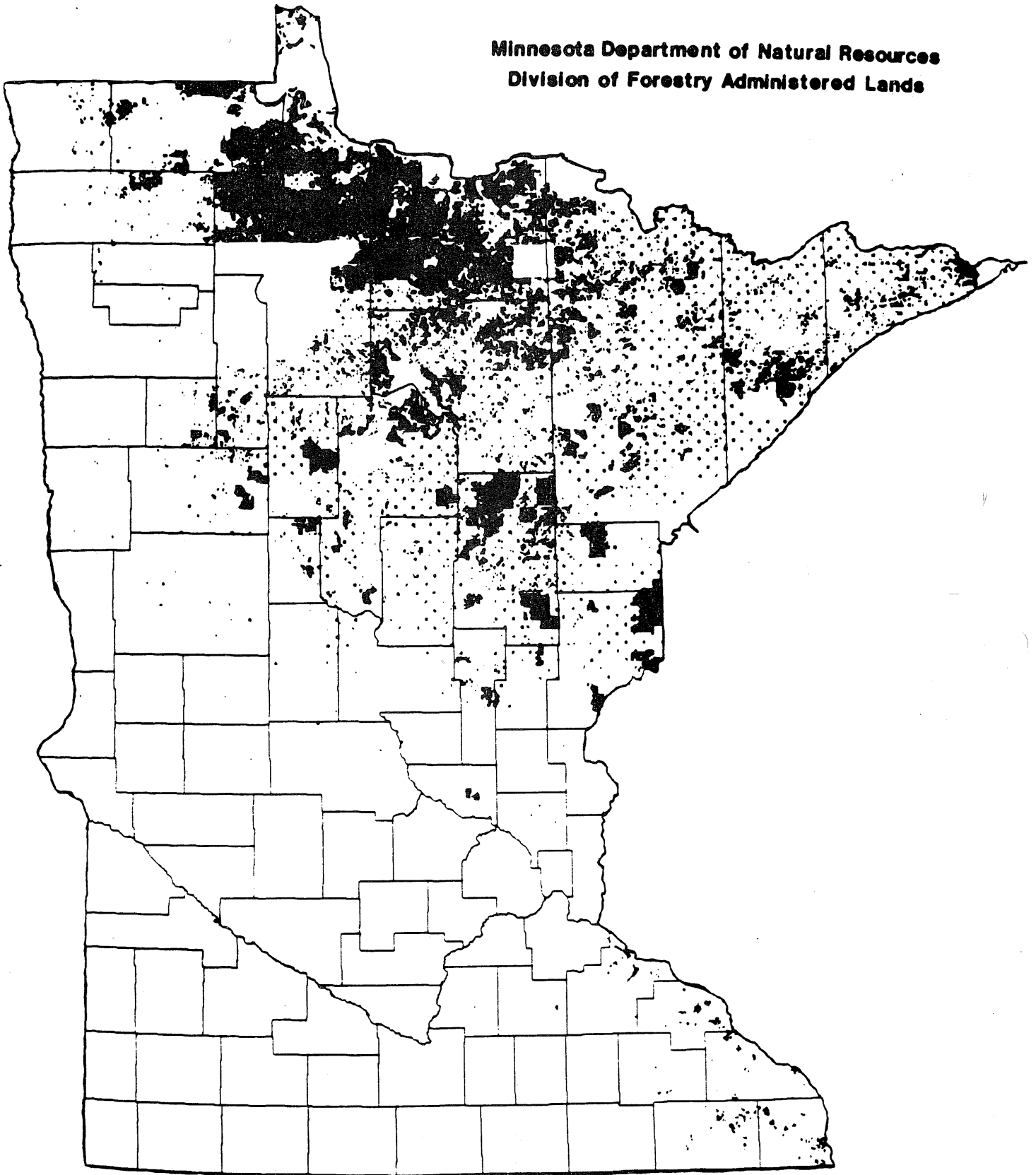
The state of Minnesota administers 2.7 million acres of commercial forest land, and counties and municipal agencies administer an additional 2.3 million acres. Federal agencies also administer 2.3 million acres.

The Division completed the first Minnesota Forest Resources Plan in June 1983. That plan included an assessment of Minnesota's forest resources and a recommended program for managing the resources. The assessment part of the plan described and evaluated the past, present and prospective forest resource conditions of Minnesota. It analyzed the demands for Minnesota's forest resources and the capabilities of the resources to meet those demands. The program part of the plan contained the goals, strategies, and recommended actions to resolve the important forest management issues identified in the assessment portion of the plan.

This document is an update of the program portion of the Minnesota Forest Resource Plan. It presents a recommended "program" and budget for the Division of Forestry for fiscal years 1987-1991. The program is responsive to the management team'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

Figure 1

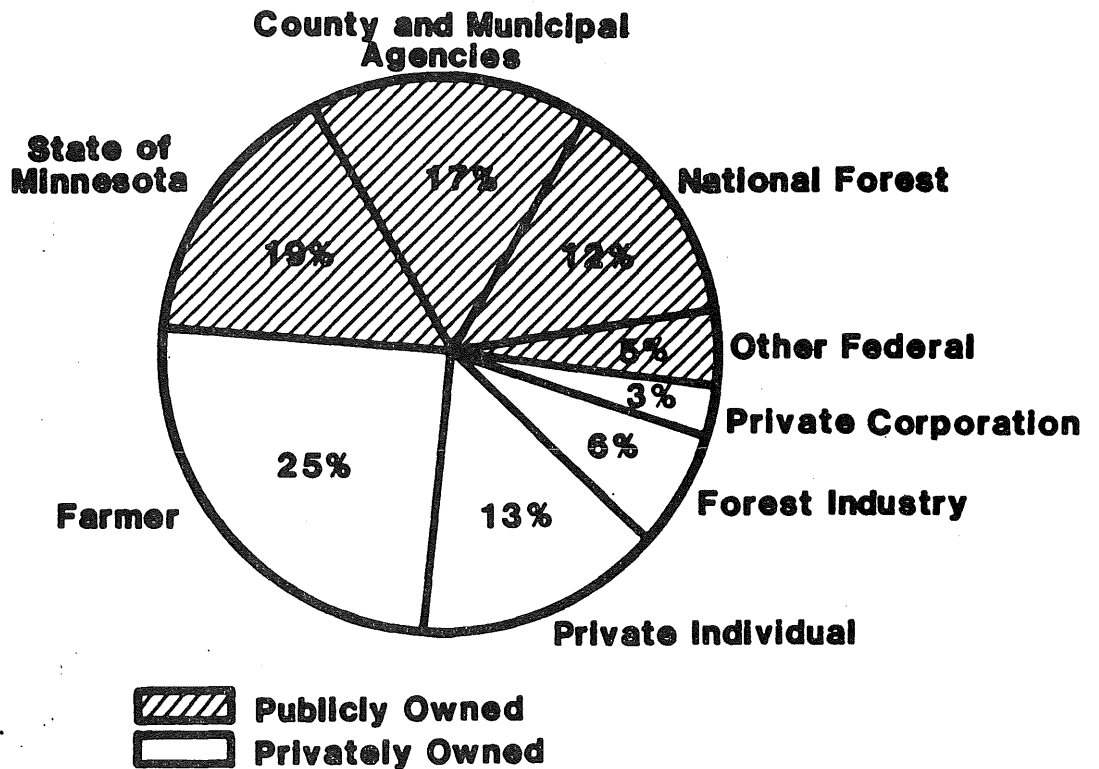
**Minnesota Department of Natural Resources
Division of Forestry Administered Lands**



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.

(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. (See Figure 3).

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.

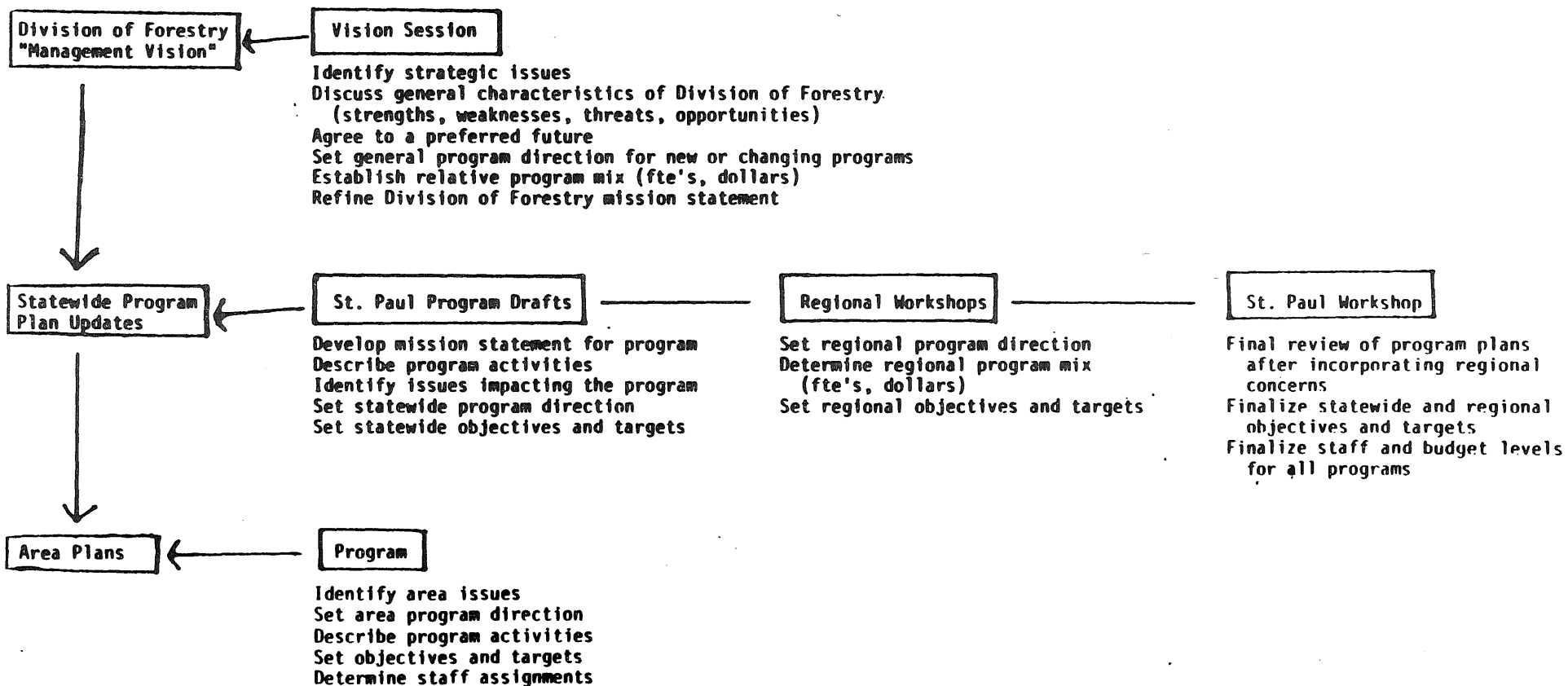
Accomplishment reports are the primary tool used to determine how well the Division is meeting its goals and objectives. The Division develops an accomplishment report at the end of each fiscal year which compares actual accomplishments with the objectives established in the annual work plan. Reports 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 and 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.

Figure 3

MFRP Planning Process Schematic



FORMAT AND CONTENT

This plan contains six major sections: Future Division Direction; Budget and Staffing Summary; Summary of Research and Information Needs; Assessment; Recommended Program, and Appendices. A brief overview and summary of plan highlights can be found in the Executive Summary.

The Future Division Direction section of this plan 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 plan for each program.

The Budget and Staffing Summary reviews the sources of funds that comprise the Division's budget, and summarizes the budget and staffing needs of each subprogram for fiscal years 1987-1991. These projections are based on what is reasonable to expect given the current trends. They are not "pie-in-the-sky" estimates of what is needed to fully manage the forest resources of the state.

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.

The Assessment Section briefly outlines significant trends in population growth, income and employment, and unemployment on a regional basis for Minnesota. Also included is an overview of Minnesota's timber-based industry and the outlook for continued growth of this important sector of the state economy. This section supplements information contained in Volume Three of the 1983 Minnesota Forest Resource Plan.

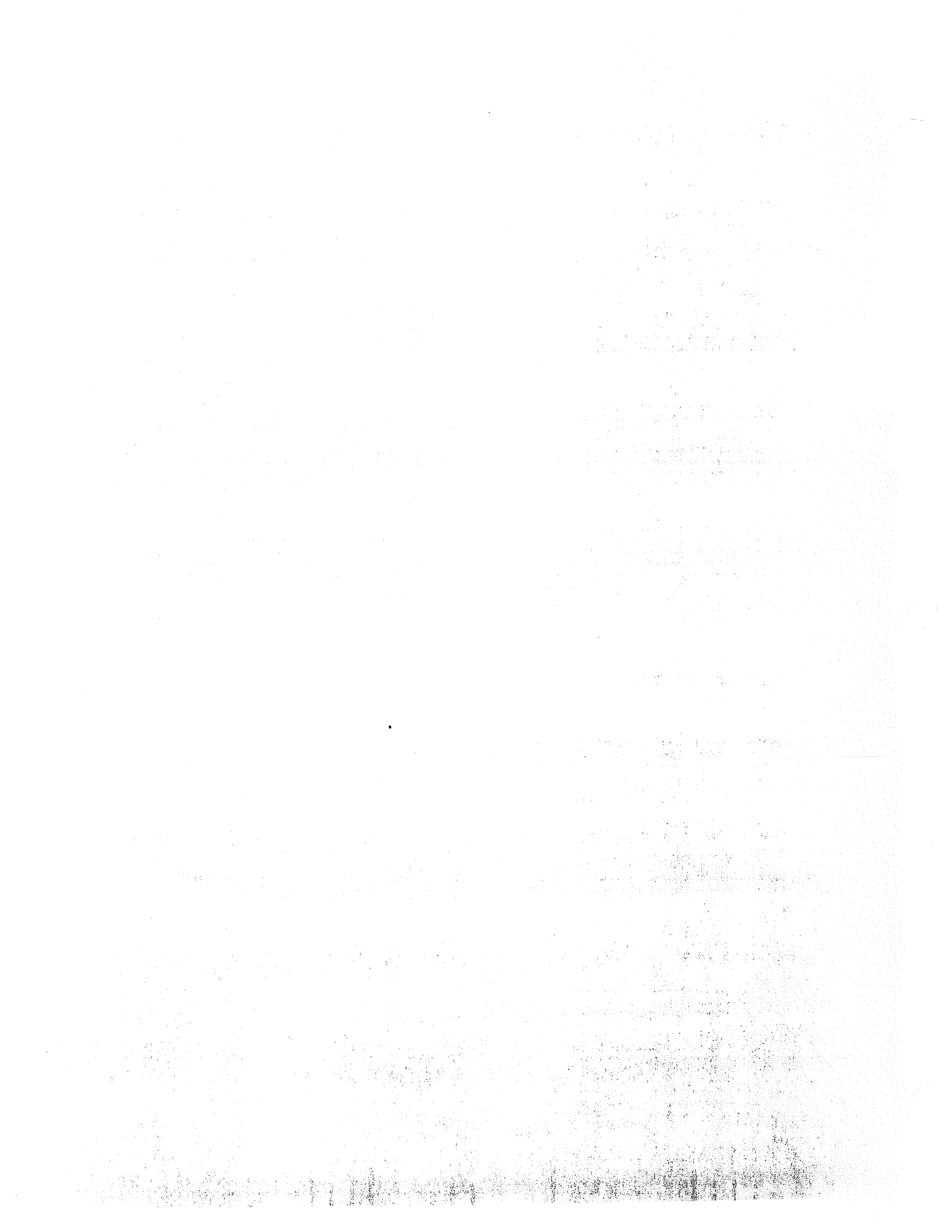
The recommended program lays out an action plan for each subprogram which describes specific actions to be taken to address the 1983 assessment, an issue analysis and policies of the Forest Resources Management Act of 1982. These action plans include a brief description of program activities, a statement of the program goal, a summary of the statewide and regional program directions, a list of major strategies and objectives for fiscal years 1987-1991, and projected targets, and staffing and budget needs for fiscal years 1987-1991.

The Appendices include Assessment Tables, regional time allocations by subprogram for fiscal years 1982-1986, regional program targets for fiscal years 1987-1991, a summary of the major forest resource laws, a glossary of terms, and an organizational chart for the DNR, Division of Forestry.

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Minnesota Forest Resources Plan

Executive Summary



EXECUTIVE 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.

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, a significant 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. Division of Forestry funding sources are shown in Figure 4.

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.

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.

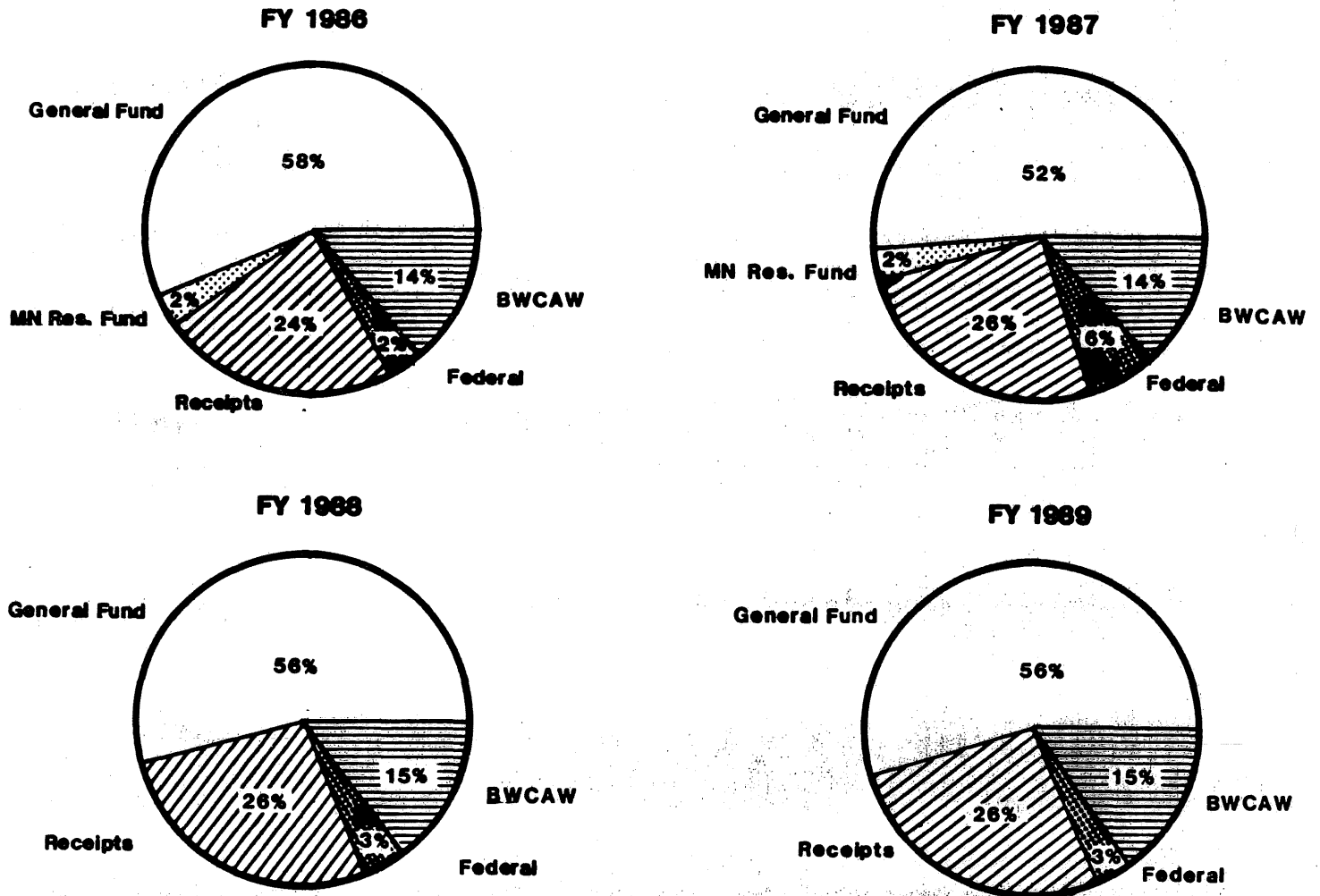
The Reinvest in Minnesota (RIM) bill, enacted by the Minnesota State Legislature in 1986, also promises to have a great impact on resource management programs in Minnesota for an extended period. The bill is intended to protect and enhance the state's fish and wildlife resources. Although some provisions 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

Figure 4

DIVISION OF FORESTRY SOURCES OF FUNDING

1986-1989



Source: DNR, Division of Forestry, 1987.

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 efficiently administer the sale of timber stumpage from state-owned forest lands. 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 that of a cooperator providing technical advice and assistance upon request. Full-time county assistance staff will no longer 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.

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Minnesota Forest Resources Plan

Future Direction for the Division of Forestry

FUTURE DIRECTION FOR THE DIVISION OF FORESTRY

BASIC ASSUMPTIONS

The information contained in this document is based, in part, upon a series of basic assumptions that significantly affect the future direction of the Division of Forestry and each of its programs. These assumptions, which describe the Division's perspective on the environment in which it operates, 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. This goal requires a highly trained and skilled professional staff with a diversity of talents and expertise. It will also require a commitment on behalf of the Division and its employees to continued professional development, and a willingness 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 tough and increasingly competitive. At a time when public demands are continually increasing, the Division will need to accomplish more with less. This means that 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, providing for a diversity of public needs and land uses, while maintaining the basic integrity of the forest resource. The continued success of the organization will hinge on its ability to balance competing public needs and land uses with sound resource management principles.

VISION STATEMENT

The 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 shall also be promoted on other ownerships through technical assistance programs.

Forest resources 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 (Minnesota Statutes

1980, Section 89.001). 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 the Minnesota Forest Resources 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 paperwork and much 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 help alleviate internal conflicts as well.

A better 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 managing nearly 5 million acres of state forest lands. Additional emphasis will be placed on better use of these lands for a variety of commodity and amenity forest outputs.

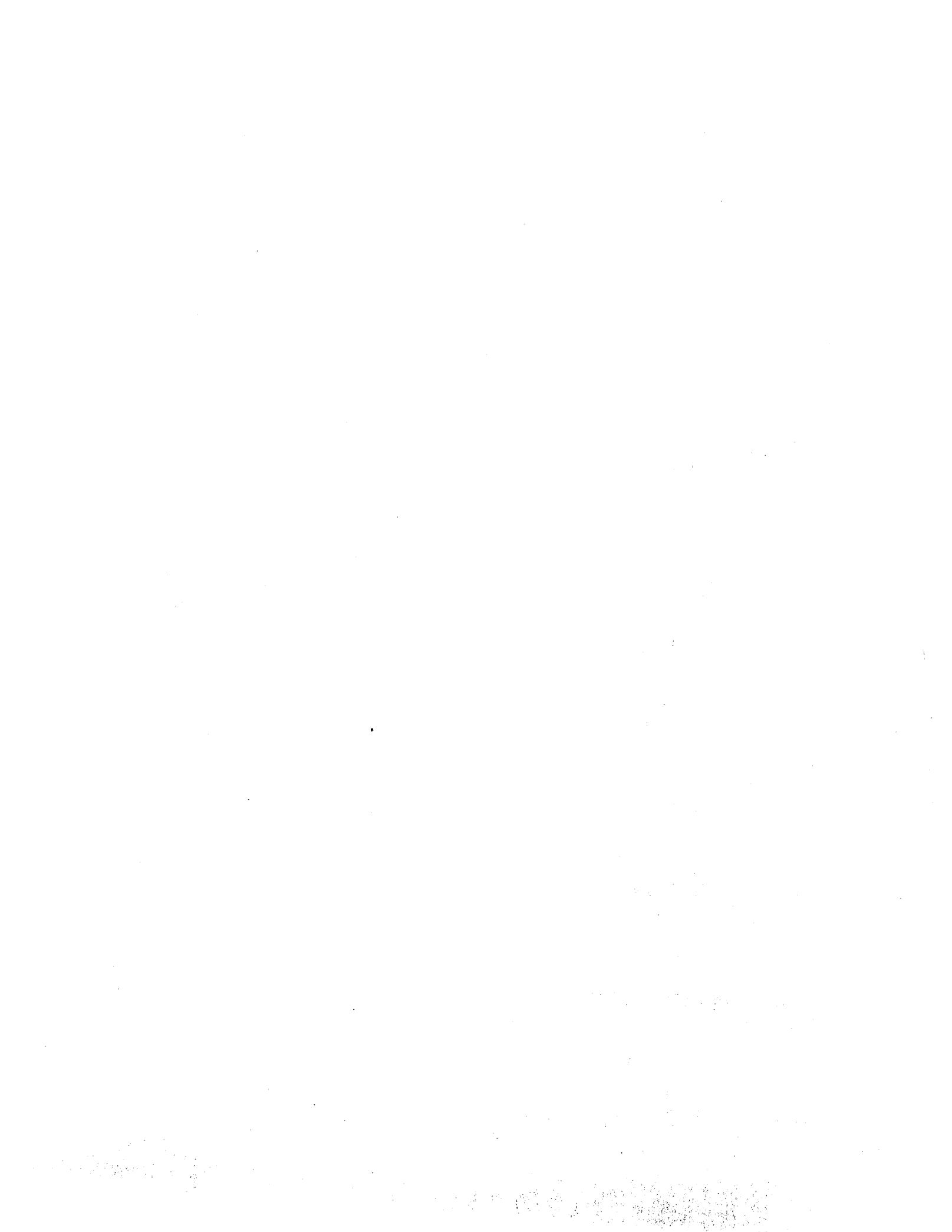
DIVISION GOALS

- * 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., Conservation Reserve Program, Reinvest in Minnesota).
- * 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, nongame 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.
- * Improve 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).
- * Provide coordination and technical assistance to other divisions, agencies, and organizations to encourage a cooperative approach to management and protection of fish and wildlife habitat, wilderness, rare and distinctive flora and fauna, air, water and soil.
- * 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.
- * 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 born 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 consistent with sound natural resource management principals.
- * Augment the efforts of the DNR, Bureau of Information and Education by dedicating more Division staff time to information and education activities.



MF
RP

Minnesota Forest Resources Plan

Budget and Staffing Summary

BUDGET AND STAFFING SUMMARY

INTRODUCTION

This update of the program portion of the Minnesota Forest Resource Plan lays out action plans, budget and staffing needs for each Division of Forestry sub-program for the next five years (F.Y. 1987-F.Y. 1991). Goals, objectives, strategies and actions have also been articulated to propel the Division into the future in a continuing role as a leader in forest resource management in Minnesota and in the nation.

These program plans and their associated activities will, however, have little effect without adequate funding and staffing. Budget reductions have been significant in recent years. The budget for the Division from all sources has decreased an average of \$1.9 million per year since 1985. Major impacts of these reductions include the closing of 14 field stations, phasing out 6 county assistance foresters, eliminating 20 hotshot fire crew members, laying off 7 full-time professional foresters, maintaining numerous position vacancies, reducing cost-share for tree planting, eliminating or reducing maintenance of 51 recreational facilities and 160 miles of trail, and an overall reduction of field and staff activities in all program areas.

The following section reviews the sources of funds that comprise the Division's budget, and summarizes, by program, the budget and staffing needs for fiscal years 1987-1991. This budget review describes the sources and purpose of Division funds, what activities the Division can and does use the funds for, what portion of the Division's total budget the funds provide, and expected future funding levels. An understanding of these sources can help clarify the varying effects that changes in one funding source or another can have on different activities.

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 during the planning process. The projections are not "pie-in-the-sky", but are based on what is reasonable to expect given recent budget trends. Table 3 is a summary of the Division's budget by source of funds for fiscal years 1984-1987. These figures are actual dollars that were appropriated during that period.

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 (E)	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
SUBTOTAL	11,606.8	12,405.4	12,300.6	12,505.7	12,642.9
<u>Nursery and Tree Improvement (F)</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 (G)	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
SUBTOTAL	3,587.7	4,055.7	3,994.7	3,882.1	2,931.0
<u>Forest Resource Assessment</u>					
Forest Resource Assessment and Analysis (H)	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
SUBTOTAL	1,647.5	1,775.0	1,775.0	1,775.0	1,775.0
<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	1,680.8	1,680.8	1,680.8	1,680.8	1,680.8
SUBTOTAL	3,907.2	3,947.1	4,051.1	4,220.8	4,271.8
TOTAL	25,953.9	28,786.4	27,706.0	29,486.4	29,006.0

(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:

$$\text{Budget} = \# \text{ fte's} \times \$30,000/\text{fte} \times 1.245 + \text{project dollars}$$

$$(\text{full time equivalents}) \times (\text{salary and benefits}) \times (\text{supplies and expenses}) + (\text{contract services})$$

- (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 \$2.2 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) Budget reductions are a result of continuing budget cuts and personnel layoffs.
- (F) 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.
- (G) The increase in PFM funding is due to increased cost share funding for wildlife enhancement through the RIM and CRP programs.
- (H) 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 (B)	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 (C)	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 (D)	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 (F)	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 (G)	493.3	504.0	505.0	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 is equal to 1730 hours.

- (B) The projected increase in time spent on fish and wildlife activities is due to time spent on aspen recycling projects aimed at improving forest productivity and wildlife habitat.
- (C) Includes seasonal and non-tenured laborers. No staffing changes are anticipated despite increased production levels over the next five years.
- (D) 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.
- (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 shows for other programs.
- (F) 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.
- (G) This figure includes overtime, work performed by student workers, seasonal and non-tenured labor, and 90% positions.

BUDGET SOURCE SUMMARY - GENERAL OVERVIEW

- I. State General Fund
 - A. Forest Management
 - B. Forest Management Intensification
 - C. Inventory Supplemental
 - D. Campground Supplement
 - E. Emergency Fire Fund
 - F. BWCAW - State Match
 - G. Legislative Commission on Minnesota Resources Project Funding

- II. General Obligation Bonding
 - A. Capital Improvement Bonds
 - 1. Building
 - 2. Non-Building (Formerly Resource 2000)
 - a. Forest Roads and Bridges Betterment
 - b. Recreation Facilities and Lands Betterment
 - c. Land Acquisition
 - B. Reinvest in Minnesota (RIM)

- III. Receipts
 - A. State Forest Development Account (Trust Fund)
 - B. Forest Management Fund
 - 1. Nursery Account
 - 2. Trust Account
 - 3. FMF Other
 - C. Dedicated Campground Receipts
 - D. Trails and Waterways Appropriation
 - E. Consolidated Conservation Area Fund
 - F. Burntside State Forest Fund

- IV. Federal Funding
 - A. BWCAW Forestry Intensification Program
 - B. Federal Cost-Share Programs (Coop. Forestry Assistance)
 - 1. Special Forestry Programs
 - 2. Other Programs
 - a. Forestry Incentives Program (FIP)
 - b. Agricultural Conservation Program (ACP)
 - c. Conservation Reserve Program (CRP)
 - d. Resource Conservation & Development (RC&D)
 - e. Zumbro Watershed Project - PL566

- V. Pass Through Grants
 - A. Rural Community Fire Protection Program
 - B. Regeneration Growth Inventory - LCMR (Beltrami County)
 - C. County Forestry Assistance

I. STATE GENERAL FUND

A. Forest Management

Purpose: This fund is the primary source of the Division's budget (approximately 53% of the total budget for FY84-87). It finances the basic operating expenses of the Division and is not dedicated to any single project, program or activity.

Activities Funded: Over 80% of the General Fund is used for salaries. The remainder is used for operating supplies and expenses such as office rent, heat, electricity, communications, travel, gasoline and other vehicle fuel, training and workers unemployment/compensation.

Future Funding: Future funding levels are dependent on the state legislature.

B. Forest Management Intensification Account

Purpose: This account originated in 1982. Due to low levels of appropriations for forest development work in prior years the state had built up a backlog of un-reforested areas. The request for this special appropriation was to reduce the backlog and was predicated on job creation and sustaining ongoing industrial expansion.

Activities Funded: All forms of forest development project activities anywhere in the state. Primary emphasis was on improving forest productivity and the reforesting non-trust lands outside of the BWCAW.

Future Funding: Due to budget cuts during recent legislative sessions, this account was used to fund regular operating expenses and salaries. This account will no longer exist as a separate account due to these budget reductions.

C. Inventory Supplemental

Purpose: This fund provides basic technical support, supervisory direction and labor needed to carry on the Forest Resource Assessment and Analysis Program (FRAAP).

Activities Funded: Gathering forest resource data and providing data services to forest land administrators, planners and field managers in both the public and private sectors.

Future Funding: Expected to remain stable through FY 1991 at approximately \$412,000 per year.

D. Campground Supplement

Purpose: This fund supplements the dedicated campground receipt account to maintain and operate state forest campgrounds.

Activities Funded: All operating and maintenance activities for state forest campgrounds and picnic areas excluding specific project proposals for rehabilitation and development.

Future Funding: Funding levels are dependent on the state Legislature. If funding is decreased, the Division may have to consider closing some campgrounds and picnic areas or reducing maintenance levels.

E. Emergency Fire Fund

Purpose: This fund is used to prevent and suppress forest fires on some 22.8 million acres of state, other public and private land in Minnesota.

Activities Funded:

Presuppression - training Division personnel
- weather and fire danger monitoring
- airtanker and equipment availability
- equipment standby
- detection

Suppression - costs of controlling and extinguishing forest and grass fires including equipment operating costs, permanent personnel overtime, smoke chasers salaries, and supplies. Hotshot crews were funded here in the past.

Future Funding: The Division submitted a change level request for \$200,000 annually for F.Y. 88 & 89 to provide timely payment for purchased services and fire fighting labor. Funding needs to be increased, with Legislative approval, to 1.5 million dollars annually to cover the costs of an "average" fire year.

F. BWCAW - State Match

Purpose: The federal BWCAW funding requires a \$750,000 annual legislative appropriation of matching funds for forest management intensification on state, county, and non-industrial forest lands to offset the loss of available timber which resulted from the reclassification of timber lands by the BWCAW Act.

Activities Funded:

Forest Development on State Land
* accelerated reforestation of softwoods
* softwood timber stand improvement (TSI)
Increase seedling production
State Forest Roads
* reconstruction and maintenance
* construction
* bridge repair and upgrading
Accelerated Forest Inventory
County Assistance
* reforestation
* timber stand improvement
* road reconstruction and maintenance
Private Forest Management
* reforestation
* timber stand improvement
* marketing
Forest Resource Planning

Future Funding: Funding will be phased out in conjunction with federal BWCAW funding by federal F.Y. 1990.

G. Legislative Commission on Minnesota Resources (LCMR) Funding

Purpose: The LCMR recommends appropriations to state agencies in the general areas of fisheries, wildlife, recreation, forestry, minerals, soil and water. These have been short-term projects designed to: (1) improve natural resource management, (2) develop and organize natural resource information, or (3) acquire land or develop facilities for a broad range of natural resource purposes.

As one of its primary operating principles, the LCMR avoids funding recommendations which would amount to replacement of regular budget funding with LCMR funding. The Commission's charge is to accelerate and improve resource management, not to substitute one source of money for another. In some cases, the Commission recommends that an agency conduct a more extensive or more intensive program in a given area than regular budget financing might allow.

Activities Funded: Past Division projects include:

- * accelerated Phase II Inventory
- * geographic information system
- * management information system
- * forest recreation development (campground rehabilitation, recreational sub-area plans)
- * wildfire planning and budgeting system
- * forest resource planning program (MFRP, Area planning)
- * accelerated PFM program
- * fire management analysis program
- * pulpwood weight study
- * fuelwood measurement study
- * urban and community forestry program

Future Funding: Funding will continue to be available upon approval of requests. The Division request level has decreased in recent years and is expected to remain low in the immediate future.

II. GENERAL OBLIGATION BONDING

A. Capital Improvement Bonds

1. Building

Purpose: Provides funding for Division building construction and improvement projects.

Activities Funded: Any building site capital improvements which require a specific engineering request and plan. Includes expansion, new construction and remodeling of offices, residences, repair shops, garages, etc.

Future Funding: Additional funding is available upon submittal and approval of project funding requests and the associated

bonding authority. Authority to sell bonds is granted by the Legislature depending on the State's credit rating and current bond interest rates.

2. Non-Building (Referred to as Resource 2000 through F.Y. 1985)

The original purpose of Resource 2000 in 1975 was an accelerated natural resources land acquisition program "to provide healthful outdoor recreational opportunities for our citizens and natural habitat for our fish and wildlife". The original program proposed a \$100 million bonding program over three bienniums. As part of the program, nearly 50,000 acres of land was to be acquired primarily for the Richard J. Dorer Memorial Hardwood Forest and the Sand Dunes State Forest.

While the original program was envisioned to be entirely a land acquisition program, it quickly became apparent that its focus needed to be broadened. The purposes for land acquisition were expanded and the funding has increasingly been directed towards natural resources development. The LCMR, through its numerous programs in the past years, has been instrumental in creating this new focus. The LCMR reviews and monitors all projects that are funded by Resource 2000 bonding. Today, funds are received for forest roads and bridges betterment, recreation facilities and land betterment, and land acquisition for state forests.

a. Forest Roads and Bridges Betterment

Purpose: Provides funds to manage and maintain an effective system of forest access roads to support the tourism industry, forest management and the forest product industries.

Activities Funded: Development of new roads, reconstruction of existing roads and replacement of inadequate bridges as outlined in the 1982 Forest Road Plan.

Future Funding: Additional funding is available upon submittal and approval of project funding requests and the associated bonding authority. Authority to sell bonds is granted by the Legislature depending on the State's credit rating and current bond interest rates.

b. Recreation Facilities and Lands Betterment

1) Lands Betterment

Purpose: Provides funds to reestablish Richard J. Dorer Memorial Forest lands to a multiple-use status of forest resource production, environmental protection and recreation use, and to demonstrate sound forest management practices.

Activities Funded: Forest management activities on existing and newly acquired lands in the Richard J. Dorer Memorial Hardwood Forest. Projects include tree planting, timber stand improvement, plantation weed

control, erosion control structures, boundary signing, access roads, building site cleanup and closing abandoned wells.

Future Funding: Additional funding is available upon submittal and approval of project funding requests and the associated bonding authority. Authority to sell bonds is granted by the Legislature depending on the State's credit rating and current bond interest rates.

2). Recreation Betterment

Purpose: The 1985 State Comprehensive Outdoor Recreation Plan (SCORP) and its supporting data base indicated a need for more primitive camping, swimming beaches, picnic areas, nature trails and hunting opportunities. This funding is designed to meet some of those needs, protect existing state investments and protect the health and safety of the user.

Activities Funded: Development and rehabilitation of state forest recreation facilities including campgrounds, day-use areas, beaches, access roads and water accesses.

Future Funding: Additional funding is available upon submittal and approval of project funding requests and the associated bonding authority. Authority to sell bonds is granted by the Legislature depending on the State's credit rating and current bond interest rates.

c. Land Acquisition for State Forests

Purpose: This program is designed to acquire key parcels of land from willing sellers to protect resources, consolidate ownership patterns, foster production of public resource values and provide access to other public lands.

Activities Funded: Acquisition efforts will be concentrated in the Richard J. Dorer Memorial Hardwood Forest. However, key parcels which become available in other state forests will be considered for acquisition as identified by Administrative Area Plans.

Future Funding: Additional funding is available upon submittal and approval of project funding requests and the associated bonding authority. Authority to sell bonds is granted by the Legislature depending on the State's credit rating and current bond interest rates.

B. Reinvest in Minnesota (RIM)

Purpose: Provides funds to protect soil and water quality and improve wildlife resources and habitat management in Minnesota under the authority of the 1986 RIM Act. Proceeds from the sale of state bonds for this fund are kept in a special account and disbursed only for capital costs of the acquisition and betterment of public land and

easements in land and improvements in land in accordance with the RIM Act. Fish and wildlife enhancement projects to be funded include: development and improvement of the comprehensive fish and wildlife management plan; implementation of the RIM conservation reserve program; soil and water conservation practices; enhancement of fish and wildlife habitat on lakes, streams, wetlands, and public and private forest land; acquisition and development of public access sites and recreation easements to lakes, streams, and rivers for fish and wildlife oriented recreation; matching funds with government agencies and the private sector for acquisition and improvement of fish and wildlife habitat and uncommon or diminishing ecological communities; research and surveys of fish and wildlife species and habitat; enforcement of natural resource laws and regulations. information and education; implementing the aspen recycling program and the aspen recycling pilot project; necessary support services.

Activities Funded: The bonding mon. that the Division currently receives under the RIM Act is str ly for the aspen recycling program.

Future Funding: One million dollars from the bonding proceeds were appropriated to the aspen recycling program to be available until spent within a three-year time frame. Funding for current and future RIM activities and proposed activities will be dependent on legislative action in the 1987 legislative session.

III. RECEIPTS

A. State Forest Development Account (Trust Fund)

Purpose: This fund recovers some of the costs associated with the protection, improvement, administration and management of school and university trust fund lands. Funds are derived from receipts generated by school and university trust fund lands.

Activities Funded: Road work, reforestation, timber sales, program administration, fire protection, etc. on school and university trust fund land only. Includes trust fund lands both inside and outside state forest boundaries.

Future Funding: The limit of annual expenditures through this account is \$500,000.

B. Forest Management Fund (FMF)

Purpose: The Forest Management Act of 1982 established the FMF as a dedicated source of funding for forest management activities on the various state-owned forest lands. The funds are derived from receipts generated on all state-owned forest lands primarily from timber sales and leases. These receipts are appropriated to three sub-accounts within the FMF: 1) Nursery Account; 2) Trust Account; and 3) FMF Other Account. Nursery receipts and school trust fund land receipts comprise the majority of this fund.

Activities Funded:

1. Nursery Account

Receipts from nursery tree seedling sales are credited to this sub-account and must be expended to fund nursery operations on a self-sustaining basis. Specific activities include general nursery operations, the tree improvement program, the capital recovery fund, the nursery information system, and seed and cone accounts.

2. Trust Account

Receipts from school trust fund lands (up to imposed limits) are credited to this sub-account but must be expended for trust land purposes. Specific activities funded include forest road improvements, forest development (reforestation, timber stand improvement, etc.), and forest pest prevention and training on school trust land only.

3. FMF Other Account

Specific activities funded include forest road improvements, forest development (reforestation, timber stand improvement, etc.), forest pest prevention and training, and equipment and training for fire protection. Funds are expended on non-school trust lands. This account annually appropriates \$85,000 directly to the Youth Conservation Corps program.

Future Funding: Funding levels for the FMF are dependent primarily on timber sales receipts and lease receipts. Timber sales levels have been decreasing in recent years and are expected to remain depressed for most species in the near future.

C. Dedicated Campground Receipts

Purpose: Dedicate the receipts from state forest campgrounds to maintain and operate those campgrounds.

Activities Funded: General maintenance and operation of state forest campgrounds and picnic areas. Construction and rehabilitation are funded by other sources (LCMR) on a special project basis.

Future Funding: Funding is determined by campground use and user fee structures. Future campground use will likely remain stable or increase. The Division does not plan to increase user fees at this time.

D. Trails and Waterways Appropriations

Purpose: Provides funding to maintain (primarily) and construct water recreation facilities, snowmobile trails, and cross-country ski trails managed by the Division of Forestry. Funding comes from boat and canoe licenses, unrefunded gasoline taxes, the game and fish fund, snowmobile registration fees and cross-country ski licensing fees and is appropriated through the Trails and Waterways Unit.

Activities Funded: Maintenance and construction of water access sites, canoe and boating route campgrounds and landings, and snowmobile and cross-country ski trails.

Future Funding: The funding level is negotiated each year with Trails and Waterways personnel at the regional level.

E. Consolidated Conservation (Con Con) Areas Funds

Purpose: This fund is a set-aside account for receipts from state Con Con lands for the purpose of distributing 50% of these funds to the counties where receipts were generated. Fund transfer is at the end of each fiscal year. The remaining 50% is available to be appropriated to supplement the Division's general fund appropriation. In the case of land sales, 90% of the sale receipt is distributed to the county and the remaining 10% to the DNR Land Bureau.

Activities Funded: This funding provides a supplement to the Division's general fund appropriation. Activities funded are therefore the same as for the general fund (salaries, expenses, supplies).

Future Funding: Receipts from Con Con lands have been decreasing in the past few years. Funding will probably remain at FY87 levels or lower in the near future.

F. Burntside State Forest Fund

Purpose: The Burntside State Forest was established with a forest land grant in 1904. The land within the forest boundaries is to be used only for forestry purposes. This is a dedicated account funded by receipts from the Burntside State Forest.

Activities Funded: Forest development activities on Burntside State Forest land only.

Future Funding: Activities in the Burntside State Forest will continue at a much lower level in the future due to the 1978 expansion of the BWCAW to include much of the forest. As a result, the funding in this account will remain at a low level.

IV. FEDERAL FUNDING

A. BWCAW Forestry Intensification Program

Purpose: This fund provides for intensified forest management on state, county and non-industrial forest lands to offset the loss of available timber which resulted from the reclassification of timber lands by the BWCAW Act.

Activities Funded:

Forest Development on State Land

- * accelerated reforestation of softwoods
- * softwood timber stand improvement

Seedling production

State Forest Roads

- * reconstruction and maintenance
- * construction
- * bridge repair and upgrading

Accelerated Forest Inventory

County Assistance

- * reforestation
- * timber stand improvement
- * road reconstruction and maintenance

Private Forest Management

- * reforestation
- * timber stand improvement
- * marketing

Forest Resource Planning

Future Funding: Expected to remain at \$3 million through federal FY1990.

B. Federal Cost-Share Programs (Cooperative Forestry Assistance)

1. Special Forestry Programs

Purpose: Financial assistance from the federal government (U.S. Forest Service) for approved special projects and programs. In the past, funds were received for general forest management activities, now known as traditional funds. Beginning in federal fiscal year 1986 a portion of these funds were set aside to fund special projects that best meet the goals of the U.S. Forest Service's State and Private Forestry program. This funding approach, known as focused funding, is believed to be a more efficient means to address important forestry issues.

Activities Funded:

Traditional Funding

Planning Assistance
Rural Forestry Assistance
Insect and Disease Control
Urban Forestry Assistance
Rural Fire Protection and Control

Focused Funding

North Central Fine Hardwoods Tree Improvement
Intensified Woodlands Council Initiative
Handbook for Marketing and Industrial Development
Red River Forest Project

Future Funding: In federal fiscal year 1987, 47% of the available financial assistance is allocated to focused funding projects and 53% is allocated in the traditional manner. In future years, funding for focused projects will account for about 75% of the financial assistance.

2. Other Programs

a. Forestry Incentives Program (FIP)

Purpose: To increase the future supply of timber products harvested from non-industrial private forest lands.

Activities Funded: Treatments are provided primarily for the most productive sites with emphasis on technical assistance for timber stand improvement in Norway pine plantations including semi-commercial thinning. Other assistance is provided for reforestation (planting and seeding) and site preparation for natural regeneration primarily in overmature aspen stands. Vendor training sessions are also provided.

Future Funding: Expected to remain stable through federal F.Y. 1991.

b. Agricultural Conservation Program (ACP)

Purpose: To enhance the environment by establishing forest tree plantations and improving existing timber stands on non-industrial privately-owned lands.

Activities Funded: Technical assistance for reforestation, timber stand improvement (pruning and thinning). Cost sharing for reforestation practices which are either too small for FIP, are also being cost shared with state funds, or are prospective participants in the federal Conservation Reserve Program (CRP).

Future Funding: Expected to remain stable through federal FY 1991.

c. Conservation Reserve Program (CRP)

Purpose: This is a voluntary land retirement program to reduce soil erosion, enhance wildlife habitat, improve water quality, increase timber production, reduce surplus commodities and assist the farm economy.

Activities Funded: Private landowner sign-up, conservation plan development and technical assistance on projects planting more than two acres of trees or shrubs.

Future Funding: \$67,700 annually for federal FY 87 & 88
\$56,400 annually for federal FY 89 & 90

Active promotion and sign-up period ends FFY 1990.

d. Resource Conservation and Development (RC&D)

Purpose: The Division has representatives on four RC&D councils in the state. These councils develop projects and the federal government allocates funds to various agencies providing technical services to complete the projects.

Activities Funded: Technical services which the Division provides for these special resource development/environmental protection projects.

Future Funding: No project funding is expected to be allocated in future years due to federal budget reductions.

e. Minnesota PL 566

Purpose: A seven-year project designed to increase forest management and reduce soil and water erosion problems in the South Zumbro watershed.

Activities Funded: Technical assistance in management planning, tree planting, timber stand improvement, fence construction, road construction, harvesting and participation in federal and state cost-share programs only in the South Zumbro watershed.

Future Funding: Currently in the third federal fiscal year of this seven year project. Funding should remain stable through the remaining four years.

V. PASS THROUGH GRANTS

A. Rural Community Fire Protection Program

Purpose: Provide financial, technical and other assistance to organize, train and equip fire departments in rural areas and communities with a population of less than 10,000 for preventing and suppressing fires.

Activities Funded: Limited to 50% of requested assistance. \$2,500 limit per project area or community. Assistance is provided for organizing, planning, training and acquiring equipment.

Future Funding: FY88-\$112,500 FY89-\$112,500

B. Regeneration Growth Inventory - LCMR (Grant to Beltrami County)

Purpose: A grant to Beltrami County to inventory young timber stands and develop revised growth models to indicate the feasibility of increased or decreased harvesting.

Activities Funded: Inventory of young stands and development of growth models within 85% accuracy.

Future Funding: FY88-\$25,000 FY89-\$25,000

C. County Forestry Assistance

Purpose: Provides funds to intensify forest management on 2.8 million acres of county-administered lands.

Activities Funded: Improving access to timber stands in need of harvest or regeneration, tree planting and seeding, and thinning and release from competing weeds to increase the long-term timber supply.

Future Funding: FY88-\$250,000 FY89-\$250,000

TABLE 3
BUDGET SUMMARY - FISCAL YEARS 1984-1987
STATEWIDE
Division of Forestry

ACCOUNT (FUND)	FY1984	FY1985	FY1986	FY1987 (A)
<u>ANNUAL BUDGET</u>				
<u>General Fund</u>				
Forest Management	\$11,731,300	\$12,177,573	\$11,846,600	\$12,208,030
Forest Management Intensification	466,000	149,000	-	-
Inventory Supplemental	397,200	417,909	386,300	412,500
Campground Supplement	56,500	58,083	33,200	36,400
Emergency Fire Fund	930,700	1,545,000	750,000	750,000
BWCAW - State Match (by Federal FY)	750,000	750,000	570,000	570,000
Minnesota Resources Fund (LCMR)	1,008,000	1,126,000	387,500	387,500
Sub-Total	15,339,700	16,223,565	13,973,600	14,364,430
<u>Receipts</u>				
State Forest Development Account	500,000	500,000	500,000	500,000
Forest Management Fund - Nurseries	250,000	2,009,813	1,898,700	1,898,700
- Trust	525,332	1,687,000	2,781,200	2,212,800
- Other	360,800	368,000	352,800	330,500
Dedicated Campground	70,000	82,000	94,796	139,300
Con Con	500,000	500,000	450,000	351,400
Burntside State Forest	-	-	19,487	15,762
Sub-Total	2,206,132	5,146,813	6,096,983	5,448,462
<u>Federal (Federal FY)</u>				
BWCA Forestry Intensification	3,000,000	2,934,700	2,854,000	2,800,000
Federal Cost-Share Programs				
- Special Forestry Programs	396,530	338,400	351,440	324,221
- FIP	7,600	7,300	6,930	12,100
- ACP	68,360	68,300	64,840	139,891
- CRP	-	-	36,000	30,689
- RC&D	27,600	35,000	23,700	35,000
- PL566	18,000	18,000	17,300	20,000
Sub- Total	3,518,090	3,401,700	3,354,210	3,361,901
<u>Grants</u>				
County Forestry Assistance	-	2,000,000	1,250,000	250,000
Rural Community Fire	125,000	125,000	118,750	226,352
Sub-Total	125,000	2,125,000	1,368,750	476,352
ANNUAL BUDGET TOTAL	\$21,188,922	\$26,897,078	\$24,793,543	\$23,651,145
<u>GENERAL OBLIGATION BONDING</u>				
		Bonding Authorized		
<u>Capital Improvement</u>				
Building	-	-	-	-
Road & Bridge Betterment	\$1,000,000	-	60,200	896,726
Recreation Betterment	330,000	-	6,836	232,531
O. R. System Acquisition	2,400,000	-	-	500,000
Land Betterment 81 & 85	1,787,200	391,561	261,093	604,355
Land Acquisition 81	600,000	10,546	111,601	181,038
Aspen Recycling (R.I.M.)	1,000,000	-	-	500,000
BONDING TOTAL	\$402,107	\$439,730	\$617,408	\$2,914,650
TOTAL - ALL SOURCES	\$21,591,029	\$27,336,808	\$25,410,951	\$26,565,795 (A)

(A) FY 87 figures are available amounts: actual spending levels may be lower.

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Minnesota Forest Resources Plan

**Summary of Research,
Information,
and Continuing Education Needs**

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 and use 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.
- * Study the relationships between forest age and diversity and plant and animal health.

- * Examine the impact of even-aged, short rotation, single species timber management on wildlife populations.
- * 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.
- * Support efforts to develop a method of efficiently and effectively debarking green birch pulpwood.
- * 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, 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).

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Minnesota Forest Resources Plan

SECTION I

ASSESSMENT

POPULATION, INCOME AND EMPLOYMENT
State and Regional Trends in Minnesota¹

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 the state's forest lands and major consumers of its forest timber products, state demographic, income and employment changes are key indicators of future forest resource demands.

POPULATION

Minnesota's population continues to grow at a rate below that of the nation (Figure 5). Between 1970 and 1980, total U.S. population increased by 11.4 percent whereas the state's population increased by 7.1 percent. From 1980 to 1985, the estimated national growth was 5.6 percent while the state's estimated growth was 2.9 percent. The 2.9 percent population growth in Minnesota represents a gain of slightly over 117,000 persons since 1980.

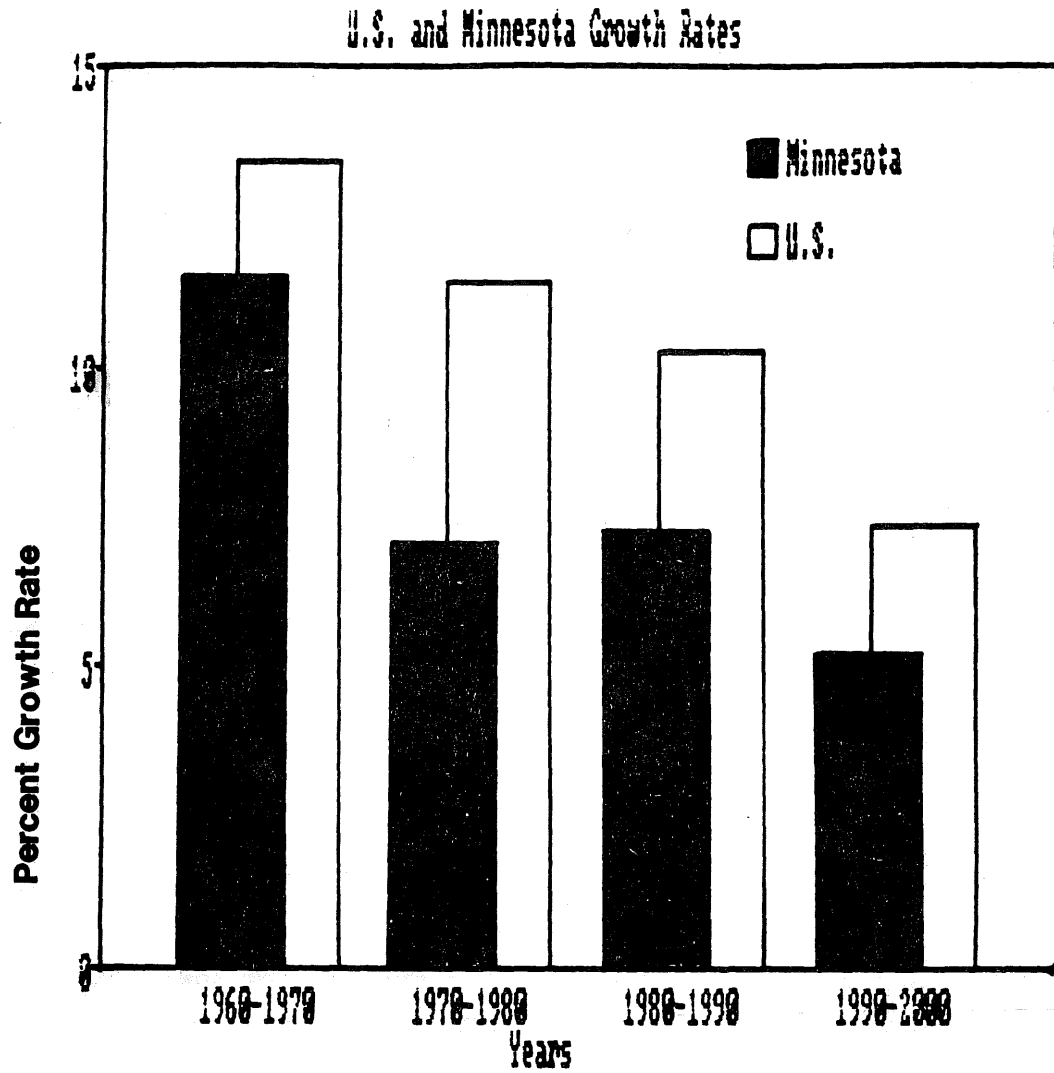
Minnesota's population is projected to continue to grow at a slower rate than nationally. Over the 1980s, the state's population is projected to increase by 7.2 percent as compared with 10.2 for the nation. During the 1980s, state population is projected to grow by 5.2 percent versus 7.2 percent for 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. State population grew by 391,000 persons in the 1960s and by 271,000 persons during the 1970s.

Based on past and projected gains, population growth during this decade will be similar to that of the 1970s. Slow growth since 1980 suggest that population growth will have to accelerate significantly over the next few years to reach the projected 1990 level. Growth during the 1990s will be lower than in the past. Projected population gain between 1980 and 2000 totals 525,000 persons, which is 20 percent less than the 662,000 increase between 1960 and 1980.

Regional distribution of projected population growth is similar to past regional growth patterns (see Appendix for delineation of regions). 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 (Figure 6). Population projections anticipate 80 percent of population growth between 1980-2000 will again occur in these two regions (Figure 7). As a result of similar growth patterns the state's population distribution will remain fairly constant through the year 2000.

¹ Information in this section was compiled by David Senf, graduate student at the University of Minnesota, under contract through the Center on Urban and Regional Affairs. Assessment tables can be found in Appendix A.

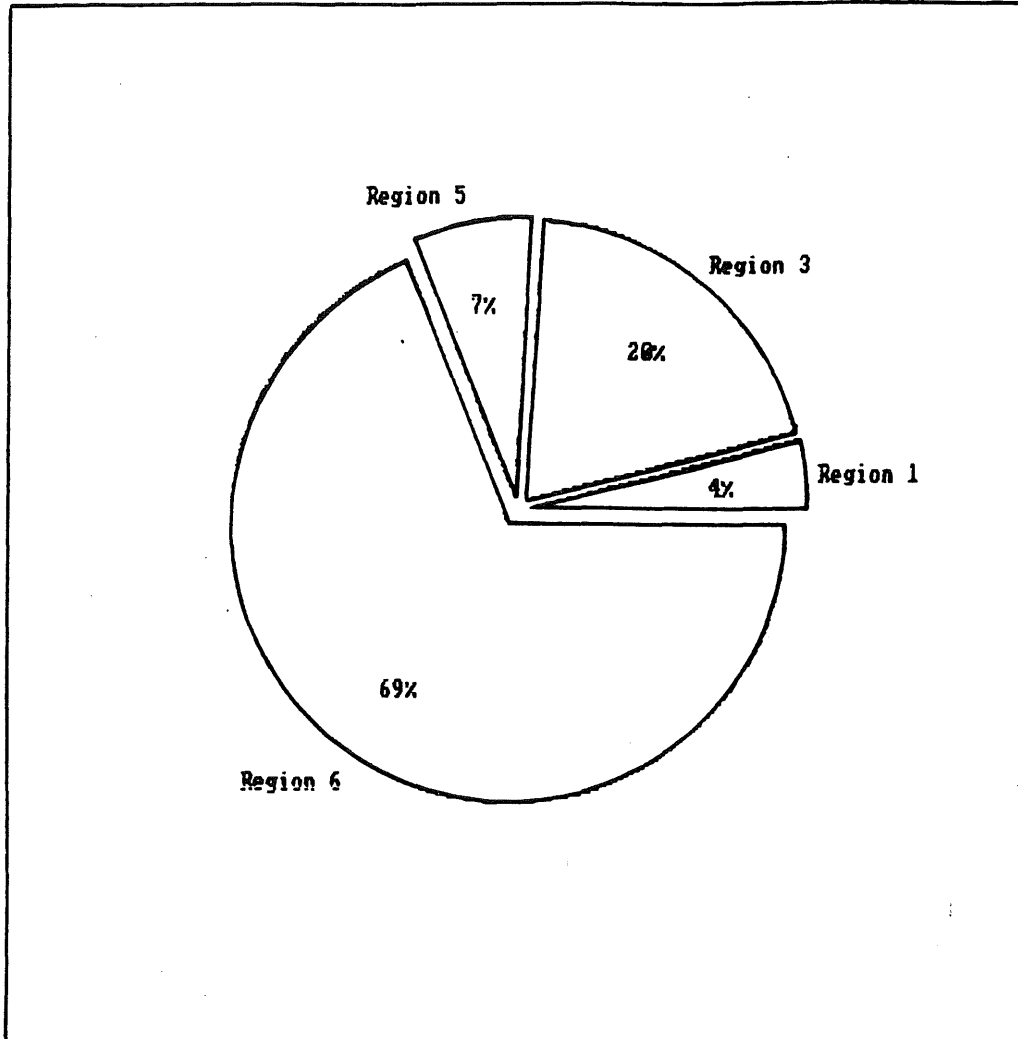
Figure 5



Source: U.S. Department of Commerce, Bureau of the Census, General Population Characteristics, 1985.

Figure 6

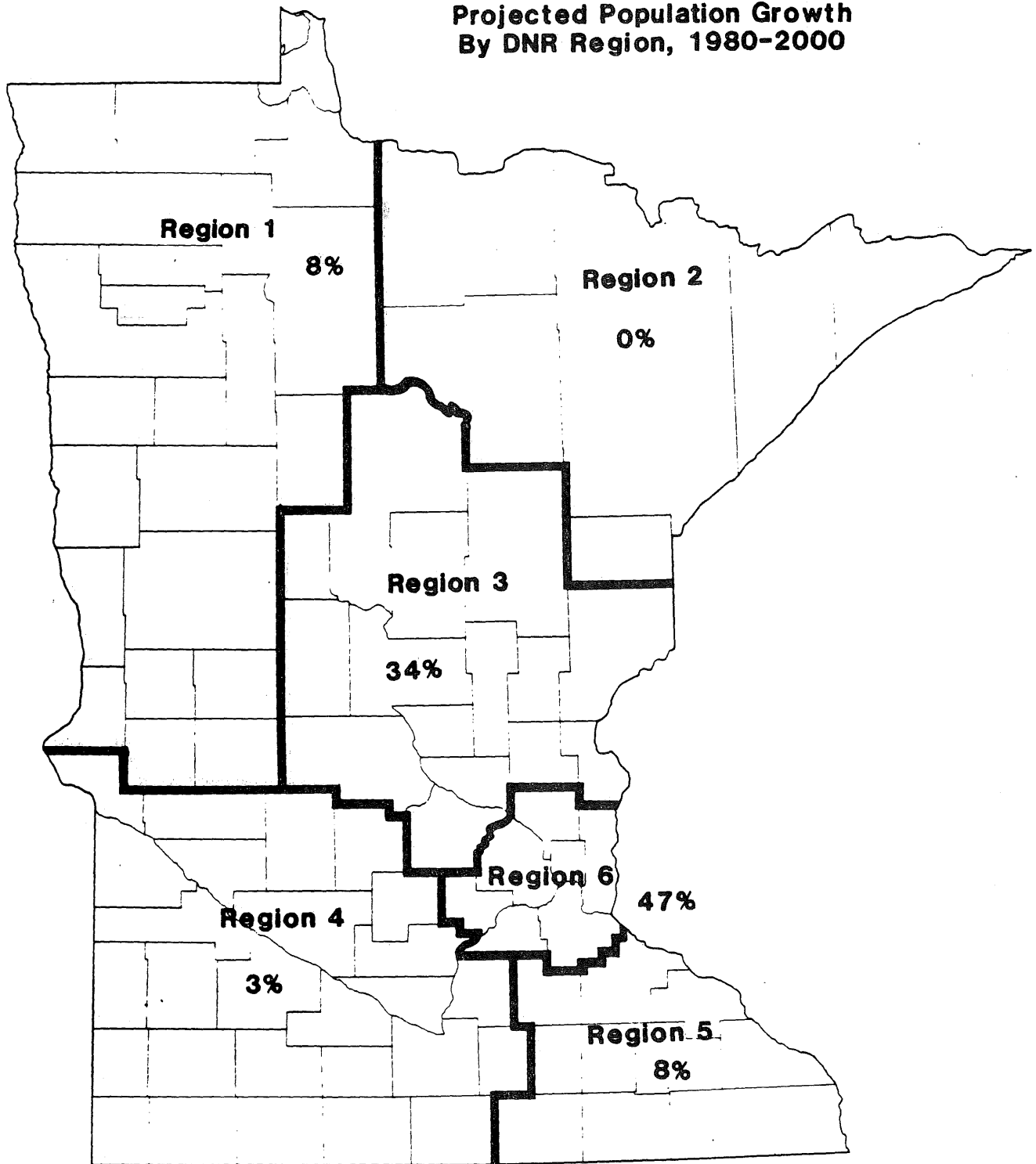
1960-1980 State Population Growth



Source: Minnesota State Planning Agency,
Office of the State Demographer.
Minnesota Population Projections,
1983.

Figure 7

**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.

The Metro Region is projected to have 48.5 percent of the state's population by 2000, roughly the same share it now has. Metro population is projected to increase by 245,000 persons by 2000, substantially less than the 460,000 gain in population over the 1960-1980 period.

Population in Region 3 is projected to increase by over 176,000 persons before the year 2000. This growth exceeds the region's 1960-1980 gain of 135,000 persons. By 2000, Region 3 is projected to account for 14 percent of the state's population, up from 11.4 percent in 1980. Region 3 will be the fastest growing region.

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 fifteen 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. The projected gain of only 15,000 people in the region between 1980-2000 lends to the falling regional population share.

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. Region 5 is projected to have a gain of 43,000 persons through the 1980s and 1990s. Its share of state population will remain close to 9.7 percent. Regional population share for Region 1 is projected to stay at 8.8 percent with a projected gain of 42,000 in population. Projected growth in both Region 1 and 5 is slightly below past rates.

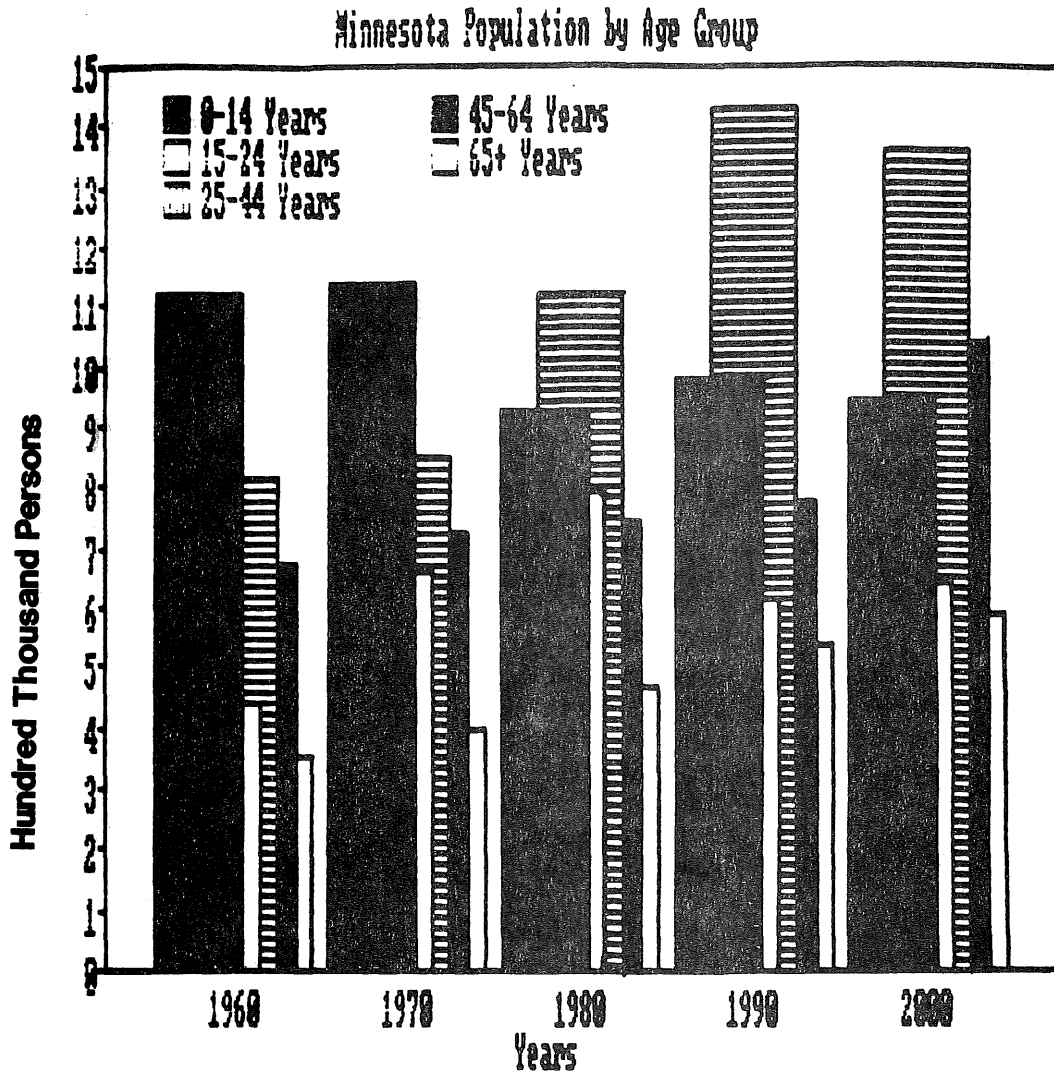
Population will continue to be concentrated in Region 6, the Metro Area. Region 3 will move ahead of Region 4, becoming the second most populated region. Population in Region 2 which has recently been falling will stabilize but will not experience much if any growth before 2000. Population growth in Region 4 has remained consistently low over the last 20 years and will continue to do so in the future. Population growth in both Regions 1 and 5 surged during the 1970s then slowed in the 1980s. Steady but moderate growth is projected for these two regions between now and 2000.

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 (Figure 8). 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

Figure 8



Source: Minnesota State Planning Agency,
Office of the State Demographer.
Minnesota Population and Household
Estimates, 1983.

earning and spending ages will occur during the 1990s. The 45-64 year old population group will dominate the state's age structure in the 1990s much as members of this group did during their adolescent years in the 1960s and 1970s.

The number of persons over 65 in the state will continue to increase during the 1980s and 1990s, an ongoing trend since 1960. Population of 65 years or older will grow from around 480,000 in 1980 to close to 600,000 by 2000, an increase of 25 percent. The number of people below the age of 15 will remain fairly constant over the next two decades. A small surge in this age group is occurring now as the baby boom generation moves through their family formation years. 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. Demand for timber products generated by Minnesota consumers should 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 had 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 if projected to continue to fall in both absolute terms and relative to the U.S. average.

Between 1960 and 1980, average household size in the state decreased by 23 percent from 3.35 to 2.73 persons per household. The U.S. average fell from 3.29 to 2.74, a 20 percent drop. Over the next two decades, household size in the state is projected to gradually fall to 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. Population increased by 19.3 percent between 1960 and 1980 while households increased by 46 percent, over twice the rate of population growth. The number of households in the state is projected to grow by 32 percent before 2000. Again, more than doubling the expected population growth.

INCOME

Average per capita income in Minnesota has exceeded the national average since the early 1970s. During the 1960s, 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 (Figure 9).

Per capita income growth in the state over the 1960s was 42.1 percent in real terms compared to 35.8 percent for the nation. During the 1970s, real per capita increased by 17.1 percent in the state versus 13.4 percent nationally. Between 1980 and 1984, state per capita income grew by 8.1 percent with most of the increase occurring in 1984 as the economy recovered from the 1981-82 recession.

Per capita income across regions of the state is uneven. Only the Metro region has exceeded the state per capita income average over the last fifteen years. Per capita income in the Metro region has consistently been 15 to 18 percent above the rest of the state. Metro per capital income in 1984 exceeded the national norm by 21 percent. Since 1970, per capita income in the Metro region has increased at the same rate as the states figure.

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. Per capita income in Region 2 has actually fallen in absolute terms since 1980 by 1.2 percent. Declining income in Region 2 can be traced to lower mining employment.

Per capita income in Region 4 increased from 84.3 percent of the state norm in 1970 to 93.6 percent in 1975 but has fallen back to 87.3 percent in 1984. Falling farm income resulting from depressed ag prices during the 1980s have negatively affected income in this region.

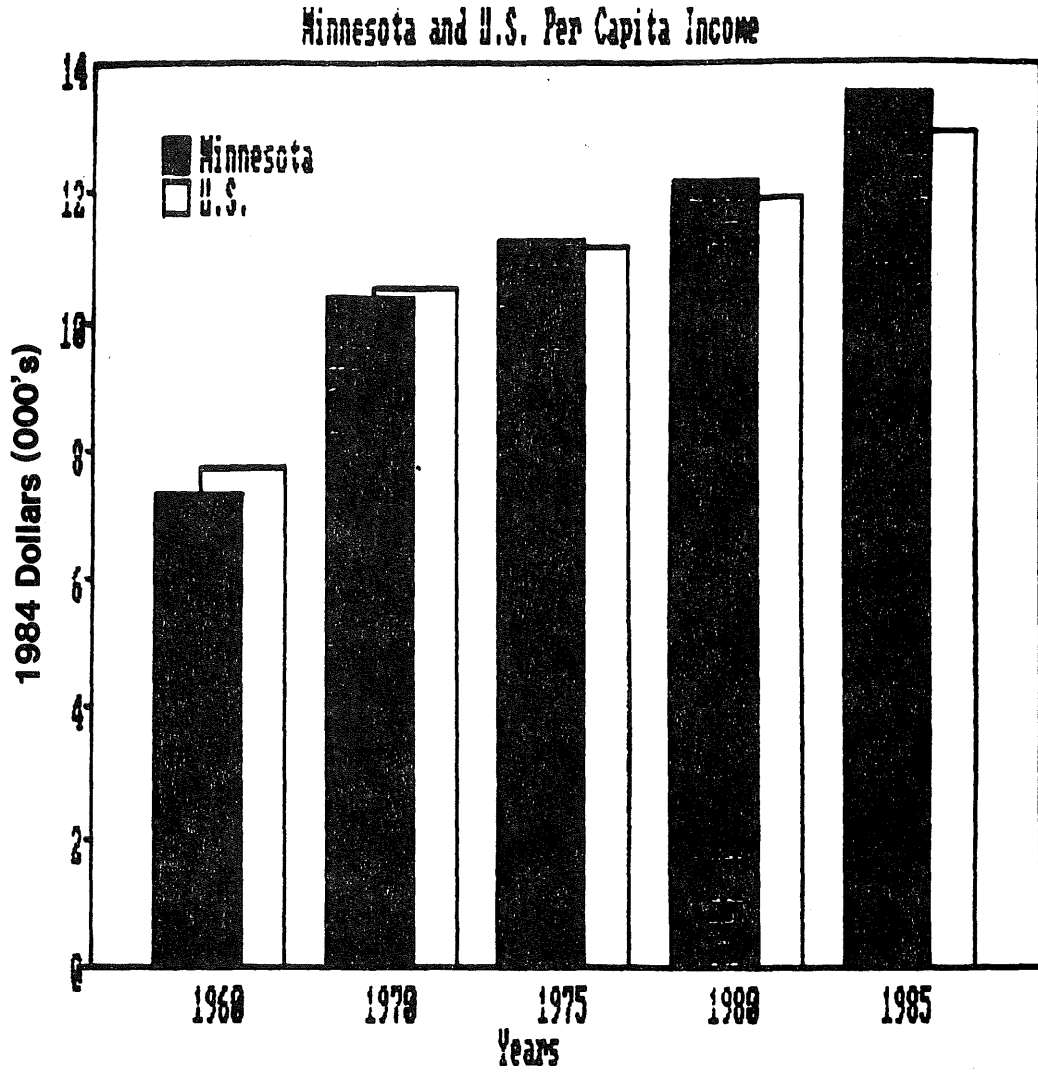
1984 per capita income in Region 3 was estimated to be 74.3 percent of the state average. This region has the state's lowest income level. Per capita income in this region declined slightly relative to the state level from 1970 to 1975, stayed the same through 1980 and has since increased slightly relative to the state average. 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 capital income in the region has increased by 9.2 percent since 1980. In Region 5, per capita income has been moving towards the state average since 1975. The region's 1984 income level was just below the national average. 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.

EMPLOYMENT

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. As employment in the state continues to expand and diversify, the state's industrial mix of employment has gradually shifted towards the national distribution.

Figure 9



Source: U.S. Department of Commerce, Bureau of Economic Analysis. State Personal Income Estimates for 1929-1982. 1984.

An important consequence 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 business swings. 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.

Throughout the 1960s and 1970s employment growth in the state consistently outpaced national employment growth. During the 1980s however, state employment growth has lagged slightly behind the national rate (Figure 10). Employment in the state declined more relative to U.S. employment loss during the 1981-82 recession. Since then employment growth in the state has been dampened by the depressed agricultural sector and the severe drop in mining employment. Employment and income loss in these two sectors have undoubtedly had adverse effects on employment and income growth in supporting sectors.

Minnesota's employment growth during the 1980s has continued to be generated in the manufacturing, retail, FIRE (finance, insurance, real estate) and service sectors. Between 1980-1984, these sectors have created over 88 percent of new employment. Retail, FIRE and service employment has allocated for 90 percent of 1980-1984 employment growth (Figure 11).

Manufacturing employment since 1970 has expanded primarily due to sharp employment gains in printing and publishing, non-electrical machinery and scientific instruments industries offsetting employment losses in food and kindred, apparel and transportation equipment industries. While manufacturing employment nationally has been flat, state manufacturing employment has grown annually by 1.3 percent since 1970.

Retail employment growth in the state has been generated primarily by expansion in the number of eating and drinking establishments. More than one-half of retail employment growth has been in the eating and drinking industry. Employment in this industry, like most retail employment, is predominantly part-time. Part-time employment amounts to over two-thirds of all retail employment. The economic advantages of growth in retail employment are offset by the high percentage of part-time employment and low wages typical in this sector.

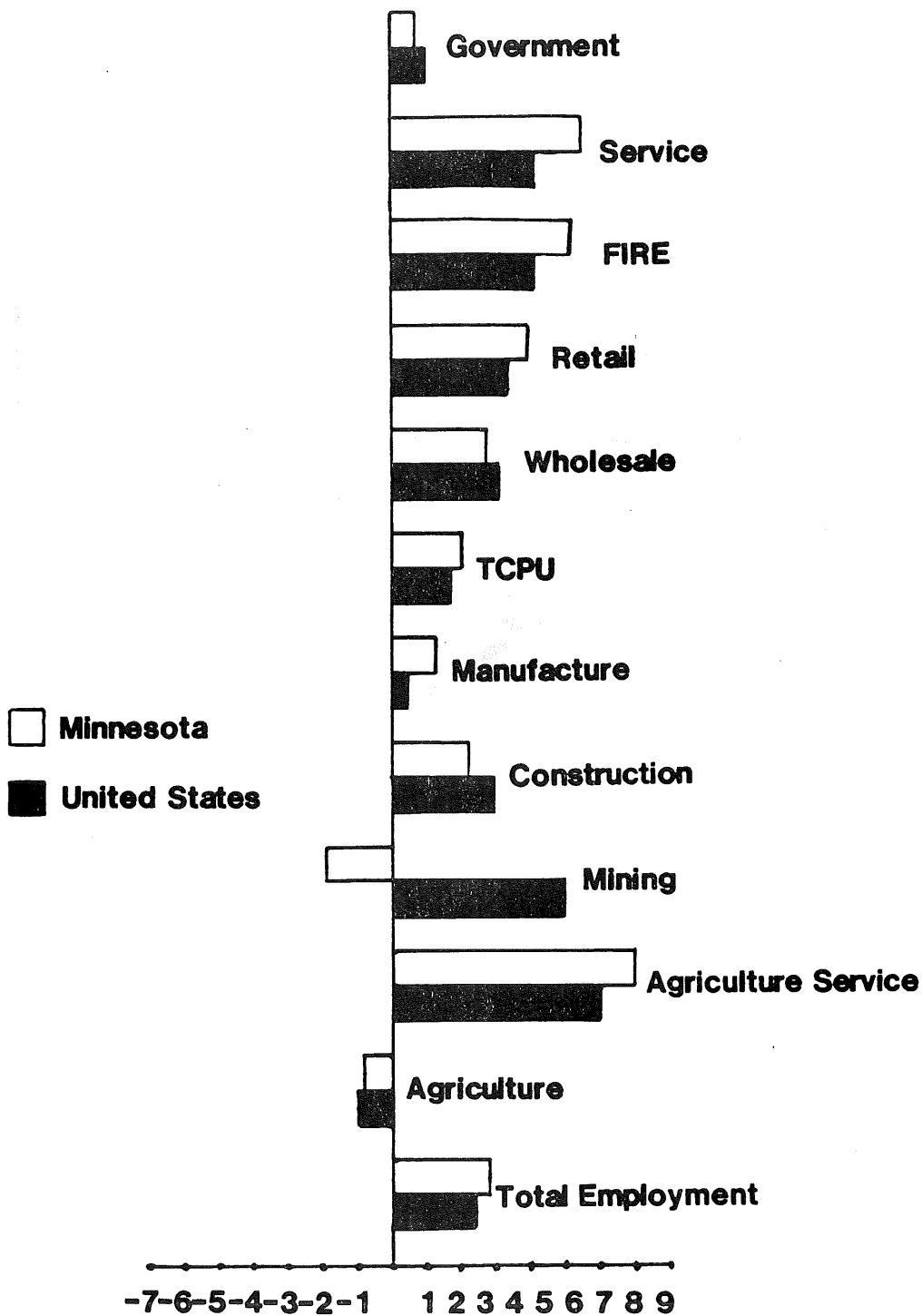
Employment growth in FIRE has followed the national trend, expanding rapidly during the 1970s and into the 1980s. FIRE employment now accounts for 7.0 percent of total state employment, up from 5.1 percent in 1970. Higher than average wages characterize FIRE jobs, making this sector the fastest growing high wage sector.

The service sector has been by far the most dynamic sector both within the state and nationwide. State employment in retail and wholesale trade, depending on employment data sources. Employment in the service sector will soon account for one out of every four jobs in the state. Business and health services are expanding the fastest among services industries. Although the service sector's contribution to the state's economic base is hard to quantify, an increasing share of the state's expanding activity is service related.

While state employment has increased above two million to an historical high, most of the growth has been concentrated in the Metro Region (Figure 12).

Figure 10

United States and Minnesota Employment Growth

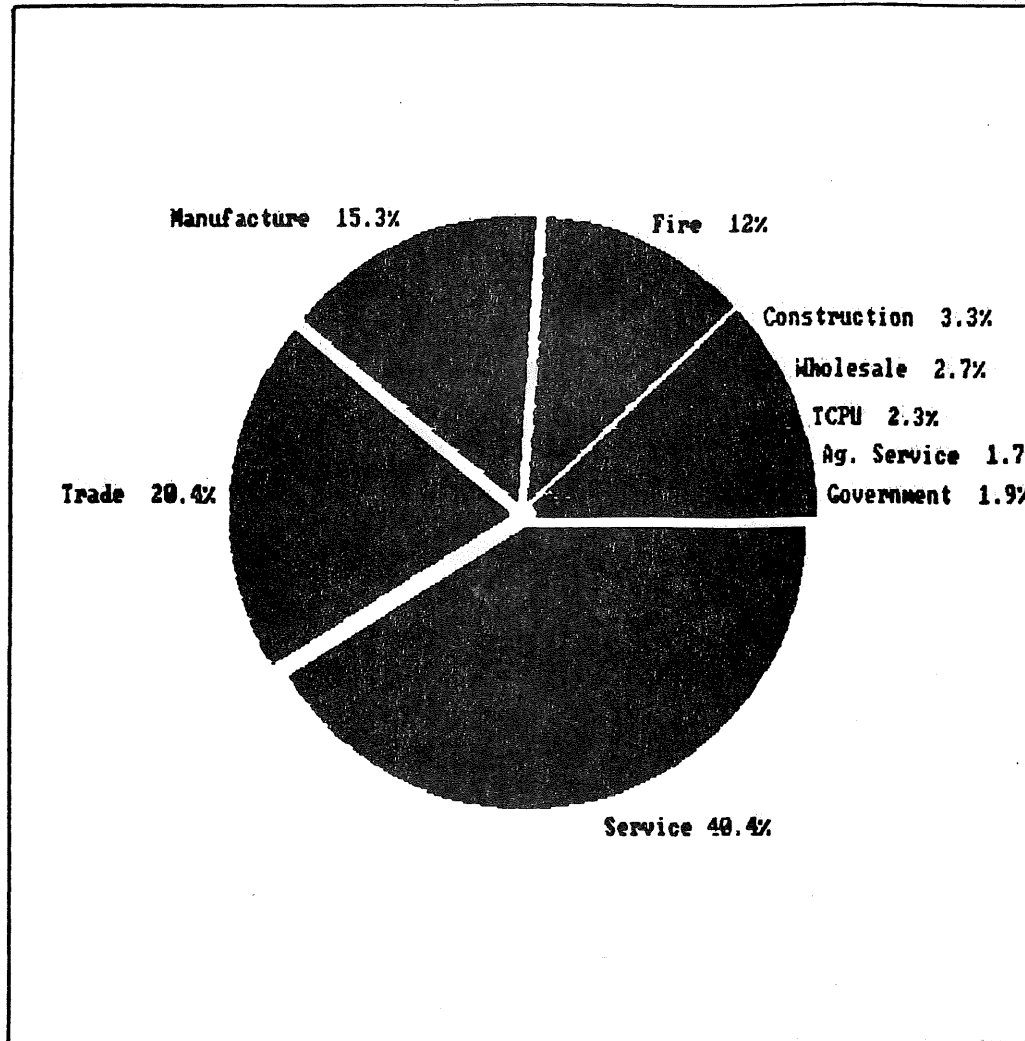


Annual Average Percentage Change 1970-1984

Source: U.S. Department of Commerce, Bureau of Economic Analysis. Computer Tape, Employment Series, April 1984.

Figure 11

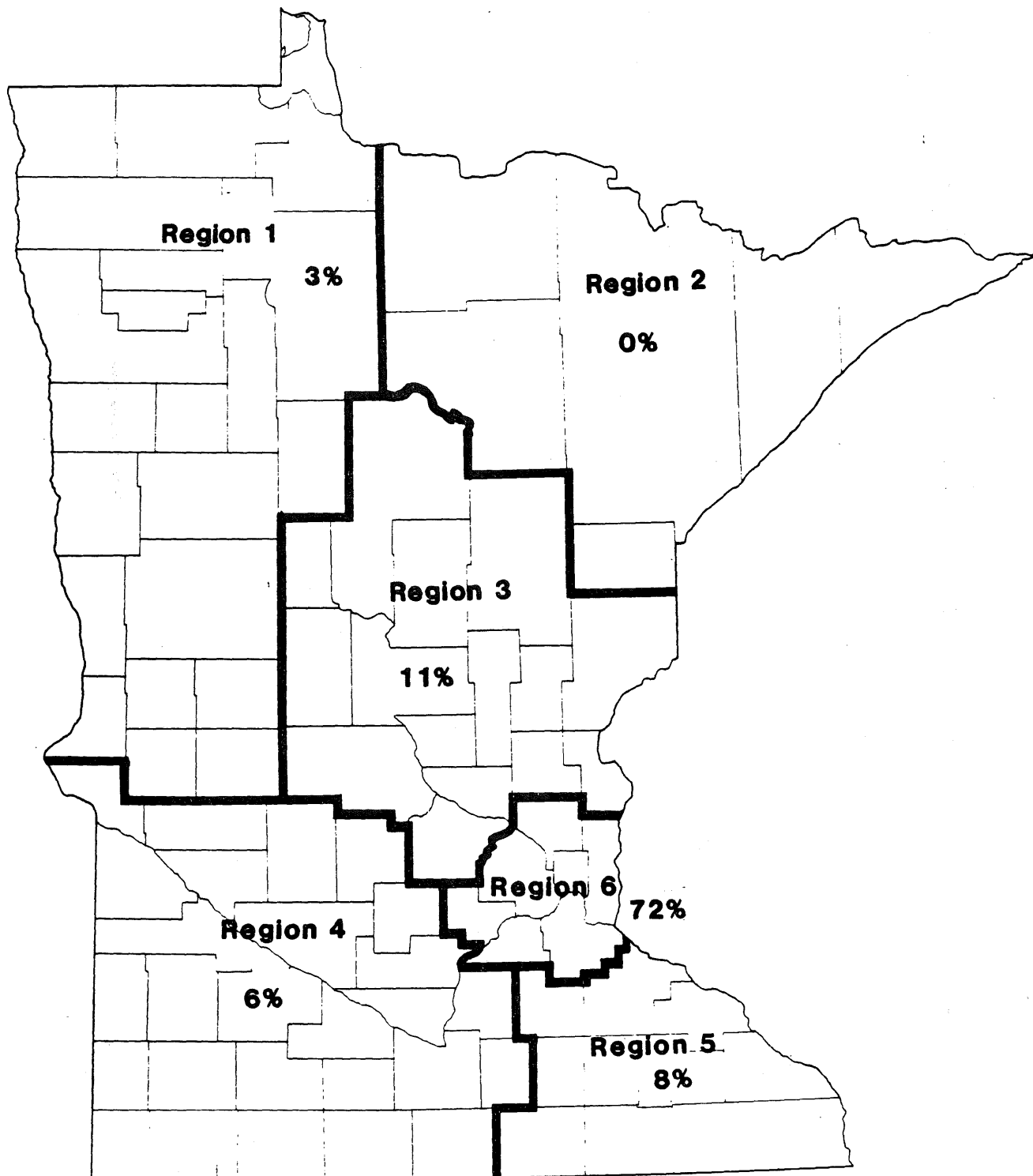
Share of MN Employment Growth 1975-1984



Source: U.S. Department of Commerce, Bureau of Economic Analysis. Computer Tape, Employment Series, April 1984.

Figure 12

**Employment Growth by DNR Region
1975-1984**



Source: Minnesota Department of Economic Security. Research and Statistical Service Office. 1985. St. Paul, MN. 40c

Employment in the Metro Area has generated seven out of every ten 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.

Outstate regions have been hurt by more than just poor conditions in agriculture and mining. 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 added up to low employment gains in most of the outstate regions.

Characterizing the economic picture in the state as one of a healthy, expanding metro economy surrounded by economically depressed regions over-simplifies actual regional conditions. Since each of the state's regions vary in industrial mix and economic base, regional economic prospects differ. Some of the regions are adjusting more rapidly than others from declining natural resource based economies to durable goods manufacturing and service producing based economies.

Region 1 is the state's most agriculture intensive area. Statewide agriculture employment is 6 percent of total employment and 14 percent when metro employment is excluded. In Region 1 agriculture employment is 20 percent of all employment. Though still the dominant industry, agriculture has significantly decreased in importance in the region just as it has in the state. Agriculture employment has fallen from one-half of all jobs in the 1950s, to one-third of employment in the 1970s, down to one-fifth of all jobs in 1984.

Although employment growth in other sectors have been near state averages, employment gain since 1975 has been held down by agriculture employment losses. The net result has been low employment growth. Next to Region 2, Region 1 has had the lowest employment gain in the state since 1975. Employment has actually dropped by a small amount since 1980. Losses in the agriculture, construction, TCPU (transportation, communications, public utilities) and wholesale sectors have just barely been offset by gains in manufacturing, FIRE and service sectors.

Since this region is heavily dependent on agriculture, the ongoing depressed state of agriculture will continue to dampen employment growth in the region. Some diversification is occurring in the region through expansion in manufacturing and service providing industries. But the loss of agriculture generated basic income in the region will not be quickly replaced by growth in other sectors. Employment growth in Region 1 will lag behind most other regions of the state into the 1990s.

Employment in Region 2 decreased by a dramatic 9 percent between 1980 and 1984 due to a sharp decline in mining employment. As domestic production of steel declined mining employment in the region fell by 50 percent between 1980 and 1984. The heavy dependence of the region on the mining sector has generated additional employment loss in related sectors. Construction, TCPU and manufacturing employment directly and indirectly linked to mining activity has also decreased.

The loss of basic income from mining activity has also effected retail and service employment growth. Growth in these sectors has been less than half the

state average. While over 8,000 jobs have been gained since 1975 in the retail, FIRE and service sectors almost 14,000 jobs have been lost in the mining, construction, TCPU, manufacturing and wholesale sectors.

Region 2 has always been dependent on the mining sector and as such has been extremely sensitive to business cycle swings. The recent cutback in mine employment appears to be more permanent than past layoffs. International competition in the steel industry has permanently altered the domestic steel industry. As of now, regional mine employment is unlikely to recover to past levels.

Unless the basic income lost from lower mining activity is replaced through manufacturing growth, employment opportunities in Region 2 will continue to be limited. Growth in tourism and timber related industries will add jobs in the region but will fall short of matching basic income loss due to mining's decline.

Employment growth in Region 3 has averaged 28 percent annually since 1975, a rate exceeded only by the Metro Region (2.9 percent) and far above the state average (2.2 percent). Although agriculture is still an important source of employment and income in the region, the region's economy has a diversified base. Employment growth has been spread over every sector but agriculture.

Employment in agriculture, as it has across the state, has been declining in the region. The region's agriculture employment concentration is still above the state average but roughly equal to the non-metro concentration. During the 1970s, manufacturing employment growth occurred mainly in electrical and non-electrical machinery production. Since 1980, however, employment in non-electrical machinery has dropped, lending to an overall loss in manufacturing jobs between 1980-1984.

Employment growth in trade and service industries continued to be strong between 1980 and 1984. Employment gains in these sectors matched or exceeded, in percentage terms, Metro area gains. Communication and transportation industry (TCPU) expansion in the region has far outpaced statewide industry growth.

Outside of the Metro region, the economic conditions of Region 3 are the most promising. The region's industrial mix is diverse and includes expanding industries. While the region's agriculture sector will continue to directly and indirectly adversely affect the region's economic performance, the diversity of the region will offset the drag created by the agricultural crisis. The region's close proximity to the Metro area is advantageous, providing markets and resources for its industries.

Region 4, like Region 1, is heavily dependent on agriculture as its economic base. The region though has a more developed manufacturing sector. Manufacturing employment is just slightly below the state's average concentration and above the non-metro average. Manufacturing employment is concentrated in food processing, printing and publishing, and production of electrical and non-electrical machinery.

Of all the regions, Region 4 has the lowest concentration of trade and service employment. Service employment growth has lagged behind the rest of the state except in the FIRE sector. Part of the region's lower than average trade and service activity can probably be explained by the size of its tourism industry. Compared to other regions, Region 4 has a smaller tourism industry.

Between 1980-1984 employment growth in Region 4 has slowed considerably compared to the 1970s. Depressed agriculture conditions have spread beyond the farm to wholesale and retail businesses. Manufacturing employment has declined slightly but remains high enough to buffer some of the income and employment loss occurring in agriculture and agricultural linked industries. Employment growth in the region will continue to be flat as the problems in agriculture continue.

Region 5 ranks third behind Region 3 and the Metro region in employment growth between 1975 and 1984. Agriculture employment is still important to the region but has fallen behind manufacturing as the leading basic industry. Manufacturing's share of regional employment is exceeded only by the Metro region's manufacturing sector. Manufacturing employment gains have been generated in both electrical and non-electrical machinery. The region's major manufacturing industry remains food and kindred. Employment in this industry declined during the 1970s but has since steadied.

Service employment between 1980-1984 has expanded rapidly as the health service industry centered in Rochester continues to grow. The region's service sector accounts for a larger share of employment than in any other region. The expanding service sector has contributed heavily to the region's economic expansion by enlarging the regional economic base beyond manufacturing and agriculture.

Future prospects for growth in Region 5 depend on manufacture and service sectors' ability to continue to expand and replace falling basic income in the agriculture sector. The region appears to be better situated than Regions 1 and 4 to weather the crisis in agriculture.

Metro region employment growth continued to exceed all other regions between 1980-1984, just as it did during the 1970s. The Metro region is the least agriculture intensive region in the state and as such appears to be the least affected by the depressed state of agriculture. The region's apparent immunity or lagged response to agriculture troubles is indicated by its increasing share of employment growth. Between 1975-80 the region generated 65 percent of new employment in the state. Between 1980-1984 the region's share of new employment jumped to over 80 percent.

The region's industrial diversity has led to employment gains in every sector, excepting agriculture, since 1975. Metro manufacturing employment has far outpaced national growth due to the above average number of fast growing manufacturing industries in the region. Service and trade employment continues to expand at a rate equal to the national. Service and trade employment account for nearly 60 percent of total metro employment, reflecting the region's role as a regional service and trade center. Employment growth in service industries and FIRE have been particularly strong since 1980. Between 1980-84 three out of every four new jobs in the region were either service or FIRE positions.

The diversified economic base and above average concentration of nationally expanding industries in the Metro region suggest favorable conditions for continued employment growth. Even though the financial and income problems of the state's agriculture sector may as they continue begin to have a more noticeable negative affect on the Metro economy, the employment picture will remain strong.

UNEMPLOYMENT

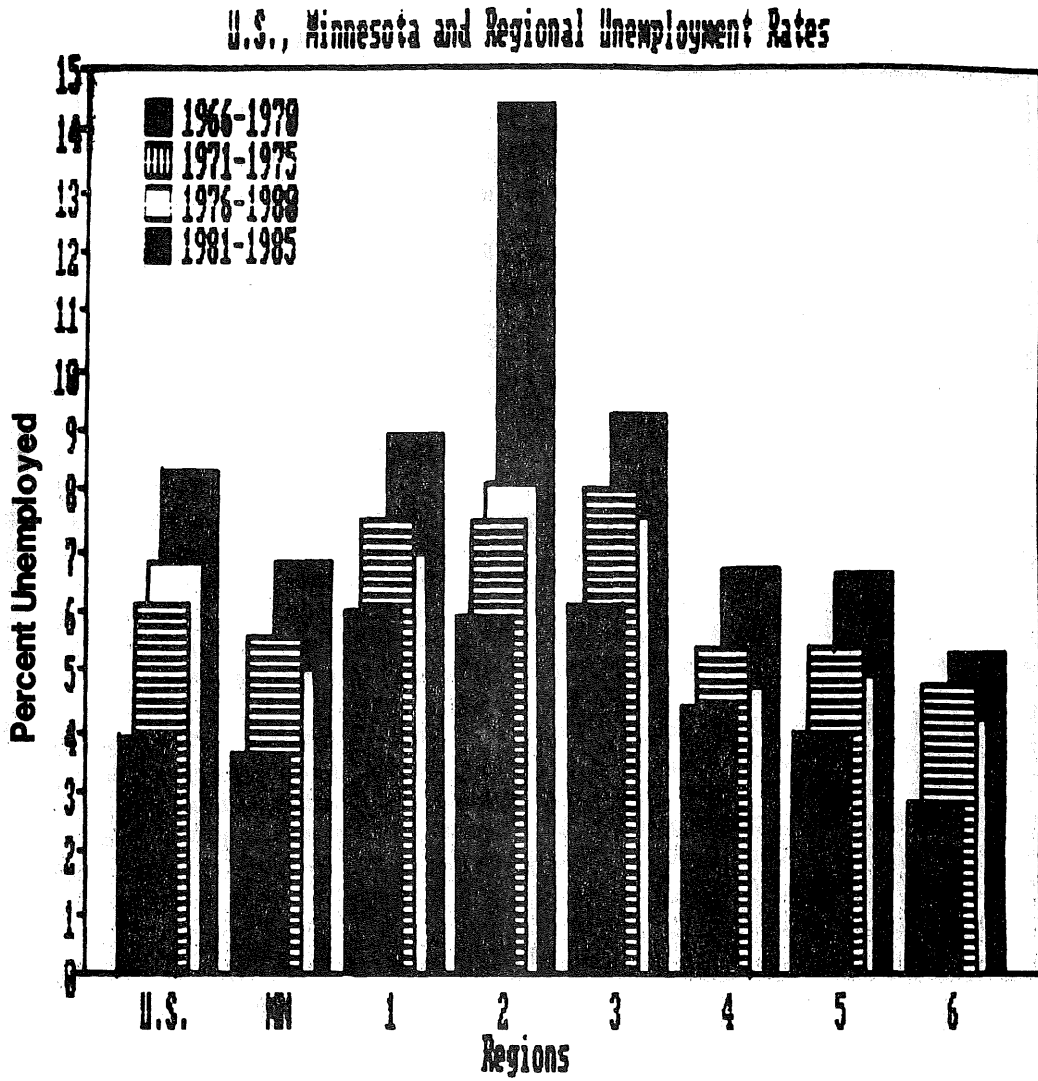
Minnesota's overall employment picture when evaluated in terms of unemployment levels continues to be better than the national situation. Unemployment in the state has consistently been below the U.S. average over the last twenty years (Figure 13). The ability of the state's economy to create jobs at a rate faster than the national economy has kept state unemployment rates below national rates since labor force growth has been similar for the state and nation.

As with income and employment measures, there is a significant discrepancy between Metro and outstate regions with regards to unemployment. From 1966-1970, unemployment outside of the Metro area was 80 percent higher than in the Metro area. Non-Metro unemployment improved relative to the Metro region between 1971-1975 but was still 30 percent higher. Since 1980 the unemployment rate in outstate regions has worsened relative to the Metro region, higher by 60 percent on average over the last five years.

Since unemployment rates are a function of changes in employment and labor force levels, employment conditions can be masked as discouraged workers drop out of the labor force and are missed. Raising unemployment rates, though, are still useful for identifying deteriorating economic conditions. Non-metro Minnesota's unemployment rate has moved above the national rate during the 1980s reflecting the depressed agriculture and mining conditions in the state.

Relative to the national average, regional unemployment rates improved statewide during late 1960s and through the 1970s. 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 1980s. Unemployment in Regions 1 and 3 also continues to exceed the national rate.

Figure 13



Source: Minnesota Department of Economic Security, Research and Statistical Office. Minnesota Labor Force Estimates 1966-1978.

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 14. 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.

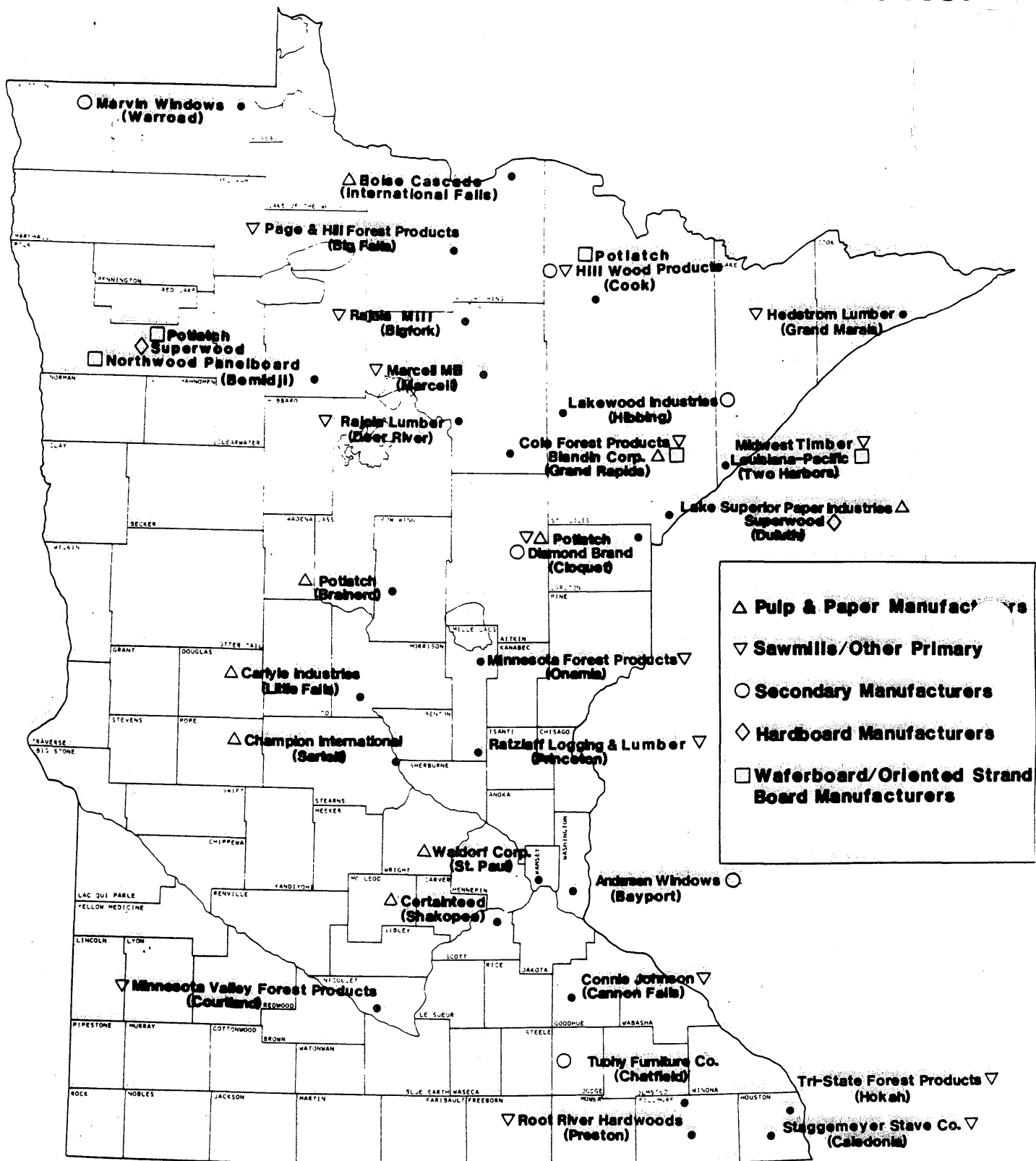
The industry's importance as a source of employment and income increases at the regional level. Almost one-half of estimated 1984 timber-based employment in the state was located in the seven county metropolitan area. Logging employment is concentrated in Region 2, the northeast, where the majority of 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

Figure 14

Minnesota's Largest Forest Products Producers 1987



Source: DNR, Division of Forestry. 1987.

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.

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 4 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 Bildrite, 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.

* For definition of technical terms see Glossary.

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.

TABLE 4
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
TOTAL	4,397,000 cords	5,810,000 cords	

Source: Minnesota DNR, Division of Forestry, 1987.



Minnesota Forest Resources Plan

State Forest Land Management Program

The mission of the State Forest Land Management Program is 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 a manner that best meets the needs of Minnesota citizens.

LAND ADMINISTRATION

ACTIVITY DESCRIPTION

The Department of Natural Resources is a major 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. Much of this land was originally acquired as school, swamp, or other trust fund land from the federal government. Other land was acquired through reclamation of submarginal agricultural lands during the 1930's depression, transfer of county tax-forfeited lands, or fee title acquisition.

Minnesota has 13.7 million acres of commercial forest land. These lands are about equally divided between public (53%) and private (47%) landowners.

The Division's land administration activities include acquisition, exchange, sale and lease of lands. Field staff are involved in identifying proposed acquisitions, sales, leases or exchanges, inspecting leases, and maintaining contacts with other agencies and individuals. The DNR Land Bureau assumes responsibilities for negotiations, appraisals, record keeping and other services.

The Division's lands include a mix of large contiguous blocks and small isolated parcels. This checkerboard pattern of public land ownership is inefficient to manage for some purposes such as timber development. Dispersed ownership increases the costs of determining property corners, maintaining property lines, providing road access, preventing trespass and for a wide range of management activities that require on-site administration. 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. 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. Consolidation provides opportunities for the Division to reduce the cost of managing its lands by reducing the mileage of DNR road rights-of-way maintained, reducing the length of section lines and numbers of section corners, and reducing the travel time to manage the public lands. Cost savings can also be realized by decreasing the incidence of public trespass and reducing travel time to administer special use permits on scattered parcels.

Acquisition of land for land acquisition, sale, transfer, lease and exchange for forestry purposes is selective and aimed primarily at consolidation of forest management units. However, land acquisition will continue on a case-by-case basis for specific purposes such as improving management efficiency, protecting key forest resources and maintaining an adequate public forest resource base to provide for multiple-use forest values.

Sale of state forest land is undertaken in some cases where a determination has been made that the land is not needed for forest management purposes and serves no other state purpose. For example, agricultural land in the Richard J. Dorer Memorial Hardwood State Forest which was acquired along with adjacent forest lands recently was returned to private ownership as required by M.S. 89.022. Land sales are determined on a case-by-case basis.

Where Forestry-administered lands outside of designated management units have potential for management for specific resource purposes, internal transfers of administrative control may take place. Recently, 104,000 acres of Forestry-administered land in the northwestern part of the state were transferred to the Division of Fish and Wildlife to be managed for wildlife purposes.

The Division has acquired some lands through leases, primarily for special purposes such as location of field offices, fire towers, air tanker bases, or other special facilities. The Division also leases state forest land for agricultural, commercial, or other suitable purposes. The Division's major leasing program involves lakeshore leases. Lakeshore lots on state forest lands are leased to private individuals for seasonal recreational use. The Division is responsible for annual inspections of these lakeshore lots. A study is now underway to set up rules for lakeshore leasing and to determine which lakeshore lots should be sold. Some leases have also been granted for special uses by sportsmen's clubs or other organizations.

Land exchange is another important management tool available to the Division, but has been used only on a limited basis. Land exchange is most often used to consolidate state-owned lands to increase management flexibility and efficiency, improve access, or to reduce management conflicts. The Division may exchange certain state-owned lands for land of other public agencies or privately-owned land. Lands acquired in an exchange of trust fund lands are subject to the trust status. Lands with trust status must be managed to maximize the long-term economic return while using sound natural resource management principles. Net income is deposited into the Permanent School Fund. When an exchange is proposed which precludes the purposes for which these lands are dedicated, compensation and payment to the trust is required. As a result of the Forest Management Act of 1982, a portion of the net revenues from trust fund lands are deposited into the Forest Management Fund to cover costs of managing school trust lands.

Cooperative management agreements (CMAs) are often useful in situations where land sale or exchange is not feasible. CMAs are a form of joint powers agreement that allows one unit of government to manage land owned by another. Like land exchange, CMAs are a tool that the state can use to bring valued resource land under management control. Interagency agreements are now being used by the U.S. Forest Service in place of CMAs with similar results. A variation is also being used with private parties as a mutually beneficial land management tool. The U.S. Forest Service has expressed interest in entering into such agreements in the management of timber and mineral resources.

The Division also cooperates with the Minnesota Historical Society to develop, maintain, and administer historic sites, historic districts, monuments and archaeological sites. An agreement between the Department and the Minnesota Historical Society establishes procedures for dealing with historic and archaeological sites. This agreement includes procedures to follow in the identification of historic/archaeological sites; preparation of master plans to manage the historic/archaeological site; sale or lease of lands within historic/archaeological areas; installation of interpretive exhibits; and use of facilities of historic/archaeological significance.

GOAL

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

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.

Although state land leases and land exchange can be useful tools in achieving an optimal pattern of land use and ownership, both can be administratively difficult, costly and inefficient. A number of inter-disciplinary (internal) issues and a lack of Department direction currently hinder the land exchange process. Similarly, the Division is not a leader in the area of land leasing, but rather implements the administrative procedures set forth by the DNR Land Bureau. The roles of all major actors in the land exchange and lease processes must continue to be examined and recommendations made to expedite and simplify land transactions. In some cases, the sale of surplus lands and the acquisition of other lands, on the other hand, offer the promise of more rapid and cost-effective land transactions, which could speed the attainment of a more consolidated statewide land-ownership pattern.

Many Minnesotans remain unaware of the costs and benefits associated with public land ownership. These costs and benefits must be carefully examined and communicated to the field organization, and to the resource-using public. The public's interest in maintaining these lands must also be balanced with the costs involved in their administration (i.e., payments-in-lieu of taxes, legal fees, administrative expenses). Public benefits must be broadly defined to include non-commodity resource values and uses as well as those that produce a direct, measurable economic return.

The amount of time and budget dedicated to land administration has varied through the years, primarily due to fluctuations in the magnitude of the

acquisition program. During the 1986-87 biennium the Division annually spent approximately 7.0 person years of effort and \$475,000 on land administration. No increase in staff is proposed during the 1988-89 biennium specifically for land administration purposes. The projected increase in the 1990-91 budget is due primarily to an expected increase in capital bonding for land acquisition. The level of future acquisition may also increase if money from the revolving land fund is appropriated.

Emphasis over the next five years will be to:

- * 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 consolidated state land-ownership pattern consistent with multiple-use management goals and public benefits.
- * Streamline land transactions wherever possible.
- * Take a more active role in leasing at the area level.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

Land Classification

- * Insure that any revisions of DNR's land classification system meets the management objectives of the Division and that classification decisions are made at the lowest possible level with regional and central office review.
- * Resolve issues surrounding the management of state administered lands outside of designated management units (e.g. State Parks, State Forest, Wildlife Management Areas).

Land Acquisition

- * Continue to purchase lands in the Richard J. Dorer Memorial Hardwood Forest to meet goals outlined in the 1979 Plan for Acquisition and as identified in the Lewiston Area Plan.
- * Develop criteria for selecting and ranking acquisitions in other state forests as identified in area plans.
- * Request LCMR approval to purchase any lands identified in approved area plans, replacing parcel-by-parcel approval.
- * Streamline the process of acquiring forest road easements by seeking authority to purchase parcels under \$2,000 without a formal appraisal or review.
- * Build public support for continued acquisition of forestry lands.
- * Cooperate with the DNR Land Bureau in pursuing legislation needed to streamline the land appraisal and review process and to speed up land acquisition.
- * Actively pursue acquisition of gifts of land within state forests.
- * Acquire a tract of land to serve as a seed orchard complex. (See Nursery and Tree Improvement Program.)

Leases

- * Generate increased revenues for the Forest Management Fund through innovative lease management, taking into consideration natural resource values and public benefits.

- * Delegate authority to issue leases to the field and offer training in lease administration.
- * Work with the DNR Commissioner's Office, Attorney General's Office and the DNR Land Bureau to establish procedures for consistent enforcement of lease provisions and trespass.
- * Insure that lakeshore leasing rules are adopted and uniformly enforced.
- * Continue to evaluate lakeshore lease lots for possible sale, as required by the Legislature.
- * Evaluate all existing leases to determine if they should be continued or phased out through the area planning process.

Land Exchange

- * Identify potential land exchanges with other public agencies and private landowners through the area planning process. Develop a system that requires minimal review once a plan is approved.
- * Work with the DNR Commissioner's Office to develop a long-range departmental goal for land adjustment.
- * 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.
- * Work with the DNR Division of Minerals to explore options that allow surface access for exchanged lands that overlie state-owned minerals, while allowing consolidation to maximize surface management efficiency.
- * Train Division personnel in land exchange procedures.
- * Seek needed legislation to expedite land exchanges with the counties. Clarify responsibility for abstract costs, title searches, title clearing and other associated work.
- * Consider sale of state lands as an alternative to small exchanges with private landowners when isolated parcels are involved.
- * Seek legislation to remove the requirement that agricultural lands in the Richard J. Dorer Memorial Hardwood Forest must be exchanged or sold, in view of current state (RIM) and federal (CRP) policies which seek to remove agricultural lands from production.

Transfer of Administrative Control

- * Transfer trust fund land status (while retaining current administrative status), from lands in state parks, wildlife management areas, SNA's and non-revenue producing lands to state forest lands to consolidate blocks of trust fund lands within state forests.
- * Transfer administrative control of lands to other divisions when appropriate to meet land management objectives.

Land Sale

- * Evaluate scattered parcels for possible sale, with proceeds from sales going into the Land Sale Revolving Fund.
- * Seek a decision from the DNR Commissioner's Office regarding a policy of allowing proceeds from the Land Sale Revolving Fund to be used by the division selling the land to acquire more suitable land.
- * Consider the sale of state lands, upon request from a private landowner, if lease or exchange is not feasible.

State Forest Boundaries

- * Work to resolve the state forest boundary issues identified in area plans.

Other

- * In conjunction with the Division of Fish and Wildlife, explore alternatives and options concerning the Land Utilization Project lands in Northwestern Minnesota, and develop a plan of action so that issues can be resolved before the lease expires in 1990.

REGIONAL EMPHASIS

Region I

A land exchange plan, identifying any surplus lands to be disposed of by sale and priorities for land acquisition will be completed for each of the administrative areas in Region I during the area planning process.

The lease on Land Utilization Project lands expires in 1990. Alternatives and options will be developed and a plan of action developed and implemented on these lands.

Region II

- * Accelerate land exchanges with the Superior and Chippewa National Forests and the counties.
- * Provide field assistance and information to the DNR Land Bureau regarding the disposition of summer homesite leases. Continue to administer unsold homesite leases and other leases.
- * Pursue any opportunities to increase lease revenue from state land within the limits of sound natural resource management.

Region III

Identify the desired ownership pattern by area, and accelerate the necessary acquisition, sale and exchange efforts to meet that objective. A pilot project in the Backus Area between the Department, Chippewa National Forest and Cass County will test the system.

Region V

- * Use the area planning process to identify lands which should be retained in agricultural production.
- * Simplify the review of leases, particularly renewals. Decentralize administrative responsibility to the area or at least the region level.
- * Continue acquisition of lands in Richard J. Dorer Memorial Hardwood Forest as outlined in the 1979 acquisition plan and as possible with available funds. Work with forest user groups and to build more support for continued acquisition.

LAND ADMINISTRATION FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	7	7	7	7	7
<u>Budget Needs (B)</u>						
1. General Fund	\$(000's)	210	150	150	150	150
2. Resource 2000	\$(000's)	500	1,000	1,000	1,000	1,000
3. Forest Road Easements		<u>25</u>	<u>25</u>	<u>25</u>	<u>25</u>	<u>25</u>
TOTAL BUDGET NEEDED		735	1,175	1,175	1,175	1,175
<u>Targets</u>						
	M = 1,000					
	MM = 1,000,000					
<u>Leases and Permits</u>						
1. Administer leases.	leases	3,100	3,100	3,100	3,100	3,100
<u>Acquisition, Sale, Exchange</u>						
2. Propose or review land sales.	M acres	20	20	20	20	20
3. Identify land adjustments in area plans.	plans	4	4	4	4	4
4. Acquire lands.	acres	1,250	4,100	4,100	5,200	5,200
5. Review and propose land exchanges and land transfers.	proposals	25	30	30	35	35
6. Road easements.	easements	10	20	20	20	20
<u>Classification</u>						
6. Transfer trust status.	acres	100	100	100	100	100
7. Propose or review land classifications involving DNR-administered lands.	acres					

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

STATE FOREST RECREATION

ACTIVITY DESCRIPTION

Recreation facilities on the state's forest lands evolved over a period of many years. The building of logging roads and fire breaks in the late 1800's and early 1900's providing access to forested and lake areas greatly expanded the opportunities for recreational pursuits. Many of the currently popular recreation areas were developed in the early part of the century. Much of the recreation development on public land to date was done by Civilian Conservation Corps (CCC) during the depression of the 1930's. Campsites and other facilities were designed to concentrate users at established sites as a fire prevention measure. Many of these facilities are still in use, some with little modification. Similar programs providing for forest recreation development later took place, most notably in 1958 and 1963.

In 1963, prompted by the tremendous rise in recreational use of state forests, the Legislature authorized the Commissioner of Conservation to establish campgrounds and charge fees at these facilities. The fees were to be used solely for maintaining, operating and developing state forest campgrounds. At that time, the Division of Forestry administered 23 primitive campgrounds, most of which were established by the CCC in the late 1930's. The 1963 Legislature also passed a bill known as the Minnesota Outdoor Recreation Resources Act which imposed a one-cent-per-pack tax on cigarettes to raise money for a wide range of conservation projects. This fund paid for many of the recreation facilities that were developed or redeveloped since 1963. The 1963 laws were the first to officially recognize and fund, by law, recreation facilities in state forests. Before that time facilities were maintained and developed with the Division's management budget or special funds and work crews.

The 1975 Legislature passed the Outdoor Recreation Act which established the state's outdoor recreation system. The act included criteria for developing and managing all state recreation facilities including those in state forests.

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 program has rehabilitated 17 campgrounds, 2 day-use areas and 56 miles of trail. (Due to recent budget cuts the Division is minimally maintaining 27 of the campgrounds and day-use areas.) These facilities are managed in accordance with DNR Policy #9, Recreational Use of Minnesota State Forests (MN DNR, 1980).

Today's forest recreation management activities include planning, development and maintenance of facilities, enforcement of rules and regulations, and distribution of maps and other interpretive materials. In addition, the Division produces a comprehensive brochure on state forest recreation areas and maps for almost all of its recreational trails. The Division also works with other recreation providers within and outside the DNR to keep pace with constantly changing recreation demand.

State forest lands have considerable impact on the tourism industry and the supply of outdoor recreation opportunities. These lands and their associated

waters are used for many recreational pursuits including camping, picnicking, hiking, hunting, trapping, fishing, canoeing, boating, swimming, ski touring, snowshoeing, snowmobiling, trail biking and horseback riding.

The 1985 State Comprehensive Outdoor Recreation Plan predicts that demand for most recreational activities will increase significantly on state forest lands. The Division, along with others in the DNR, are searching for ways to satisfy this projected demand. The Division will continue to evaluate its recreation efforts to determine when changes in emphasis are needed to better satisfy projected demand.

GOAL

Fulfill the outdoor recreation potential of Division-administered lands by providing developed recreational areas and opportunities for dispersed recreational activities compatible with other forest uses and consistent with user demands.

STATEWIDE DIRECTION

The major emphasis of the State Forest Recreation Program 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 facilities will continue to be a part of the program, but emphasis will shift to dispersed forms of recreation that require little operations or maintenance funding. The program will also shift from a planning phase to an operational phase with more time being spent on implementing plans and promoting use of the state forest for recreation. Promotion of recreational use of state forest lands will be carefully planned and coordinated to include all non-conflicting users for a specified area.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

The Division will work with other units of the Department to analyze the recreation market for state forests, and to develop a management strategy that addresses the needs of the identified market. Efforts then will be targeted to areas with highest need and return to the user.

Information and Education

- * Develop comprehensive maps showing recreation facilities and public lands.
- * Develop high-quality user information that identifies and promotes dispersed recreational opportunities.
- * Develop an interpretive program for state forests including interpretive trails, driving tours and informational brochures.
- * Develop a system of signing state forest lands.
- * Develop and distribute a comprehensive map of state forest recreation areas.
- * Develop a recreation information handbook for state forests.
- * Work to increase the Division's visibility and to build support groups for state forest management programs.

Management

- * Reevaluate the directions and policies of the State Forest Recreation Program regarding the provision of facilities and compatibility with other recreation providers.
- * Maintain cooperative relations with other public and private recreation providers.
- * Initiate a working group to develop comprehensive rules and regulations for state forest lands, sub-areas, ORV's and other special uses.
- * Work with conservation officers and county sheriffs to ensure that state forest rules and regulations are enforced.
- * Develop a risk management program for recreational activities including maintenance levels and standards for developed recreation areas, and a system of evaluation to reduce risk.
- * Work with other DNR divisions and the Legislature to develop legislation which limits the state's liability while allowing for protection of recreational users.
- * Evaluate the level of use at all recreation sites and adjust the capacity to fit the need.
- * Investigate alternative ways to fund facility maintenance to acceptable standards.
- * Work to secure adequate funds for recreation management, including rehabilitation and new development.
- * Turn management of some campgrounds over to a concessionaire on a trial basis as is being done in the Superior National Forest.
- * Assign Division personnel to work weekends at heavily used state forest campgrounds to insure adequate supervision and public contact.
- * Continue to identify appropriate ORV/ATV use areas in area plans and cooperate with the DNR Trails and Waterways Unit to develop statewide ORV/ATV rules and regulations.
- * Work with wildlife and fisheries managers to enhance wildlife and fisheries related recreation opportunities on state forest lands.
- * Evaluate opportunities for motorized and non-motorized trail uses during the area planning process to resolve existing and/or potential user conflicts.

Forest User Analysis

- * Conduct a state forest recreation user needs analysis.
- * Work with the Office of Tourism and the DNR Office of Planning to identify and analyze existing and potential recreational users of the state's forest lands.
- * Identify opportunities to expand the forest recreation market to benefit both public and private sector providers.
- * Evaluate the effectiveness of ongoing recreational promotional and development efforts.
- * Conduct recreation user surveys at state forest campgrounds on an informal basis by using a questionnaire and drop box.

Promotion

- * Intensify promotion of state forest recreation through public distribution of maps, brochures and interpretive and educational resource information.
- * Divert more of the program supervisor's effort and attention to promoting recreational use of the forest.

- * Increase the visibility of the Division's field staff to recreational forest users.
- * Build support among non-timber forest users by developing and distributing informational and educational materials.

REGIONAL EMPHASIS

Region I

With roughly 2 million acres of state forest land in Region I more effort will be placed on promoting recreational use of these public lands. The region will employ a public relations representative who will help with media tasks. The Region will also investigate the possibility of working with local tourist information organizations to promote recreational use and enjoyment of the region's natural resources.

Region II

The major areas of emphasis for the recreation program in Region II are to complete rehabilitation projects and adequately maintain existing recreational facilities; to better anticipate demand for new facilities and provide a limited number of new facilities; and, market recreational opportunities on state forest lands.

Region III

Emphasis will be on rehabilitating and maintaining existing facilities. Division staff will work with the private sector to minimize conflicts and enhance local tourism. Promotional efforts will focus on the multiple uses of state forests.

Region V

Complete recreational developments outlined in the Richard J. Dorer Memorial Hardwood Forest sub-area plans. Highest priority will be rehabilitating existing facilities. New construction will have lower priority and will be undertaken only where the need is well documented and the use is compatible with sound natural resource management. Development along the Root River Trail will be guided by use patterns. More promotion of existing facilities will be attempted. Rules and regulations to control the use of 3-wheel ATV's on public trails and roads will be sought.

STATE FOREST RECREATION FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	21.0	22.0	22.0	22.0	22.0
<u>Budget Needs (B)</u>						
1. General Fund	\$(000's)	630	880	880	880	880
2. Ded. Campground Receipts	\$(000's)	95	100	100	100	100
3. LCMR	\$(000's)	200	0	0	0	0
4. Resource 2000	\$(000's)	120	300	300	300	300
5. Water Access	\$(000's)	30	50	50	50	50
6. Trails	\$(000's)	80	100	100	100	100
7. Canoe and Boating	\$(000's)	16	25	25	25	25
TOTAL BUDGET NEEDED		1,171	1,455	1,455	1,455	1,455
<u>Targets</u>						
Policy, Regulation, Planning						
1. Work with Trails & Waterways and Office of Planning on an off-road vehicle policy for state lands.	policies	1				
2. Initiate a working group to develop rules and regulations for state forests.	rules		1			
3. Develop recreation sub-area plans. (C)	plans		4	4	4	4
Information						
4. Develop comprehensive maps showing rec. facilities and public lands.	maps	2	2	2	2	2
Development and Rehabilitation						
5. Rehabilitate campgrounds per LCMR Work Program.	facilities	4	4	4	4	4
Operations and Maintenance						
6. Operate and maintain facilities in accordance with the budget.		350	300-350	300-350	300-350	300-350

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

(C) Currently listed under Forest Resource Planning Program. Function will be transferred to the State Forest Recreation Program in F.Y. 1988.

STATE FOREST ROADS

ACTIVITY DESCRIPTION

The Division of Forestry maintains 2,064 miles of road which serve 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 the availability of state forest roads.

The following are the major activities of the State Forest Road Program:

- A. Inventory the forest transportation system to provide basis for other program decisions.
- B. Maintain existing transportation facilities in good condition.
- C. Reconstruct roads and bridges to bring facilities up to required standards.
- D. Construct new access as needed to serve the protection, management and use of forest resources.
- E. Manage the transportation system by developing policies and procedures, and reviewing regional programs, projects, and area plans.

GOAL

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

STATEWIDE DIRECTION

Cooperative 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 a 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.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991 (Prioritized within categories)

Transportation Planning

- * Analyze regional program needs consistent with budget allotments to best manage the statewide access network.
- * Finish the forest access inventory procedures and carry out localized road inventories prior to area transportation plan development. Develop a system to house data in a manner which is accessible by field offices.
- * Develop a detailed access plan as part of each area plan which considers specific resource and access needs for the 10-year period. This plan will guide area and region expenditures through the 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.
- * Continue to use the Forestry/Wildlife guidelines in reviewing forest road projects.
- * Consider multiple-use forest benefits when planning or evaluating forest road projects.

Policy Development

- * Define procedures for road abandonment, easements, design, inventory, transportation planning.
- * Create a forest road manual to consolidate existing literature.
- * Revise circular letters to meet current needs.
- * Develop policy guidelines for cooperative road maintenance agreements and easement exchanges with other divisions, agencies, corporations and interest groups.
- * Develop heavy equipment policy covering acquisition and use of Division equipment for forest roads consistent with other program needs.
- * Work cooperatively with other divisions, agencies and groups to develop policies to address issues of road densities and access in roadless areas.
- * Work with other divisions to develop policies on road abandonment that consider conversion of forest roads to other uses.
- * Explore the possibility of providing guaranteed access for multiple-use forest management and timber harvest.

Training

- * Conduct a forest road policy, planning and design workshop in June 1987. Follow up with a series of area short courses.
- * Provide information on outside training opportunities to the Division's Training Board and regional staff.
- * Plan a construction and maintenance workshop for 1988 or 1989. Follow with area training.
- * Provide one-on-one training for region, area and district staff as needs arise and opportunities permit.
- * Work with regional staff to develop heavy equipment training programs.

Administrative Support

- * Develop budgets to support program needs.
- * Propose and follow legislation to provide better funding and control of forest access.
- * Integrate access information with the other resource information through the Division's Geographic Information System in a manner that is easily accessible to the area and region offices.
- * Explore the need to coordinate access needs of the Department.
- * Support efforts of townships and counties to increase funding for roads accessing state lands.

REGIONAL EMPHASIS

The forest road activities in the regions can be categorized into four phases: acquisition; construction and maintenance; reconstruction and maintenance; and maintenance.

Region I

The major emphasis in Region I is reconstruction and maintenance of the existing system. Transportation planning will be completed in all areas by 1991. An inventory of culverts and bridges will also be completed by 1991. Planning in other areas will be limited until area planning is completed. Bridge upgrading and resurfacing are major needs in the Region. Limited gravel sources and high surfacing needs will absorb much of the reconstruction funds. Roads will be evaluated as to their need and liability. Those not serving state lands will be abandoned or transferred to other owners.

Region II

The major portion of reconstruction will be completed between 1987-1991. The region has initiated an effort to identify the construction needs and will enter a construction and maintenance phase over the next four years. Construction needs tend to be in areas that were previously avoided and therefore will be costly to construct. Ongoing maintenance is well in hand Regionwide. Resurfacing will begin in 1990 on roads previously reconstructed. Emphasis in Region II will be on completing forest road development projects as noted in the six-year Region II work plan as funding becomes available, and completing timber access development projects as initiated in July 1986, again as funding becomes available.

Region III

Proper road maintenance will be emphasized through increased funding and improved management techniques. As the inventoried mileage increases, maintenance efforts must be expanded to protect new or improved roads from deterioration. Proper grading techniques will be emphasized through training. All graders, whether DNR personnel, contractors, townships or loggers should be grading in the proper way and to the same specifications. Efforts to control the negative impacts of beavers on culverts and waterflow will be increased through the use of newly developed tools and techniques. Region III will be working more closely with the DNR Section of Wildlife on road placement, development and funding to meet the needs of both disciplines. As road planning continues, it must be closely coordinated with the Timber Management Planning Information System (TMPIS), recreation, wildlife development and other concerns in order to minimize costs and unintended road impacts on the natural environment.

Region V

Road activity in this region has been limited to minor reconstruction, maintenance and access acquisition. Area planning will provide a good assessment of the needs in this region. Expanding the maintenance program through the use of contractors is a primary regional objective. As parcels of land are acquired the construction of suitable access will be undertaken.

STATE FOREST ROADS FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	13	13	13	13	13
<u>Budget Needs (B)</u>						
Staff	\$(000's)	390	390	390	390	390
Supply and Expenses	\$(000's)	96	96	96	96	96
Projects	\$(000's)	<u>1,334</u>	<u>839</u>	<u>839</u>	<u>839</u>	<u>839</u>
TOTAL BUDGET NEEDED (C)		<u>1,820</u>	<u>1,325</u>	<u>1,325</u>	<u>1,325</u>	<u>1,325</u>
<u>Targets</u>						
1. Training courses.	courses	1	1			
2. Maintenance.	miles	2,064	2,064	2,064	2,064	2,064
3. Reconstruction.	miles	105	90	90	90	90
4. Construction.	miles	15	17	17	17	17
5. Bridges replaced or repaired.	projects	5	6	6	6	6
6. Resurface reconstructed roads.	miles	20	20	20	20	20

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

(C) The Division has put forward the following funding proposals:

- A change level request for \$425 M per year has been submitted for F.Y. 1988 and beyond to support the program's targets.
- A bonding request for \$750M annually for 1988-1993 has been proposed - adjustments will be made in the work plan to accommodate these funds if approved.
- A proposal to spend \$2.2MM annually of RIM funding on roads has been submitted and will require adjustments in the work plan if approved.

The 1982 Forest Road Plan provided a conservative estimate of \$2,200,000 annually for the Forest Road Program (maintenance, reconstruction and construction). In order to accomplish the same amount of work in this five year period the figures have been adjusted for inflation and increased costs to \$4,400,000 per year. The needed budget identified in this five year plan reflects what is reasonable to expect given current budget trends. Project targets were set assuming an adequate budget and staffing level can be maintained.

TIMBER MANAGEMENT

ACTIVITY DESCRIPTION

It is the responsibility of the Division of Forestry to manage state-owned forest lands to best meet the needs of Minnesota's citizens. This requires coordinated forest resource management to attain the optimum mix of public benefits. Management must also conform with the purpose for which the lands are held and with all laws, regulations, and instructions of the DNR Commissioner.

The Timber Management Program includes two major functions: timber stand regeneration and regulation of harvest. The basic function of 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. Regulated timber harvests are needed to promote sustained yields of forest products. These functions involve various aspects of timber scaling, sales, timber harvest, stand regeneration and stand maintenance.

The major activities of the Timber Management Program include:

- A. Silvicultural review of selected timber sales.
- B. Regeneration of harvested, poorly stocked, and non-stocked forest lands.
- C. Timber stand improvement: release of plantations and natural crop trees, selected pruning of crop trees, and thinning.
- D. Other forest development: erosion control, boundary fencing.
- E. Silviculture and forest management training.
- F. Planning, forecasting and budgeting.

The Forest Resource Management Act of 1982 requires the Division of Forestry to assure that reforestation activities will occur in three areas: 1) regenerate timber on an equivalent amount of acreage as is harvested each year, 2) regenerate previously harvested areas that have not been reforested adequately, and 3) regenerate poorly stocked forest stands to return them to a state of greater productivity.

In an effort to improve integration of DNR management practices, a Wildlife/Forestry Coordination Policy (DNR Policy #8, revised 5-3-82) and Forestry/Wildlife Guidelines to Habitat Management (MN DNR Wildlife, 1986) were developed. DNR Commissioner's Guideline No. 8 states, "As state administered lands are to be managed for compatible multiple use benefits, unless otherwise dedicated by law, both Divisions of Forestry, and Fish and Wildlife are jointly charged with the responsibility of achieving the goal of integrating forest and wildlife management, while recognizing other multiple use purposes."

Program efforts over the next five years will be aimed at addressing the following issues:

- A. Some harvesting systems increase subsequent site preparation and planting costs, by leaving unmerchantable timber after harvest, and may limit the range of acceptable silvicultural prescriptions for the site.
- B. Conflict exists over the use and management of non-commercial woody ecosystems (brushland) is increasing.
- C. The availability of both bareroot and containerized seedlings in the quantity and quality required for field operations is, at times, uncertain and has led to increased regeneration costs, poor seedling survival and frustration on the part of field staff and managers alike.

- D. Forest regeneration and development activities are being significantly affected by forces outside the Division's control (e.g. Insurance and bonding requirement/costs, availability of contractors, herbicide issues, budgets, manpower limitations).
- E. Up-to-date technical information is not uniformly available at the field and staff level to insure the successful establishment of some tree species and/or regenerate special problem areas or sites.
- F. An age imbalance exists in the aspen cover type which will affect the long-term continuous supply of timber to the aspen using industry.
- G. Current poor markets for softwood species have reduced the Division's ability to carry out thinning prescriptions in 20-30 year old conifer plantations.
- H. There is a need to develop a reliable means of quantifying the need for herbicide use, and to develop a system of herbicide application which minimizes environmental impacts.
- I. There is a need to determine to what extent the oak species should be promoted through silvicultural activities on regenerating harvest sites, particularly when the oak type represents only a small component of the regenerating species.
- J. Wildlife depredation of timber regeneration is the single largest cause of tree seedling mortality. It consists primarily of deer and rabbit browsing, moose browsing, and mice or mole girdling of newly planted seedlings.

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.

STATEWIDE DIRECTION

Reforestation enjoys broad public support. Still, there is a need to promote an information exchange between resource managers and resource users regarding the multiple benefits which can be obtained from both hardwood and conifer 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.

It is Department policy that pest control practices on DNR-administered lands will employ integrated pest management techniques; and that priority will be given to non-chemical management alternatives. When herbicides are used, the Division policy requires that buffer strips be retained between the treated area and the water body. The Division needs to continue evaluating its use of herbicides, develop better application systems and assess onsite effectiveness in relation to the its management goals. A reassessment of the Division's expectations of 'good' plantation management and future market conditions may necessitate a shift to more mixed stands and away from even-aged, single species stands, and move to planting more non-timber tree and shrub species.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

Forest Regeneration

- * Implement timber sale and reforestation policies that support the economic regeneration of harvested stands to the most suitable species.
- * Cooperate with the University of Minnesota and other agencies in research to develop summer harvesting systems which minimize deterioration of site quality and regeneration potential.
- * Evaluate the role of the Division in managing non-stocked lowland brush types.
- * Classify brush ecosystems as to their potential timber productivity and coordinate management and regeneration plans with the DNR Section of Wildlife.
- * Implement nursery practices that will ensure quality bareroot stock, which is inventoried and shipped by seed collection zones. Maintain a containerized tree seedling program to supply trees not available from bareroot production.
- * Modify regeneration targets to allow areas the flexibility to use only the highest quality nursery stock available on an annual basis.
- * Continue to emphasize seed collection and procurement to insure that sufficient seed from the appropriate seed zones is available for seedling production.
- * Encourage the Division's Nursery and Tree Improvement Specialist to explore the production of rooted cuttings for tree species which have recurring seed supply problems.
- * Continue cooperation and joint training with other DNR division and bureau personnel.
- * Develop silvicultural systems that result in acceptable stand establishment and vegetation management while reducing physical and visual impacts on the environment.
- * Develop recommendations to the DNR Commissioner's Office regarding insurance and bonding requirements.
- * Inform foresters, other resource managers and recreational users about the multiple benefits of the Division's forest management program.
- * Reevaluate reforestation targets and standards.
- * Build non-timber species targets into reforestation goals.
- * Support research efforts aimed at successful cedar regeneration.
- * Cooperate with other divisions and agencies to carry out unfunded program activities.
- * Continue to develop and fine tune the management systems available to the field foresters to accomplish difficult site preparation and vegetation control activities.
- * Promote oak and other hardwood species regeneration on medium to good hardwood sites.
- * Research methods of controlling wildlife depredation of timber regeneration.

Technology Transfer

- * Improve technology transfer within the Division through the use of Roots articles, field trips, area workshops, and distribution of information from the staff level to the districts.
- * Actively take part in technical workshops sponsored by other agencies and organizations both in and out of state.
- * Hold multi-regional or statewide silvicultural forest development workshops to facilitate information and idea transfer.

- * Actively take part in and promote interagency field research focusing on regeneration problems.
- * Provide continuing education opportunities relating to forest regeneration/management problems (e.g., white cedar, oak, summer harvesting aspen) by encouraging personnel to pursue advanced college degrees focusing on specific management problems in their graduate study.

Utilization

- * Expand the aspen recycling program in the northern regions of the state.
- * Intensify aspen management through clone development, hybrid poplar/aspen planting, and field analysis of exceptional aspen stands and recycling results.
- * Use marketing studies to project future demands for oak and other hardwood species.
- * Expand marketing efforts and improve the utilization of low quality oak and other hardwood species.

Timber Stand Improvement

- * Increase efforts in marketing existing plantation thinning material on good to excellent sites. Clearcut softwood plantations on poor to medium sites, providing that commercial markets are unavailable for thinning opportunities.
- * Plant new conifer plantations at reduced numbers of trees per acre and accept mixed stands without early thinning needs.
- * Continue research to develop a quantifiable method of determining the need for plantation release.
- * Develop and implement minimum acceptable stocking levels for commercial softwood species and accept mixed stands in lieu of intensive plantation release activities.
- * Continue to develop herbicide application systems as a management tool which meet management objectives and satisfy department policies and guidelines.

REGIONAL EMPHASIS

Region I

Due to anticipated budget reductions with termination of the BWCA program, economic priorities will be used to determine which projects will be funded. For example, planting of lowland species will likely be eliminated. Natural and artificial seeding will be the only regeneration method for these sites and site preparation will be limited to burning.

Additional emphasis will be placed on full-tree skidding to reduce site preparation costs for upland species. Herbicide projects will be monitored closely to determine if application is absolutely necessary. Herbicides will continue to be used for site preparation.

Region II

After years of catching up, the regeneration backlog has been eliminated. In the future, conifer planting will be reduced 20-30%. Reforestation efforts will seek to match the best species to the site.

Region III

Sites that can support quality hardwoods will be regenerated, particularly oak. In conjunction with this increased effort to regenerate hardwoods, both naturally and artificially, the Region will work with the nurseries to develop specifications for desirable hardwood stock (e.g., proper caliper, proper shoot to root ratio). Some work will also be done on artificially regenerating aspen, both native and hybrid. Modest lowland acreage will continue to be regenerated, but some hardwoods such as black ash will not be attempted. Herbicide use will shift more from release to site preparation. Final plantation specifications may be less stringent, with fewer crop trees and more competing vegetation allowed per acre.

Region V

Continue to improve the quantity and quality of the hardwood planting stock. Steps to mitigate unpredictable seed collections should be taken. Examples may be out-of-state purchases, container grown, holding over seeds or seedlings and substitute species (white ash, sugar maple).

TIMBER MANAGEMENT FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	53.3	52.0	50.5	51.8	53.5
<u>Budget Needs (B)</u>						
Salaries	\$(000's)	1,599	1,561	1,514	1,553	1,606
Supplies and Expenses	\$(000's)	392	382	371	381	394
<u>Projects:</u>						
Reforestation (C)		2,111	2,092	2,033	2,050	2,085
Release		299	296	282	282	282
Well Capping		10	50	50	--	--
TOTAL BUDGET NEEDED (D)		4,411	4,381	4,250	4,266	4,377

Targets M = 1,000
MM = 1,000,000

1. Reforestation						
a. Site preparation	M acres	11.6	11.4	11.0	11.5	11.5
b. Seeding	M acres	2.8	2.3	2.3	2.5	3.0
c. Planting	M acres	10.2	10.2	10.0	10.0	10.5
2. Timber Stand Improvement						
a. Site analysis (E)	M acres	47.7	51.4	51.7	50.6	52.8
b. Maintenance/Protection (F)	M acres	1.6	1.5	1.4	1.4	1.4
3. General Forest Development						
a. Conduct activities such as well capping, surveying, signing, fencing, or construction of erosion control structures.		To be accomplished with budget available to Region V.				
4. Acres of prescribed burning completed, inc. all state land regardless of Division.	acres	5,500	11,500	11,500	11,500	11,500

- (A) One fte = 1730 hours/year.
 (B) Budget estimates are in 1987 dollars.
 (C) Reforestation costs include site preparation, planting and seedling costs. The drop in reforestation activity reflects decreased timber harvest levels during the period 1984-1986.
 (D) Budget reductions are due to budget cuts and personnel layoffs.
 (E) Site analysis includes field inspection of artificially regenerated stands to determine the need for post establishment activities.
 (F) Maintenance and protection of timber stands includes activities accomplished by work crews and contracted vendors using a variety of methods to accomplish pruning, non-commercial thinning, crop tree release, cull tree removal, brushing, and rodent control.

TIMBER SALES

ACTIVITY DESCRIPTION

The Division of Forestry is responsible for managing the forest resources of state-owned forest lands under the authority of the Commissioner of the Department of Natural Resources. 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:

- A. Appraisal, sale and supervision of the harvest of timber on state lands, including special fuelwood harvesting for personal use.
- B. Timber scaling to account for all wood harvested from state land.
- C. Conducting timber sale field inspections for compliance of permit regulations.
- D. Maintain and improve the timber sale data processing system.
- E. Conduct timber sale meetings and joint planning and training sessions with other timber sellers.
- F. Update timber sale manuals and revise procedures for the administration of state timber sales.

The Division uses public auction and informal permit sales to sell timber. The auction sale was originally designed for large logging operations. It enabled companies to have large operations with logging camps and many lumberjacks. Mechanization has drastically changed the large operations. The logging camps are gone and few logging operations now employ more than half a dozen loggers. Most of the logging conducted on auction permits is now done by independent loggers working independently or under contract with a timber company.

The original auction sale law provided for a maximum appraised value of fifteen thousand dollars per tract offered. Only one auction sale, with any number of individual tracts, was allowed per county each year. Quite often 50 to 100 tracts would be offered at a sale and companies would purchase their needs for one or more years. Individual permits were for a four-year period and could be extended up to six more years. Today, the regular auction has a maximum value per tract of twenty thousand dollars and a permit duration of three years with two one-year extensions allowed. Any number of sales can be held in a county but only one sale can be held on any one day in the state.

Intermediate auctions, geared for independent loggers with small cash flow, offer permits with a maximum value of seven thousand dollars for a duration of one year with two possible one-year extensions. Individuals can possess up to four permits at any one time.

The informal timber permit was enacted in 1925 primarily to enable farmers and other settlers to obtain timber for their own needs and to provide them with an additional source of income. The law limited the value of a permit to fifty dollars and allowed only one permit at a time to an individual. Cutting was limited to dead or down timber.

The informal permit has, however, undergone many changes. Today the informal permit allows the cutting of green timber, increases the monetary limit to \$3,000, and increases the number of permits which can be held at any one time to

two. The duration of the permit is for one year with a one-year extension. The Division also sells fuelwood permits for personal use with a permit length of up to one year.

GOAL

"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."

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.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

Policy and Legislation

- * Conduct a thorough evaluation of the current timber sales operations in an effort to make the program more cost effective and better able to meet market demand. This would include overhead costs, policies and procedures, size of the program, market share, legal and revenue issues. In addition, timber appraisal and scaling methods should be evaluated as to how best to accomplish these tasks.
- * Update the timber sales manual to incorporate recommended changes from the program review.
- * Establish a timber sales user group to help redesign and modernize the program.
- * Formalize policies and standards for timber sales.
- * Build flexibility into current laws to make state sales more competitive.
- * Seek the authority to sell regular auctions over-the-counter after the initial offering.
- * Monitor and administer timber sale laws and policies to maintain a flexible timber harvesting program.

Marketing

- * Aggressively advertise timber sales after they are put up for sale.
- * Meet regularly with industry representatives to better coordinate state timber sales to meet their needs, including timing, size, species and location access.
- * Involve Utilization and Marketing Program staff more in developing the annual timber sales work plan.
- * Concentrate timber sale areas, within a township, to reduce travel and inspection time.
- * Eliminate unmerchantable species from notice of sale; list under optional species.
- * Reduce sale and cutting regulations -- list only those regulations that are absolutely necessary. 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.

Operations

- * Implement new or revised timber sale procedures as necessary to improve administrative efficiency such as 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.
- * Better control amount of timber offered to reduce the ratio of timber offered to timber sold.
- * Reduce workload needing the Attorney General's review or approval.
- * Consider wildlife and other resource values when planning and conducting timber sales.
- * Coordinate with County and Federal governments in the sale of timber stumpage and in the development of transportation systems.

REGIONAL EMPHASIS

Region I

Investigate improved methods of marketing the state's timber. Design timber sales to meet expected consumer needs, consistent with accepted forest management practices. Conduct timber sales sufficient to meet expected market demand.

Region II

- * Continue to supply a market share of timber harvested on state lands.
- * Revise and alter procedures to exercise flexibility in changing market situations.
- * Work with field appraisers on innovative ways to improve state sales and administration.

Region III

Capture our proportionate market share based upon the percentage of commercial forest land owned, while continually striving to reach the allowable timber harvest. Conduct a market analysis and adjust the sales program to meet the consumers' needs as well as develop new markets for forest products.

Region V

With volatile market demand for many hardwood species, the market is best able to set the price of timber sold through the auction process. Continue emphasis on auction sales. Complete the Phase II forest inventory and the Timber Management Planning Information System to develop a regulated harvest system on the Richard J. Dorer Memorial Hardwood Forest. Explore ways to complete post-harvest timber work prior to, or as a part of, timber sales.

TIMBER SALES FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	72.9	73.8	74.5	75.2	75.9
<u>Budget Needs (B)</u>						
Salaries	\$(000's)	2,187.00	2,214.00	2,235.00	2,256.00	2,277.00
Supplies and Expenses	\$(000's)	535.82	542.43	547.58	552.72	557.87
TOTAL BUDGET NEEDED		2,722.82	2,756.43	2,782.58	2,808.72	2,834.87
<u>Targets</u>						
	M = 1,000					
	MM = 1,000,000					
1. Conduct timber sales program on state land.						
a. Timber offered	M cords	800	750	720	720	700
b. Timber sold	M cords	419	485	500	525	550
2. Appraise and supervise special fuelwood sales.	permits	1,800	1,800	1,820	1,820	1,820
	M cords	14	14	14	14	14
3. Scale timber harvested on state land.						
a. Division scale	M cords	184	195	200	210	215
b. Consumer scale	M cords	350	365	380	390	405
TOTAL	M cords	(534)	(560)	(580)	(600)	(620)
c. Administer consumer scale agreements.	agreements	81	85	88	92	98
4. Conduct special projects.	projects	3	3	3	3	3

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

FISH AND WILDLIFE HABITAT MANAGEMENT

ACTIVITY DESCRIPTION

Forests and associated waters on Division-administered lands provide habitat for a variety of fish and wildlife species. Manipulation of forest vegetation is the key to 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 (DNR Policy #8, revised 5-3-82) and Forestry/Wildlife Guidelines to Habitat Management (MN DNR Wildlife, 1986) were developed. DNR Commissioner's Guidelines No. 8 states, "As state administered lands are to be managed for compatible multiple use benefits, unless otherwise dedicated by law, both Divisions of Forestry, and Fish and Wildlife are jointly charged with the responsibility of achieving the goal of integrating forest and wildlife management, while recognizing other multiple use purposes."

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; controlling wildfires; managing shrub and grass habitat; conducting prescribed burns; coordinating the Division's land administrative activities to enhance opportunities for the production of fish, wildlife and native plant species; participating in fish and wildlife improvement activities by providing personnel or other forms of support; and providing training or planning assistance to and coordination with the DNR Division of Fish and Wildlife.

The major link between forestry activities and fish habitat is the impact that specific management activities have on water quality. This link was made in 1972 through the passage of the Federal Water Pollution Control Act which established water quality goals. The major objective of that legislation was to restore and maintain the chemical, physical and biological integrity of the nation's waters. In 1980, the Governor of Minnesota signed the Minnesota Water Quality Plan called for in the Federal Act. The plan identified several forestry activities as potential causes for water quality degradation: construction of roads on forested lands; recreational activities; clearing for fire breaks; and certain site preparation activities such as root and rock raking and plowing. The plan went on to say "The study of the relationship of forestry activities to water quality in Minnesota indicates that water pollution is not generally severe in forested areas. However, in both the current and proposed revised water quality classifications, an extremely high proportion of highly classified waters are in forested areas. Therefore, whenever pollution does occur from forested lands, it is likely to harm a high-quality environment."

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.

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 designated in the Division's area plans.

STATEWIDE DIRECTION

Passage of the Conservation Reserve Program, a provision of the Federal Food Security Act of 1985 (commonly called the "farm bill"), designed to idle the nation's marginally productive or highly erodible farm lands, 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 grasses.

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. 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 to the appropriate Division.

The Division's best management practices for shoreland areas are designed to minimize impacts on adjacent water bodies. These management practices are itemized in the draft Forest Development Manual and include directions on road design standards, winter rockraking, winter logging, windrow construction, clearcutting, buffer strips, pesticide application, etc. In addition, special effort is needed to establish effective forestry management practices on private land to provide water quality protection from forestry activities.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

Policy

- * Revise Forestry/Wildlife Coordination Policy and guidelines to accommodate wildlife recommendations or concerns regarding the Division's Private Forest Management Program.
- * Revise the Forestry/Wildlife Coordination Policy and guidelines to address wildlife depredation problems and to streamline administrative procedures.

- * Continue to implement Forestry/Wildlife Coordination Policy and Guidelines in all areas of the state.
- * Work with Forestry/Wildlife Task Force to develop an old growth timber policy which defines old growth, establishes site selection criteria and defines the amount and distribution of old growth to be retained and protected.

Planning

- * 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 management efforts.
- * Conduct joint planning sessions using the Timber Management Planning Information System (TMPIS) during area planning to reduce the need for additional reviews.
- * Review the Division's realignment plan in conjunction with the DNR Section of Wildlife's planning efforts to identify opportunities where each division could share common data bases, administrative boundaries, and office facilities.
- * Encourage joint forestry and wildlife research and planning efforts to explore ways to improve wildlife habitat while minimizing timber depredation problems.
- * Coordinate Forestry and Fisheries and Wildlife planning at all levels to assure compatible programs and activities.
- * Incorporate heritage element data into the forestry Cooperative Stand Assessment data base.
- * Identify areas for old growth management through area planning efforts.
- * Resolve management conflicts created by the conflicting objectives to maximize revenues from trust fund and Con-Con lands and to enhance wildlife habitat.
- * Find ways to reduce the need for foresters and wildlife managers to review and approve each other's project proposals.
- * Cooperate with the Division of Fish and Wildlife in managing upland and lowland grass and brush ecosystems of various sizes for sharptail grouse, woodcock, moose, deer and other game and non-game species.
- * Support cooperative research efforts to examine the effects of even-aged, short rotation, single species timber stands on wildlife.
- * Cooperate with the Soil Conservation Service in developing an ecological land classification and mapping system.

Training

- * Train Division personnel in wildlife habitat management practices and in managing woody shrubs, as related to private forest land management.
- * Reassign personnel temporarily between the DNR Divisions of Forestry and Fish and Wildlife on an annual basis to provide experience and training.
- * Plan prescribed burns for wildlife habitat through joint meetings with wildlife managers. Provide training on the Department's Prescribed Burn Policy - Operational Order #47.
- * Provide information to wildlife managers and foresters on dealing with wildlife depredation on timber regeneration.

Management

- * Develop brochures, slide shows and other media to inform the public of the Division of Forestry's role in enhancing wildlife habitat.

- * Actively pursue support for the Division's wildlife enhancement activities from forest user groups through talks at club meetings and articles in outdoor publications.
- * Set up wildlife habitat improvement demonstration areas. Solicit volunteer support to complete these projects.
- * Post boundaries of Division-administered lands with signs along forest roads, county and state highways, identifying that land is open to public use.
- * Cooperate in establishing Scientific and Natural Areas and Natural Heritage registry sites where rare resources and plant communities worthy of protection have been identified.
- * Continue field efforts to improve wildlife habitat and to enhance opportunities for the production of fish, wildlife and native plant species.
- * Participate in fish and wildlife improvement activities by providing personnel support, training, planning assistance to and coordination with the DNR, Division of Fish and Wildlife.
- * Focus more attention on forestry/wildlife activities on private lands.
- * Resolve conflicts regarding wildlife depredation of timber regeneration and agricultural crops.
- * Inform forest users of the Division's efforts to enhance wildlife habitat.

REGIONAL EMPHASIS

Region I

Management strategies for fish and wildlife will be developed for each of the management units identified in the area planning process for each administrative area. Cooperative efforts of personnel from the DNR Division of Fish and Wildlife and the DNR Division of Forestry will be used in implementing these strategies.

Region II

- * Follow the prescribed burn guidelines and involve both forestry and wildlife personnel on burns conducted by each division.
- * Encourage wildlife personnel to spend some time training foresters on aspects of their job.
- * Involve area Wildlife Managers in the area planning process and in each area's Timber Management Planning Information System run.
- * Use the new forest/wildlife coordinator position within the region to provide a flow of information not only from Wildlife to Forestry but Forestry to Wildlife.
- * Work toward common forestry/wildlife area boundaries and offices.

Region III

The Region will cooperate with the DNR Division of Fish and Wildlife to implement area plan recommendations. Special efforts will be made to engage in cooperative planning for land management activities, prescribed burning, sharptail grouse management, and forest development work.

Region V

Same as statewide direction.

FISH AND WILDLIFE FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	6.5	11.8 (B)	11.8	12.9	12.9
<u>Budget Needs (C)</u>						
Salaries	\$(000's)	198	354	354	387	387
Supplies and Expenses	\$(000's)	49	87	87	95	95
Projects:						
Aspen Recycling	\$(000's)	500	572	572	644	644
Shrub/Grass Management	\$(000's)	--	300	300	350	350
TOTAL BUDGET NEEDED		<u>747</u>	<u>1,313</u>	<u>1,313</u>	<u>1,476</u>	<u>1,476</u>
<u>Targets</u>	M = 1,000 MM = 1,000,000					
1. Aspen recycling	M acres	7	6-8	6-8	5-9	5-9
2. Shrub management	acres	--	4-6	4-6	3-7	3-7
3. Permanent wildlife openings	acres					
4. Special nongame projects						

(A) One fte = 1730 hours/year.

(B) The projected increase in time spent on fish and wildlife activities is due to aspen recycling projects aimed at enhancing forest productivity and wildlife habitat.

(C) Budget estimates are in 1987 dollars.

MF
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Minnesota Forest Resources Plan

SECTION II

PROGRAM DIRECTION, 1987-1991



Minnesota Forest Resources Plan

Nursery and Tree Improvement

The mission of the Nursery and Tree Improvement Program is to produce or procure forest regeneration material for public and private land in Minnesota in a self-supporting manner.

NURSERY AND TREE IMPROVEMENT

ACTIVITY DESCRIPTION

The Division 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 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 of 1982 demonstrated legislative support for a tree improvement program by instructing the Commissioner of Natural Resources to include a tree improvement specialist position in the Department's 1984-85 Biennial budget. This position was approved by the Legislature during the 1983 legislative session.

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 Program include production and distribution of bareroot seedlings. Major activities in the Tree Improvement Program include seed source selection; seedling distribution; seed production area development; and seed orchard development, including first generation, seedling, clonal, and advanced generation seed orchards. These activities are described in more detail below.

I. Nursery Operations

Primary Objectives

- * Produce sufficient quantities of quality regeneration materials to meet demands.
- * Educate consumers of their responsibilities for regeneration material care.
- * Minimize the cost of regeneration material production and distribution.
- * Explore and implement methods to improve the logistics of regeneration material distribution.
- * Meet the increasing demands for regeneration materials created by special environmental programs (Reinvest in Minnesota, Conservation Reserve Program).

A. Seed Procurement

Seed procurement begins with a determination of seed needs to accomplish regeneration objectives based upon state, county, and private reforestation goals. Inventories of seed in storage are checked and for those species for which seed is needed, field surveys are conducted to determine the size of seed crop expected for that year. Cone/seed purchasing funds are then dispersed to the area offices that have the desired species seed available.

B. Regeneration Material Production

Bareroot seedling production begins with seed extraction and testing of the seed quality. The seed is then processed and stored for future use in seeding. Seeding at the nurseries is generally done in the fall. Prior to seeding, seedbeds must be prepared by plowing under the cover crop, adding peat as needed to maintain organic matter, roto-tilling and shaping of the beds. After seeding and during the seedlings growth, cultural amendments including fungicides, herbicides, fertilizers, weeding, and thinning are used as needed. An irrigation system provides water to maintain sufficient soil moisture and reduce damaging summer temperatures. Root pruning and transplanting of a small percentage of conifers to produce sturdier seedlings are other annual practices. Protecting seedlings from insects, animals, and wind erosion are also important functions of the operation.

When the seedling stock attains a desirable size it is lifted, sorted by grade, packaged, and shipped. The Nursery Program also contracts with private greenhouses to meet the Division's containerized seedling needs. The Division provides seed to private growers for Division containerized contracts.

C. Regeneration Material Distribution

General Andrews Nursery, near Willow River, supplies trees to the eastern half of Minnesota. The Badoura Nursery, near Akeley, supplies trees to the western half. Distribution of private tree orders for the counties bordering Iowa up to the Division's Metro Area begins in early April. Seeding beds are usually not frost free this early in the spring, therefore these early orders are filled with stock which has overwintered in storage freezers at each of the nurseries. Soon following the packaging of "freezer trees", frost free seedling beds in the nursery can be lifted to fill state, county and private orders in a basically south to north pattern.

Nursery operations are also responsible for coordinating the distribution of containerized seedlings and bareroot seedlings from contracted private grower facilities to user groups throughout the state.

II. Tree Improvement

Primary Objectives

- * Implement a revised DNR Tree Improvement Plan for Minnesota.
- * Improve coordination of Tree Improvement Program with the rest of the Division's activities.
- * Increase the understanding of the Tree Improvement Program within the Division.
- * Ensure continuance of the program initiated by North Central Fine Hardwoods Tree Improvement Cooperative.
- * Continue support of the Tree Improvement Cooperative.

A. Selection (See Glossary for definitions of technical terms)

Selection of individual trees which are superior in economic traits is a very efficient way of achieving genetic improvement of the target species. This is called plus tree selection. Plus tree selection is done in natural stands and plantations of known origin. The goal is to select individual trees that are above average in one or more important traits. Plus trees are not genetically superior. They are only phenotypically superior and must be tested to determine their genetic worth.

Plus tree selection provides moderate genetic gain. Considerable genetic gain, however, can be achieved when information on relatives is used. Since relatives share known amounts of genes in common, replicated field tests involving the offspring of plus trees are much more precise in the determination of genetic superiority. These replicated field tests are usually called progeny tests. Progeny tests identify those individuals and families that are truly genetically superior.

B. Breeding

An active selection and breeding program is the basis of a good tree improvement program. Genetically superior trees identified in the first generation selection and testing are crossed to create new and improved genetic combinations. This is done by controlled pollination, wherein the forester controls the parentage of individual crosses by applying the pollen from one tree to the female flowers of another tree. Resulting seedlings are then subjected to another round of rigorous field testing to determine true genetic worth.

C. Genetic Testing

As previously discussed, selections must be properly field tested to determine which are truly genetically superior. Progeny tests of half-sib (one parent known) or full-sib (both parents known) are most commonly used. The goal of good progeny testing is to identify which individuals, by measuring their offspring, are consistently superior across a range of sites.

D. Production of Improved Material

1. Seed Source Selection and Control of Seedling Distribution

The Department of Natural Resources distributes planting stock throughout Minnesota, to diverse environments and a wide variety of sites. This diversity requires a variety of genetic materials for many species. Establishing seed source zones coupled with distributing planting stock consistent with seed origin is a first step toward using genetic variation. It is a relatively inexpensive measure which will reduce the probability of severe losses due to climatic extremes.

2. Seed Orchards

Seed orchards are plantings of selected material, grown to interpollinate and produce genetically improved seed. First

generation orchards often contain grafted plus trees or open-pollinated offspring from plus tree selections. Seed orchards must be managed intensively to produce early, frequent, and abundant seed crops.

There are basically two types of seed orchard; clonal or seedling. A clonal seed orchard is almost always established by grafting twigs (called scions) from plus trees onto healthy, vigorous seedlings (called rootstock). Clonal seed orchards can be more expensive to establish, but have the potential to produce more genetic gain than seedling seed orchards.

Seedling orchards are established with the offspring of plus trees. It is a good approach in species that produce flowers at an early age. Seedling seed orchards can be less expensive to establish, but will produce less genetic gain than clonal orchards.

III. Marketing

Primary Objectives

- Increase sales of nursery stock.
- Improve production costs recovery.
- Promote environmental programs and sound resource management.

A. Sales

The Nursery Program encourages increased planting of tree seedlings by several methods. A weekly and/or biweekly tree seedling availability list is distributed statewide to all Forestry administrative areas, county extension offices, county Agricultural Stabilization and Conservation Service (ASCS) offices, and soil and water conservation district (SWCD) offices. The Nursery and Tree Improvement Program produces periodic news releases regarding the opening and closing of tree seedling sales, seedling availability, and seedling cost. These releases are delivered to the DNR Bureau of Information and Education for statewide distribution.

A widespread advertising of seedling availability was started in 1986 with many area offices participating. Ads were placed in many local newspapers, shoppers, and radio stations.

B. Economics

Annual meetings are held with representatives of the Division, county land departments, and the private sector to make one to three year forecasts of seedling requirements. These forecasts are used to develop a nursery seeding plan.

GOAL

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

STATEWIDE DIRECTION

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

1. Seeding and cultural changes necessary to meet the demands of the Conservation Reserve Program. This includes determining needs, ordering seedlings, and distributing seedlings.
2. Implementing economical methods of stock production, lifting, packing and shipping.
3. Completing the nursery computer management information system.
4. Completing the revised DNR Tree Improvement Plan for Minnesota.
5. Acquiring a tract of land to serve as a centralized, production-oriented seed orchard complex.
6. Expanding distribution of nursery information.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

Nursery Operations

The Nursery and Tree Improvement Program will address the issues of containerized seedling contracts, regeneration material distribution, special environmental programs impacts, selected hardwood species quantities and quality, and white spruce quality with the following strategies:

- A. Continue improvements in nursery operations
 - * Explore and implement improved nursery techniques (seed source identification from extraction to planting, lifting methods and storage systems).
 - * Expand seed collection networks.
 - * Study grading standards for seedlings.
 - * Tie field survivability results with stock quality (reports to Nursery).
 - * Schedule ordering deadlines for containerized stock.
 - * Investigate similar containerized seedling systems.
 - * Improve containerized stock contracts.
 - * Improve nursery/field coordination concerning containerized stock needs and timing.
 - * Complete and implement computerized MIS system.
 - * Use economical cultural practices (rotation ages, seed sizing, fertilizing, root pruning, herbicide use, inhibiting frost heaving, and organic matter maintenance).
 - * Continue to improve packing/shipping system.
 - * Investigate contract labor.
 - * Coordinate with field personnel on sorting/counting process for public lands.
 - * Increase freezer stock.
 - * Develop a two cooler freezer system.
 - * Make lifting operation weather independent.
 - * Investigate expanded hours of operation.
 - * Expand the number and capacity of area located storage facilities.
- B. Improve cultural management
 - * Make necessary climatic adjustments using new irrigation system.
 - * Make minor adjustments in cultural practices for certain species.

- * Increase production periods for specific species.
- * Intensify nursery soils management program.
- * Increase seeding for the Conservation Reserve Program.
- * Change cultural practices for increased hardwood production for the Conservation Reserve Program.
- * Adjust seedling amounts as recommended by environmental programs.

C. Increase coordination with and education of user groups

- * Increase field contact.
- * Observe field plantation operations.
- * Attend area meetings.
- * Participate in the Division's silviculture workshop.
- * Define what is not a quality seedling.
- * Educate the consumer on proper stock handling, care and storage.
- * Distribute pamphlets with tree orders.
- * Attend forest landowner workshops.
- * Encourage notification of stock quality upon receipt.
- * Coordinate production and distribution of Arbor Day material with the Division Public Affairs Specialist and other involved program supervisors.
- * Encourage increased production by private nurseries.

Tree Improvement

A. Continue developing a program strategy and direction

- * Evaluate existing projects to determine effectiveness.
- * Manage effective projects to achieve best results.
- * Revise the DNR Tree Improvement Plan for Minnesota.
- * Implement the revised plan including:
 - consolidating seed orchard projects (to 2 major sites)
 - increasing acreage of new seed orchard projects
 - acquiring acreage for new seed orchard projects
 - upgrading/developing Tree Improvement Program support facilities
 - intensifying tree improvement project management
- * Develop long-term breeding strategies for principle species.
- * Separate orchard and progeny test functions.
- * Clarify roles and responsibilities for managing seed orchards.
- * Seek other cooperators to help pay for seed orchards.

B. Increase awareness and support of Tree Improvement

- * Implement actions described in circular letter concerning designation of tree improvement responsibilities/activities within the Division.
- * Effectively coordinate tree improvement activities with nursery operations.
- * Inform nursery of equipment and labor needs on a continuing basis.
- * Participate in Division workshops.
- * Continue participation in Tree Improvement Cooperative workshops and field days.
- * Submit articles to Division publications.

C. Support continued cooperative Tree Improvement efforts

- * Secure funding for the North Central Fine Hardwoods Tree Improvement Cooperative beyond the federal grant period.

- * Advise and consult with the Tree Improvement Cooperative on intended DNR changes.
- * Revise the DNR Tree Improvement Program within the framework of the Tree Improvement Cooperative.

Marketing

A. Expand marketing activities

- * Expand distribution of nursery information via news media (newspaper, radio, billboards).
- * Increase distribution of written information to public contact locations.
- * Continue personal contacts with civic groups, schools, etc.
- * Attend various public workshops.
- * Inform other government agencies, organizations and DNR Divisions (i.e., Fish and Wildlife, Parks, Trails and Waterways) of special order capabilities.
- * Accommodate public agencies' specialized tree orders.
- * Identify guidelines for custom ordering procedures.
- * Continue close relationship with private growers.
- * Explore out-of-state marketing opportunities.
- * Develop alternative seedling ordering procedures.
- * Explore legislative and legal opportunities for expanding sales.

B. Increase the accuracy of regeneration material needs forecasting

- * Look at adjusting minimum tree order specifications.
- * Increase coordination of forecasting with Private Forest Management Program, Timber Management Program, county forestry and other user groups.
- * Work with county land departments to develop long-term contracts.
- * Investigate discount processes to encourage early tree sales.
- * Promote use of long-term contract agreements.
- * Implement contract alterations suggested in 1983 Nursery and Tree Improvement Program Plan.

C. Reviewing cost recovery methods

- * Continue annual review of pricing structure.
- * Establish a budget for Arbor Day activities.

REGIONAL EMPHASIS

Region I

Continue to identify seed collection areas emphasizing the identification of superior stands. Jointly develop tree improvement plans with the Division's Tree Improvement Specialist.

Region II

1. Identify and project regional tree seedling and seed needs for state-owned lands.

2. Work with Nursery and Tree Improvement Program personnel to identify and implement silvicultural improvements on state-owned land.
3. Provide impetus at the area level to assure that statewide goals are met.

Region III

Locate and develop a major production-oriented seed orchard complex. Assess needs for hardwood tree production and improvement. Continue to work closely with Minnesota Private Nurseries Association.

NURSERY AND TREE IMPROVE. FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	60	60	60	60	60
<u>Budget Needs (B)</u>						
1. Forest Management Fund	\$(000's)	2064.8	2164.8	2264.8	2364.9	2464.8
2. Tree Improvement (includes grant to UofM and federal grant for North Central Fine Hardwood Tree Improvement Cooperative)	\$(000's)	54.5	57.3	44.8	49.9	47.5
3. Bonding	\$(000's)	64	0	0	0	0
TOTAL BUDGET NEEDED	\$(000's)	2,119.3	2,222.1	2,309.6	2,414.8	2,512.3

Targets M = 1,000
 MM = 1,000,000

Nursery

1. Produce sufficient quantities of quality regeneration material to meet demand.						
- conifer seedlings	MM seedlings	27	22	22	22	20
- hardwood seedlings	MM seedlings	1.8	2	2	2	1.5
- conifer transplants	M seedlings	800	900	900	900	800
- supervise contracts for production of containerized seedlings	MM seedlings	1.5	1.5	1.5	1.5	1.5
2. Minimize the cost of seedling production.						
- implement nursery operations computer program	% completion	40	60	80	100	
3. Meet increasing demands created by special environmental programs.						
- Arbor Day	M seedlings	225	225	225	225	225
- Conservation Reserve Program	MM seedlings	5	7	7	7	

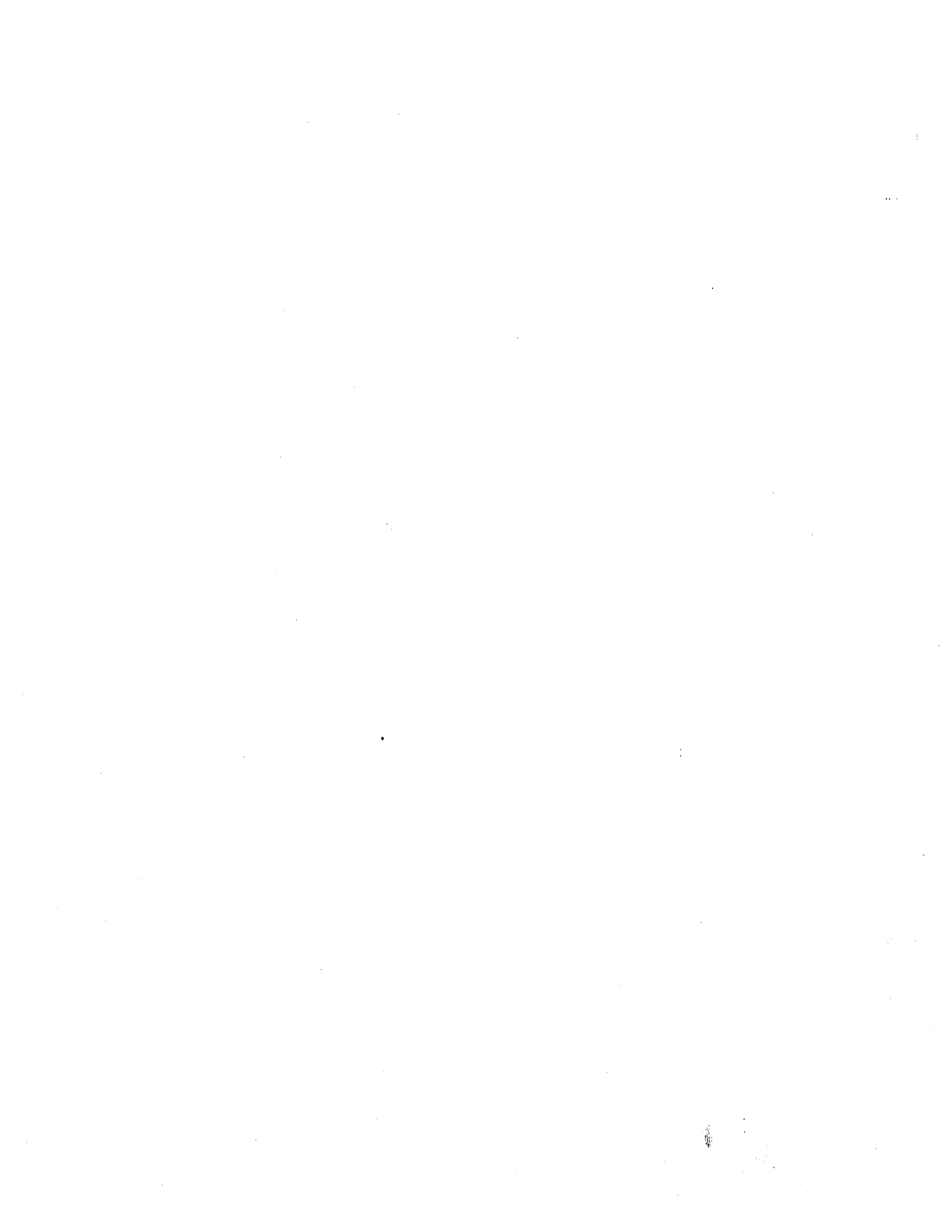
Tree Improvement

4. Implement revised DNR Tree Improvement Plan.

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Category I Species</u>						
Norway Pine						
Site prep seed orchards	acres	30				
Site prep progeny tests	acres	20				
Mgmt. of seed orchards and progeny tests	acres		50	50	50	50
Jack Pine						
Site prep seed orchards	acres		14			
Site prep progeny tests	acres		20			
Mgmt. of seed orchards and progeny tests	acres			34	34	34
White Spruce						
Manage cotton seed orchards	acres		12	12	12	12
Manage progeny tests	acres		8	8	8	8
<u>Category II Species</u>						
White Pine - low rust hazard						
Site prep seed orchards	acres		5			
Manage orchard	acres			5	5	5
Select + trees	trees	25	25			
Black Walnut						
Select + trees	trees	45	50			
Grafting	grafts	900	1000			
Site prep breeding orchards	acres	2	2			
Maintain graftings	acres	2	4	4		
Manage breeding orchards	acres	2	4	4		
Site prep 1st generation seed orchard site	acres		5			
Manage seed orchard	acres		5	5	5	5
White Pine - High Rust Hazard						
Establish seed orchard	acres	3				
Manage seed orchard	acres		3	3	3	3
Scots Pine						
Establish seed orchard	acres	3				
Manage seed orchard	acres		3	3	3	3

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.





Minnesota Forest Resources Plan

Cooperative Forest Land Management

The mission of the Cooperative Forest Land Management Program is to provide technical forestry advice and assistance to individuals, communities and governmental subdivisions in the management of their trees and woodlands.

PRIVATE FOREST MANAGEMENT (PFM)

ACTIVITY DESCRIPTION

Approximately 5.6 million acres (41 percent) of all of Minnesota's commercial forest land is in private ownership. These acres are owned by nearly 130,000 individuals with widely varied land management interests and objectives. The potential productivity of these lands typically is greater than the average for other forest ownerships in Minnesota, and they are capable of providing a diversity of resource benefits. Therefore, it is important that the Division provide the technical assistance needed to ensure the continued management and productivity of these lands.

Typical PFM activities include: 1) Promoting forest management on non-industrial private forest (NIPF) lands through personal contacts with landowners and the use of the media; 2) Providing landowner education opportunities by conducting and sponsoring 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.

GOAL

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

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.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

- * Expand public knowledge and awareness of forestry and its importance to Minnesota.
- * Target assistance to landowners who demonstrate commitment to managing their lands.

- * Actively promote the use of consulting, industrial and other private foresters in managing private forestlands.
- * Minimize the impacts of the conversion of non-industrial private forest (NIPF) lands to other non-forest uses.
- * Coordinate the PFM services so that they complement those provided by other DNR divisions, industry, consulting foresters and forestry vendors.
- * Create a stronger alliance with governmental agencies and other actors who share NIPF goals, objectives and expectations.
- * Promote changes in the current property tax system to encourage increased management of NIPF lands.
- * Develop a system requiring NIPF landowners to pay for services for which they receive an immediate financial return (i.e., timber sales).
- * Integrate NIPF management planning into the development of area forest plans and other local planning efforts.
- * Identify and promote the use of private consultants for special temporary projects which focus on specific products or objectives.
- * Include other governmental agency personnel and private consulting and industrial foresters in PFM-related training sessions.

ST. PAUL TARGETS FOR F.Y. 1987-1991

- * Establish statewide policies regarding involvement of the DNR Section of Wildlife in the preparation of private forest management plans and other aspects of the PFM program.
- * Form a closer alliance between the Division and various statewide forest user groups.
- * Provide information and support as needed to permit changes in State and Federal CRP rules and regulations.
- * Cooperate with the University of Minnesota's, Forestry Extension Specialists in developing a computerized landowner/consultant referral system to replace the present referral policy.
- * Promote the development of local agreements between soil and water conservation districts and the area forestry offices.
- * Rewrite the present PFM service and PFM timber sales policies, to combine them into a single, comprehensive PFM program policy. Include revisions in the fees charged for PFM services.
- * Provide information and support necessary to pass legislation regarding changes in forest property taxation.
- * Streamline the paperwork needed to operate an effective PFM program.
- * Establish a closer working relationship with the local RC&D councils through cooperative projects.

REGIONAL EMPHASIS

Region I

Continue involvement in private timber sales while continuing to encourage consultants to actively participate. Ensure that wildlife and prairie management is considered as appropriate by involving wildlife managers in the PFM planning process. The Conservation Reserve Program (CRP) is requiring increased time from field personnel. Division programs and activities, including PFM activities, may suffer because of it. PFM accomplishments will likely decrease slightly, depending upon the CRP and state land timber sales work load in coming years.

Region II

- * With the decrease in budget and staff time for PFM, fewer landowners will be assisted but the same quality one-on-one assistance will be maintained.
- * Emphasis will be put on timber sales, wildlife habitat and other activities where cost-share dollars are not the chief concern for the landowner.
- * Continue to maintain communication with consultants and refer landowners to consultants when the consultant can benefit the landowner by providing vendor sources.

Region III

Maintain the program at current accomplishment levels except for areas where accelerated emphasis such as CRP require increases. These increases will come at the expense of accomplishments in other PFM activities unless increased funding and manpower are provided.

Region V

Continue providing assistance to private landowners. A special effort will be made to increase public awareness of PFM activities through increased public contact and promotion.

PRIVATE FOREST MANAGEMENT FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	42	42	40	39	37
<u>Budget Needs (B)</u>						
Salaries	\$(000's)	1,260	1,260	1,200	1,170	1,110
Supplies & Expenses	\$(000's)	308.7	308.7	294.0	286.65	271.95
Projects:						
Federal Contract Dollars						
1. PL-566	\$(000's)	18.0	18.0	28.0	10.0	
2. RC&D	\$(000's)			35.0	35.0	35.0
3. CRP	\$(000's)	67.68	67.68	56.4	56.4	
4. ACP/FIP	\$(000's)	62.0	62.0	62.0	62.0	62.0
5. Focused Funding	\$(000's)	12.5				
State Cost-Share Dollars						
1. MFIP	\$(000's)	120.0	150.0	150.0	150.0	150.0
2. Wildlife habitat improvement	\$(000's)		250.0	250.0	250.0	250.0
TOTAL BUDGET NEEDED		1,848.88	2,116.38	2,075.4	2,020.05	1,878.95
<u>Targets</u>	M = 1,000					
1. Total assists	assists	14,250	13,405	13,620	13,620	13,665
a. field	assists	4,770	4,995	5,100	5,100	5,145
b. incidental	assists	9,480	8,410	8,520	8,520	8,520
2. Total management plans/acres	plans	1,950	1,985	2,115	1,960	1,955
a. comprehensive plans/acres	plans	565	495	580	580	590
b. brief plans/acres	plans	1,385	1,490	1,535	1,380	1,365
a. comprehensive plans/acres	acres	55,500	55,500	56,700	56,700	57,400
b. brief plans/acres	acres	26,250	19,850	18,850	17,750	16,950
3. Total site preparation	acres	12,040	13,200	11,310	9,280	8,320
a. natural	acres	4,305	3,065	3,225	3,500	3,540
b. artificial	acres	7,735	10,135	8,085	5,780	4,780
4. Total reforestation	acres	13,165	13,885	12,425	8,255	7,285
5. Total timber stand improvement	acres	3,755	3,315	4,300	5,800	5,700
6. Habitat improvement	acres	6,170	10,565	10,580	9,215	9,350
7. Recreation improvement	acres	6,670	4,345	4,530	4,835	4,890
8. Timber sales	sales	385	405	395	410	435
	acres	7,725	7,220	7,260	7,450	8,055
	M bd. feet	3,760	5,090	5,065	5,125	5,125
	cords	89,735	90,650	91,250	92,150	95,750

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

URBAN FORESTRY

ACTIVITY DESCRIPTION

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 Division Urban Forestry Program was established. At this time, Dutch Elm Disease was a relatively new and serious threat and it served as the nucleus around which various local and state programs were formed. Among them were the State Shade Tree Program administered by the Department of Agriculture and the Urban Forestry Program administered by the DNR, Division of Forestry.

As the incidence of Dutch Elm Disease declined in much of Minnesota, so too did federal and state funding for these 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 assistance, to urban residents and their communities. Also, the Division has continued to extensively promote Arbor Day in many Minnesota communities, recognizing the importance that this day has in building public awareness and appreciation for trees and forests.

GOAL

Assist Minnesota communities with the management of 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.

STATEWIDE DIRECTION

The Division plans to increase its efforts in urban forestry through a cooperative program with Minnesota's Department of Agriculture, the University of Minnesota and others. 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.

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.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

- * Provide field foresters with the training necessary for them to serve out-state communities.

- * Provide Metro Area forestry personnel with the training and information they need to directly assist large urban communities.
- * Cooperate in sponsoring Arbor Day events with other agencies, organizations and units of local government.
- * Work with other agencies in developing information and educational materials for distribution to interested persons.
- * Prepare and distribute an urban forestry directory to facilitate increased communication between the State's urban forestry practitioners.
- * Assist local communities in developing tree inventories, management plans, ordinances and forestry program budgets.
- * Advise communities on tree maintenance, tree planting and wood waste utilization or disposal methods.
- * Coordinate urban forestry activities with public and private sector interests.
- * Promote forestry input into local land use planning and zoning activities.
- * Cooperate with others to provide the necessary training for local housing and right-of-way developers to minimize damage to the urban environment.
- * Landscape Division field stations and other facilities.

REGIONAL EMPHASIS

Region I

Provide leadership in urban forestry by actively promoting Arbor Day, responding to forest pest requests, and by providing assistance in tree planting and care of the urban forest. Region staff will attempt to accurately record all urban forestry accomplishments to ensure that urban forestry efforts are recognized.

Region II

- * Continue servicing urban requests as in the past until the study is completed which will better identify the Division's role.
- * Select pilot communities where the Division can concentrate urban forestry efforts.
- * Provide leadership by properly landscaping and managing the vegetation at Division facilities.
- * Establish communication with other agencies, communities and the private sector individuals in urban forestry in Region II.

Region III

Keep assistance at current levels on insect and disease requests and service special projects where the Division's limited time will yield the highest return. No additional effort is possible without additional funding and manpower.

Region V

Develop a long-range urban forestry plan for the Region. Concentrate on networking with various agencies and communities to coordinate urban assistance.

URBAN FORESTRY FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988 (C)	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	3.0	8.0	8.0	8.0	8.0
<u>Budget Needs (B)</u>						
Salaries	\$(000's)	90.0	240.0	240.0	240.0	240.0
Supplies and Expenses	\$(000's)	22.05	58.8	58.8	58.8	58.8
Projects						
Federal Focused Funding						
1. Red River Project	\$(000's)	25.0	25.0	25.0		
2. Urban Directory Contract	\$(000's)	12.5				
Oak Wilt Project	\$(000's)		<u>47.3</u>	<u>47.3</u>	<u>15.0</u>	<u>15.0</u>
TOTAL BUDGET NEEDED		<u>149.55</u>	<u>371.1</u>	<u>371.1</u>	<u>313.8</u>	<u>313.8</u>

Targets

1. Individual urban assists	assists	570	670	735	800	850
2. Community urban assists	assists	239	290	395	447	497

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

(C) Increases in staff, budget, and targets from 1988 on reflect the change level for an expanded community forestry program requested in the Division's 1988-89 biennial budget.

COOPERATIVE COUNTY FOREST MANAGEMENT

ACTIVITY DESCRIPTION

The Cooperative County Forest Management (CCFM) program, formerly the County Assistance Program, was established in the 1940's under the Iron Range Resources and Rehabilitation Board to assist northern 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 managing and administering approximately 2.8 million acres of tax-forfeited forest lands.

Until 1985, 10 county assistance foresters provided direct assistance to eight counties active in the program (Aitkin, Becker, Beltrami, Clearwater, Crow Wing, Itasca, Lake and St. Louis) under a cost-sharing matching agreement. Direct assistance has been discontinued in favor of a cooperative approach to assisting counties. No full-time staff remain active in the program.

Region, area and district forestry personnel currently provide requested assistance on land transactions, administrative issues, forest inventory, ownership mapping, and aerial photo interpretation. Financial support is also made available to carry out reforestation, timber development and forest road projects. Division efforts concentrate on channeling financial support and/or technical services through ongoing Division programs rather than through direct staff support.

GOAL

Support and assist efforts to intensify the multiple-use, sustained-yield management of county tax-forfeited forest lands.

STATEWIDE DIRECTION

The restructured Cooperative County Forest Management program will pursue the complementary integration of county and state staff, programs, resources and goals to maintain and improve the quality of Minnesota's forest resources.

The historical role of the Division in providing forest fire protection, 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 pursued.

Where statutory responsibilities allow flexibility the regulatory role of the Division in relation to county programs will be de-emphasized in favor of an advisory role. The oversight for statutory responsibilities will also be decentralized to allow greater interaction between state and county field staffs. Routine projects and problems will be dealt with locally by the Division's Area Forest Supervisors. Specialized assistance will be provided upon request.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

- * Administer state and federal grants earmarked for county resource management and development.

- * Conduct joint state/county training exercises and personnel development workshops.
- * Make available adequate forest tree seedlings for county reforestation projects.
- * Assist counties in effectively using and maintaining Phase I and Phase II forest inventory information.
- * Assist counties in using the Division's Timber Management Planning and Information System (TMPIS).
- * Conduct joint state/county meetings (i.e., stumpage price review) to regularly exchange expertise and information.
- * Carry out cooperative projects (i.e., prescribed burns, road development) and engage in cooperative project planning at the local level.
- * Encourage active involvement of county land departments in the Division's ongoing MFRP and area planning processes.
- * Support the development of a more stable funding source for county land management.
- * Clarify and revise, as necessary, laws governing the relationships between the Division and county land departments.
- * Provide direct assistance to counties without an organized land department.
- * Conduct temporary personnel assignments to accomplish special projects or training.
- * Develop cooperative agreements with individual counties as necessary to meet joint needs.
- * Execute statutory responsibilities for the review of tax-forfeited land and timber sales.
- * Assist in determining Tree Growth tax rates.
- * Encourage joint state-county goal-setting and problem-solving sessions.

REGIONAL EMPHASIS

Same as statewide direction.

COOP. COUNTY FOREST MGMT. FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Units of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	4.0	2.5	2.5	2.5	2.5
<u>Budget Needs (B)</u>						
Salaries	\$(000's)	120.0	75.00	75.00	75.00	75.00
Supplies and Expenses	\$(000's)	29.4	18.38	18.38	18.38	18.38
<u>Projects</u>						
BWCA Intensification	\$(000's)	810.0	810.00	810.00	810.00	---
County Forest Development Grants	\$(000's)	250.0	250.00	250.00	250.00	250.00
TOTAL BUDGET NEEDED		<u>1,209.4</u>	<u>1,153.38</u>	<u>1,153.38</u>	<u>1,153.38</u>	<u>343.38</u>

Targets M = 1,000

1. Administer County Grants	grants (C)	16	16	16	16	16
	grants (D)	14	14	14	14	14
2. Review of Tax Law Stumpage Rates						
a. Auxiliary Forests by county	counties	8	8	8	8	8
b. Tree Growth		10	10	10	10	10
3. Grant Accomplishments						
a. Reforestation	M acres	5	5	5	5	5
b. Timber Stand Improvements	acres	1,000	1,000	1,000	1,000	1,000
c. Roads	miles	50	50	50	50	50
4. Cooperative Projects	projects					

- (A) One fte = 1730 hours/year.
- (B) Budget estimates are in 1987 dollars.
- (C) State grants subject to biennial appropriations.
- (D) BWCA grants are dependent upon federal funds.

FOREST PEST MANAGEMENT

ACTIVITY DESCRIPTION

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 decayers result in the loss of about one-half of the annual forest growth in the state. Weed competition in forest plantations restricts the establishment of 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 managers, Christmas tree growers, non-industrial and industrial landowners, urban, municipal, county and state forest managers. Previously, the program concentrated primarily on state-administered forest lands. Greater emphasis is needed in nursery, urban, private and county forest pest management. 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.

GOAL

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

STATEWIDE DIRECTION

The Forest Pest subprogram 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, place 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.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

- * 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 field units.
- * Conduct an analysis of program effectiveness.

- * 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.
- * Maintain cooperative relationships with public and private agencies to ensure an open exchange of pest management information.
- * Provide technical expertise and laboratory capabilities to address complicated nursery and tree improvement issues. Analyze and develop effective control programs for Minnesota pests.
- * Evaluate the effectiveness of prescribed pest management techniques and control strategies.
- * Help develop and implement the Department's pesticide use policy.
- * Cooperate with the U.S. Forest Service in surveillance monitoring and evaluation of regional (multi-state) and national forest pest problems.
- * Cooperate with the Minnesota Department of Agriculture to monitor and control the expansion of the gypsy moth within Minnesota.
- * Conduct surveys and investigations to determine the presence and monitor the levels of infestations of forest pests and evaluate the damage or potential for damage they cause.
- * Develop pest management guidelines and control strategies for each major timber type in Minnesota; integrate these guidelines into management practices and the unit planning process.
- * Develop stand risk rating systems for the major timber types within the state and begin risk rating Minnesota's forest lands.
- * Maintain up-to-date expertise in forest pathology, entomology, silviculture, vegetation management and the use of pesticides through continuing education opportunities.
- * Provide training for public, industry, private and urban forest managers in pest management techniques and their integration into forest management practices.
- * Provide technical review of forest development proposals using pesticides to insure their safe, effective and economical use.
- * Develop criteria for evaluating weed competition and control needs in forest areas.

REGIONAL EMPHASIS

Region I

A major emphasis for the regional pest program will be training in both insect and disease management and in the use of herbicides. Herbicide responsibilities will be returned to the areas. Monitoring and training will be the main emphasis of the Regional Pest Specialist. Insect and disease surveys will still be conducted by the regional pest specialist, but emphasis will be on evaluation surveys and long-term impact studies. District and area personnel will become more involved with detection surveys by planting and retrieving pheromone traps and by sampling for specific pests. Special projects to address specific pest concerns will also be conducted by the Regional Pest Specialist with district and area staff support.

Region II

I & D Program

- * Provide training to forest managers in pest identification and integration of pest management practices into their daily activities.

- * Increase reliance on foresters and technicians to provide the region with insect and disease information on the lands they administer. Information will include reporting of pest occurrence, some survey activity and the placement of pheromone traps.
- * Provide assistance to forest managers for specific pest problems.
- * Concentrate efforts on the future forest by intensifying work on seed orchards, plantations, regeneration areas and aspen recycling sites.
- * Conduct lab and field studies to resolve selected pest problems. Develop management strategies and/or possible control practices for selected pests.
- * Maintain the use of aerial herbicide application as an option in Region II because of the size of the program and constraints on forest access. Explore the use of ground applications where possible.
- * Maintain a statewide Forest Insect and Disease Diagnostic Laboratory.
- * Encourage contractors interested in developing ground application equipment and methods.

Region III

Train Area personnel to better recognize and treat forest pest problems. Aerial pest surveys, pheromone trap sampling, ground visits and monitoring of problem areas will continue, as will monitoring of the forest tree nurseries for pest problems.

Region V

Training and field assistance will continue to be a major emphasis. Portions of the regional herbicide program will be transferred to the Area forestry offices.

There is a need in the Region to continue to review existing pesticide guidelines regarding vegetative buffer strips. The existing guideline appears over-restrictive when applied to small, high quality sites using restrictive (ground) application techniques.

The Regional Forest Pest Specialists will continue to coordinate cooperative statewide evaluation and suppression projects with the Minnesota Department of Agriculture and the U.S. Forest Service. Risk rating studies will also continue as will efforts to establish a long-range management plan for the Gypsy Moth. Insect and disease surveys will focus on evaluating long-term impacts.

FOREST PEST MANAGEMENT FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	6.2	7.0	7.0	7.0	7.0
<u>Budget Needs (B)</u>						
Salaries	\$(000's)	186.0	210.0	210.0	210.0	210.0
Supplies and Expenses	\$(000's)	45.57	51.45	51.45	51.45	51.45
Projects	\$(000's)	15.0	10.0	10.0	10.0	10.0
TOTAL BUDGET NEEDED		246.57	271.45	271.45	271.45	271.45

St. Paul Targets M = 1,000
MM = 1,000,000

State and Federal Cooperative Targets

1. Conduct surveys and investigations to determine presence of forest pests and evaluate damage or potential damage. MM acres

Interpretation of Pest Management Principles with Forest Management Activities

2. Conduct risk and hazard rating of Minnesota's forest lands. M acres
3. Provide forest protection assistance to seed orchards. sites 2 4 2 -- --

Surveys, Evaluations, Research

4. Monitor major pest populations with pheromone traps. traps
5. Publications for information transfer. publications 4 8 4 4 4
6. Review forest development proposals using pesticides. % reviewed 100% 100% 100% 100% 100%
7. Conduct special projects. projects 2 1 2 1 1

(A) One fte = 1730 hours/year.
(B) Budget estimates are in 1987 dollars.

FOREST SOILS

ACTIVITY DESCRIPTION

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 the major benefit of the Forest Soils effort. Understanding these relationships is essential to concentrating intensive timber management on the most productive forest land in order to produce a greater quantity and quality of yield.

Funding was provided by the LCMR during the 1982-83 biennium for the Forest Soils Program. The Forest Resource Management Act of 1982 reinforced legislative support for this program by instructing the Commissioner of Natural Resources to include three forest soil and hydrology specialist positions in the 1984-85 department budget. These positions were approved by the Legislature in 1983. Today, the Division has one full-time soils specialist in each of Regions I, II and III.

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 the 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.

GOAL

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

STATEWIDE DIRECTION

Over the next five years the Forest Soils Program will continue to provide forest soil interpretations to land managers to assist in the statewide regeneration programs. The program 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; then applying this information to field forestry 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. These activities will aid in evaluating the suitability of forest land for other proposed 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.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

- * Provide site-specific evaluation and analysis prior to initiating management activities.
- * Assist public and private forest managers in focusing resource management efforts and targeting investments to the most productive sites.
- * Use the area planning process to target management efforts on the most productive sites.
- * Integrate soil concepts into forest management practices from the planning phase to harvesting and regeneration.
- * Standardize and automate soil/landform/vegetation data collection methods and reporting procedures.
- * Use ongoing forest inventory efforts to collect landform/soil/vegetation information to reduce data gaps.
- * 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 related to forest management.
- * Assign the Forest Soils Unit the responsibility to act as the central focus point for acid deposition issues.
- * Develop a hierarchical ecological land classification system based on climate, landform, soils and vegetation.
- * Develop methods of evaluating the productivity of lowland sites.

REGIONAL EMPHASIS

Region I

The forest soils program will continue efforts in five program areas including: soil interpretation and management assistance; information, education and training; management planning assistance; cooperative soil survey and special request projects. Soil interpretation and management assistance efforts will continue with emphasis on site-specific analysis prior to initiating management activities. Private forest soils management assistance will be provided in conjunction with the Conservation Reserve Program.

Training emphasis will shift from general concepts to specific management application of soil-site information. Forest Soil Specialists will continue to assist in the area planning effort.

Cooperation with the soil survey program will also continue. Soil surveys will soon be completed in Lake of the Woods and Beltrami Counties. Emphasis will be on developing supplemental publications of these surveys specifically for forest management.

The Forest Soils Program will continue to respond to special problems requiring special study. Special projects will be prioritized against a set of needs and benefit criteria. Upcoming projects include evaluating gravel resources in Region I and investigating preferred site characteristics for lowland regeneration.

Region II

Major thrusts will include:

- * Develop supplemental interpretations for soil surveys in Itasca, St. Louis and Carlton counties.
- * Explore the feasibility of expanding the coverage of the U.S. Forest Service Ecological Classification System to include state-administered land within and adjacent to the Superior National Forest.
- * Assist in developing resource management units, management strategies and guidelines for the Littlefork, Deer River, Cloquet, Hibbing and Duluth area forest management plans.
- * Develop methods to evaluate the productivity of lowland sites so management activities can be targeted for the most productive sites.
- * Take the lead role in implementing an interagency project to collect soil, landform and vegetation data on Phase I timber inventory plots in the Aspen-Birch Unit.

Region III

The major thrust of the Forest Soils Program in Region III for the next five years will continue to be two-fold. The first, is to provide site-specific recommendations to district foresters for forest management activities based on soil and landform characteristics. The second is to maintain a strong information and education program at the district and area levels. Efforts will also be directed at: 1) Establishing baseline site information through field visits and special projects; 2) Standardize and automate soil/landform/vegetation data collection methods; 3) Develop supplementary forest interpretations for soil surveys in Region III; 4) Develop resource management units (RMU's) for Region III area plans; 5) Working with other specialists on important management problems (i.e., locating good clones of bigtooth aspen and developing methods of regenerating this species on other sites).

Region V

The Division has received a Resource Conservation and Development grant to contract with a soil specialist to collect and interpret soils data in Region V. Specific objectives are to: 1) identify high quality hardwood forest land in southeastern Minnesota; 2) develop forest soil interpretations for soil surveys already published in southeastern Minnesota; 3) collect forest productivity information for important tree species in southeastern Minnesota; and 4) write and publish the results of the survey.

The major thrust of the Forest Soils Program in Region V will be to provide site-specific recommendations to district foresters for forest management activities based on soil and landform characteristics. This will be accomplished by helping to develop on-site forestry information in Region V (over the next two years) and through field visits. An information and education program will be developed at the district and area levels, and with private forest managers. Efforts will also be directed at: 1) Establishing baseline site information through field visits and special projects; 2) Standardize and automate soil/landform/vegetation data collection methods; 3) Developing supplementary forest interpretations for soil surveys in Region V; 4) Developing resource management units (RMU's) for Region V area plans; 5) Working with other specialists on important management problems (i.e., evaluating sites for the location of a black walnut seed orchard and progeny test areas).

FOREST SOILS FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	3.3	3.3	3.3	3.3	3.3
<u>Budget Needs (B)</u>						
Salaries	\$(000's)	99	99	99	99	99
Supplies and Expenses	\$(000's)	24.3	24.3	24.3	24.3	24.3
Projects:						
Identification of Prime Forest Lands - RC&D Funds	\$(000's)	10	20			
TOTAL BUDGET NEEDED		<u>133.3</u>	<u>143.3</u>	<u>123.3</u>	<u>123.3</u>	<u>123.3</u>

Targets M = 1,000
MM = 1,000,000

Forest Soil Interpretation and Management Assistance

1. Provide technical forest soil information on forest management intensification projects.						
a. State land.	M acres	3.0	3.0	3.0	3.0	3.0
b. Private land.	M acres	.45	.25	.25	.25	.25
2. Assist the forest roads program to identify potential gravel deposits.	projects	8	9	8	8	8
3. Review forest development projects using soil active and soil mobile pesticides.	% of total	100	100	100	100	100
4. Prepare articles and soil survey supplements.	articles	12	10	10	9	9

Minnesota Cooperative Soil Survey Targets

5. Collect forest productivity and other interpretive data for major soil units on state-administered land in each soil survey, and correlate soils data with timber inventory information.	plots	270	160	160	40	40
6. Attend field technical reviews of county soil surveys.	reviews attended	8	4	4	3	3

Special Projects

7. Respond to requests for soils information (i.e., relate soils to timber inventory, hazardous waste compaction, insects and disease, seed orchards).	projects	10	14	13	13	13
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(A) One fte = 1730 hours/year.
(B) Budget estimates are in 1987 dollars.

FOREST SOILS FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

ST. PAUL	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	.3	.3	.3	.3	.3
<u>Budget Needs (B)</u>						
1. General Fund	(\$000's)	9.0	9.0	9.0	9.0	9.0
<u>Targets</u>	M = 1,000 MM = 1,000,000					
Forest Soil Interpretation and Management Assistance						
1. Provide technical forest soils information on forest management intensification projects.						
a. State land.	M acres					
b. Private land.	M acres					
2. Assist the forest roads program to identify potential gravel deposits.	projects					
3. Review forest development projects using soil active and soil mobile pesticides to provide for safe, effective, and economical use.	% of total					
4. Prepare articles and soil survey supplements.	articles	2	1	1	1	1
Minnesota Cooperative Soil Survey Targets						
5. Collect forest productivity and other interpretive data for major soil units on state-administered land in each soil survey, and correlate soils data with timber inventory information.	plots					
6. Attend field technical reviews of county soil surveys.	reviews attended					
Special Projects						
7. Respond to requests for soils information (i.e., relate soils to timber inventory, hazardous waste compaction, insects and disease, seed orchards).	projects	3	1	1	1	1

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.



Minnesota Forest Resources Plan

Forest Resources Assessment Program

The mission of the Forest Resource Assessment Program is to monitor and evaluate Minnesota's forest resources to enable increased use of these resources for state economic development.

FOREST RESOURCE ASSESSMENT AND ANALYSIS

ACTIVITY DESCRIPTION

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

The resource assessment and analysis group faces five clear challenges:

- * To maintain a field commitment to the inventory process.
- * To inform the public as to what resource assessment is and what it can and does do for Minnesota.
- * To expand and change survey efforts to capture new (non-traditional) data, capitalize on new environmental initiatives and incorporate developing technologies.
- * To streamline the process of getting inventory data to users in a cost-efficient manner.
- * To cooperate in producing an accessible and user-friendly inventory analysis program.

The 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. Inventory personnel in the areas of Survey Operations and Support (SOS), Remote Sensing (RS) and Geographic Information Systems (GIS) are in Grand Rapids. The inventory team must interact strongly and effectively with the regions, areas, counties and other forest inventory users to maintain and improve the quality and utility of inventory information.

Survey Operations and Support (SOS)

Forest Inventory Survey Operations and Support is the portion of Forest Resources Assessment and Analysis concerned with the design and field implementation of the ongoing Forest Inventory and Analysis (FIA) and Cooperative Stand Assessment (CSA) efforts. When requested, SOS also produces specialized data for the Division such as the peatland assessment. In addition, SOS is a cooperator with other agencies in the design and implementation of CSA compatible resource inventories on other ownerships.

The objective of the SOS unit is to provide an accurate assessment of present conditions and changes in the natural resource data base by:

- maintaining FIA permanent plots and data base,
- maintaining and updating the CSA,
- conducting special projects (in cooperation with other public agencies).

Remote Sensing (RS)

Remote sensing is the technique of data gathering without being in direct contact with the observed objects. Remote sensing techniques include the use of

both photographic and non-photographic sensors. Remote sensing activities are designed to produce photographic and other interpretable imagery to use as a tool in resource management. The objectives are to: educate resource managers on the capabilities of remote sensing products, interpret these products and promote their increasing use in Division management activities.

Geographic Information System (GIS)

The GIS is a new technology that provides for collecting, joining together and analyzing diverse, site-specific data in a automated way. Any data describing a common point or area can be partially or fully assembled and analyzed to better identify and describe the desired character of that parcel of land. When the current processing backlog is alleviated land managers will be able to interact with the GIS to use site-dependent silvicultural data for forest management planning and analysis. The objective of the GIS unit is to improve land management capabilities by geographically inputting, maintaining, analyzing and displaying natural resource information.

GOAL

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

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.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

Survey Operations and Support

A. Establish the Minnesota "Continuous Inventory" program that includes ongoing and cyclic updates of the FIA (Phase I) and CSA (Phase II) data base in conjunction with expanded remote sensing capabilities and the development of a Division geographic information system.

- * Seek and maintain adequate funding levels.
- * Maintain the FIA on a 10-year cycle.
- * Process CSA alterations and updates on a timely basis.

- * Establish priorities for the conversion of hand drawn maps.
 - * Reassess 10% of each area's land base annually (CSA).
- B. Maintain a qualified field survey crew in Grand Rapids to set standards, write contracts, direct and quality check field survey efforts.
- * Set standards for CSA and FIA field survey.
 - * Establish quality control checks for all field survey including alterations.
 - * Develop the FIA and CSA into comprehensive multiple-use inventories.
- C. Expand biometric analysis and improve the utility of the continuous forest inventory data base for multiple-use forest development in the state.
- * Establish joint appointments or work assignments with the Division's Management Information Systems staff.
 - * Strengthen ties with North Central Forest Experiment Station and the University of Minnesota through joint projects.
 - * Establish an Assistant Biometrician position.
- D. Provide continuing education for the Division's inventory specialists in the areas of field survey, remote sensing, biometric and GIS applications.

Remote Sensing

- A. Continue to expand and develop the remote sensing program:
- * Establish a remote sensing assistant - 1988.
 - * Continue the university intern contract.
 - * Continue interaction with the University of Minnesota Remote Sensing Lab and North Central Forest Experiment Station.
 - * Continue interaction with line organization on projects and training.
 - * Provide for a timely update of high altitude photography, 35mm and 9x9 photography.

Geographic Information Systems

- A. Shift from data entry backlogs in Grand Rapids to management and planning use of the prime machine as a geographic information system.
- * Complete initial inventory data entry August 1987.
 - * Convert hard drawn maps within 2 years.
 - * Prioritize the use of GIS analytical capabilities.
 - * Cooperate with MIS in conducting a thorough needs analysis to project operational budget, staffing and equipment needs for the Division.
 - * Provide adequate staff and equipment to meet Division GIS needs.

REGIONAL EMPHASIS

Region I

The Lost River Project will be completed by the end of December, 1986. Inventory alterations will continue to be submitted as necessary to maintain the accuracy and utility of the Phase II data base. Efforts will be made to remeasure permanent plots in the Northern Pine Unit.

Region II

1. Maintain and update the current CSA data base.
2. Finish regional commitment for remeasurement of plots in the Aspen-Birch and Northern Pine units.

Region III

Same as Statewide Direction.

Region V

Maintain and update the current CSA data base.

FRAAP FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
Staffing Needs (A)						
St. Paul	fte's	3	3	3	3	3
Grand Rapids	fte's	19	16	16	16	16
Field	fte's	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
TOTAL STAFFING NEEDS		32	29	29	29	29
Budget Needs (B)						
Salaries:						
St. Paul	\$(000's)	90.0	90.0	90.0	90.0	90.0
Grand Rapids	\$(000's)	570.0	480.0	480.0	480.0	480.0
Field	\$(000's)	<u>300.0</u>	<u>300.0</u>	<u>300.0</u>	<u>300.0</u>	<u>300.0</u>
SUBTOTAL		960.0	870.0	870.0	870.0	870.0
Supplies & Expenses:						
SOS & RS (C)	\$(000's)	117.0	130.0	130.0	130.0	130.0
GIS (D)	\$(000's)	65.5	80.0	80.0	80.0	80.0
Biometrics (E)	\$(000's)	<u>50.0</u>	<u>50.0</u>	<u>50.0</u>	<u>50.0</u>	<u>50.0</u>
SUBTOTAL		232.5	260.0	260.0	260.0	260.0
Contracts:						
Trust (F)	\$(000's)	67.5				
Operations (F)	\$(000's)	<u>67.5</u>				
SUBTOTAL		135.0	240.0	240.0	240.0	240.0
9x9 Resource Photography (G)	\$(000's)	0.0	80.0	80.0	80.0	80.0
TOTAL BUDGET NEEDS		1,327.5	1,450.0	1,450.0	1,450.0	1,450.0
Targets						
	M = 1,000					
	MM = 1,000,000					
1. Conduct the FIA (Phase I) resurvey in Minnesota.						
a. HAP interpretation	M acres	8,633	8,000	3,000		
b. 35mm aerial survey	M acres	2,488	5,006	3,200	3,200	
c. Ground acres	M acres	1,745.5	2,028	2,028	2,028	
2. Cooperative Stand Assessment						
a. Ground survey						
- new acres	M acres	26	.5	.5	.5	.5
- upkeep	M acres	200	250	300	350	400
b. Initial data entry	M acres	1,426	.5	.5	.5	.5
c. Alterations and upkeep	M acres	200	250	300	350	620
d. Private lands	M acres	40				
e. Photography	M acres	500	500	500	500	500

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
3. Forest Management Projects						
a. Biometrics	projects	5	5	5	5	5
b. GIS	projects	2	3	4	5	6
4. Special Projects						
a. Biometrics	projects	10	15	20	20	20
b. GIS	projects	3	3	4	5	6

(A) One fte = 1730 hours/year.

(B) 1987 dollars.

(C) Numerous remote sensing activities are managed out of a self supporting revolving account.

(D) Final budget level will be determined by Division choice of desired GIS products.

(E) Additional dollars will be generated by direct charges to special project requests.

(F) One time funding.

(G) Decision will have to be made when to place it back in the budget, suggest 1988.

FOREST PRODUCTS UTILIZATION AND MARKETING (FPU&M)

ACTIVITY DESCRIPTION

Funding and technical assistance from the U.S. Forest Service provided the initial impetus for developing Minnesota's FPU&M program. The Division has participated in the program since its inception in 1966. The program was administered by a single staff forester until 1976. In 1976 the staff was increased to three and later to five. Since 1980 the FPU&M program has been staffed by seven foresters located in four regions and St. Paul. The seven-member FPU&M program staff work cooperatively with the other agencies and organizations involved in developing Minnesota's wood resources.

FPU&M program activity falls 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 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 the need of wood products producers and consumers together. Marketing activities include publishing a comprehensive forest industry directory, a bimonthly newsletter (3500 circulation), a semiannual 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.

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.

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.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

- * 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.
- * Investigate the feasibility of charging fees for certain types of PFU&M program industry assistance.
- * Increase public relations benefits to Division of Forestry and DNR from FPU&M activities.

REGIONAL EMPHASIS

Region I

Industrial development and business retention will be the primary FPU&M emphasis. Secondary wood processors are limited in the Region and will be encouraged. State timber sales will be studied and a marketing plan developed. Fiber fuels will also be promoted.

Region II

Forest Products Industrial Development

- A. More detailed resource assessment information is needed such as size, quality, access, ownership and location of the surplus resource to adequately assist the firms interested in developing this resource. This information will be gathered by working more closely with area personnel on feasibility studies, identifying surplus pockets through aerial observation and getting more input from loggers and other forest industry personnel.
- B. Special emphasis will be given to informing the public of the importance of the forest industry and forest management to the overall economy of northeastern Minnesota.

Wood Energy Development

- A. The role that the DNR has played in wood energy development, including system conversions, will be documented. This will be used to further promote wood energy and in public relations efforts for the Department.

Forest Products Marketing

- A. The "Forest Products Price Report" has not been published since June of 1984 due primarily to the concerns of forest industry. This report will be published again because it is valuable information and is the only historical record of delivered prices in Minnesota.
- B. The State's timber sale share in Region II will be analyzed and efforts will be made to increase it. Meetings between field personnel and the major firms procuring stumpage from the Region will be conducted.
- C. Marketing data such as directories, broker lists, producer lists, price lists, etc. will be computerized. This will facilitate more efficient organization, storage, retrieval and analysis of marketing data.

Forest Products Processing

- A. Provide overall business management training and assistance to forest products processors in cooperation with other agencies and institutions. Industries will be provided with simplified methods of installing and using cost accounting and other business management techniques to more efficiently operate their business.

Region III

Identify and promote wood processing opportunities. Promotion will be done through local development groups and established businesses. Much of the work with existing businesses will be in the form of marketing assistance and financial analysis to help control production costs.

A second initiative will be to work with field offices in identifying timber potential and in marketing timber sales. A "total" marketing approach will be encouraged in timber sale design, including researching client needs and followup evaluation of client satisfaction.

UTILIZATION AND MARKETING FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>						
1. U&M staff	fte's	7	8	8	8	8
2. Special projects	fte's	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
TOTAL STAFF NEEDED		8	9	9	9	9
<u>Budget Needs (B)</u>						
1. General Fund	\$(000's)	225.0	255.0	255.0	255.0	285.0
2. BWCAW	\$(000's)	30.0	30.0	30.0	30.0	0.0
3. Federal Focus Funding (C)	\$(000's)	25.0				
3. Special Project Funds (D)	\$(000's)	40.0	40.0	40.0	40.0	40.0
TOTAL BUDGET NEEDED		320.0	325.0	325.0	325.0	325.0
<u>Targets</u> M = 1,000 MM = 1,000,000						
Forest Products Industrial Development						
1. Identify and promote development opportunities.						
a. program initiated	opportunities	8	10	12	12	12
b. request initiated	opportunities	50	50	50	50	50
2. Assist development organizations.	assists	30	30	40	40	40
3. Prepare promotional articles and programs.	articles	8	10	12	12	12
4. Incidental assists.	assists	50	50	50	50	50
Wood Energy Development						
5. Wood energy information publications.	articles	5	5	5	5	5
6. Public media promotional articles and programs.	articles	5	6	6	6	6
7. Cooperative promotional or technical projects with other organizations.	projects	8	8	7	7	6
8. Individual energy conversion analyses.	analyses	10	5	5	5	5
9. Initiate other technical assists.	assists	100	75	75	75	75
Forest Products Marketing						
10. Market information publications.	articles	15	15	15	15	15
11. Public media promotional articles and programs.	articles	6	10	12	14	16
12. Major market research and development projects.	projects	4	8	10	12	14
13. Individual marketing assists.	assists	100	150	175	175	175

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
Forest Products Processing						
14. Secondary industry.						
a. major analyses completed	analyses	4	4	4	4	4
b. incidental technical assists	assists	50	60	70	80	80
15. Primary industry.						
a. major analyses completed	analyses	8	8	8	8	8
b. incidental technical assists	assists	80	80	85	85	90
16. Harvesting - technical assists.	assists	50	40	40	35	35
17. Presentations, workshops given.	workshops	5	5	5	5	5

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

(C) Federal focus funding is the amount received from U.S. Forest Service, State and Private Forestry for a Dutch Elm Disease project in the Red River Valley.

(D) Special project funds is an estimate for regular program expenses such as printing and contracts, and for special projects.



Minnesota Forest Resources Plan

Fire Management Program

The mission of the Fire Management Program is to prevent and suppress wildfire on public and private land in the forested counties of Minnesota (this includes all but 13 counties in Southwest Minnesota).

WILDFIRE PROTECTION AND MANAGEMENT

ACTIVITY DESCRIPTION

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 prescribed burning. Wildfire protection functions can be divided into three major categories: 1) prevention, 2) presuppression, and 3) suppression.

PREVENTION activities are designed to reduce the likelihood of fire occurrence and, also to minimize the damage resulting from fires that might occur. They include such things as public education, law enforcement, and forest vegetation (or "fuels") modification.

PRESUPPRESSION activities prepare suppression forces for the eventuality of fires and provide for early detection of fires. Activities include training crews, developing and maintaining inter- and intra-state agreements for sharing personnel and equipment, developing fire action plans, and dispatching plans, monitoring ambient weather conditions and associated fire danger, maintaining equipment in a state of readiness, and contracting for the use of private equipment. Fire detection is carried out through a network of lookout towers, aerial detection flights, and a variety of citizen and agency reports.

SUPPRESSION activities are aimed at controlling and extinguishing wildfires in the shortest time possible, considering the values at risk. This is done through a balanced application of suppression forces, including trained crews, tools and equipment.

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 habitat for specific plant and associated wildlife species. In addition, prescribed fires can provide valuable training for suppression personnel.

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.

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. The Division will continue to provide leadership in implementing prescribed fire policies and training Department representatives in prescribed burning techniques.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

Prevention

- * Intensify efforts to inform the public of the dangers of wildfire and methods to prevent them.
- * Provide additional training and information to the state's 2,000 plus Township Fire Wardens.
- * Integrate fire prevention goals with those of other Division programs.
- * Provide fire prevention training for Division employees.

Presuppression

- * Strengthen cooperative wildfire protection systems by increasing investments in and cooperation with rural fire departments and other agencies.
- * Improve the general condition and capabilities of Department fire fighting equipment. Establish standards for fire equipment. Maintain a balance between aerial and ground resources.
- * Actively support and participate in the national mobility of fire suppression resources.
- * Identify property development in high fire hazard areas and, in cooperation with local fire departments, inform property owners of the possible dangers of wildfire and what can be done to reduce these dangers.
- * Inform local zoning authorities and insurance companies of increases in loss potential and inform them of actions they could take to reduce risks.
- * Improve Division personnel's understanding of fire weather systems and the associated impacts of fire suppression preparedness levels. Train field staff to operate the BEHAVE computer program for predicting fire behavior. Address the lack of specific weather forecast information in Northwestern Minnesota.
- * Develop methods to integrate fire planning into area planning, providing updates of local plans as needed using automated data processing equipment.
- * Increase cooperation between districts, areas and regions in fire protection activities.

Suppression

- * Strive to maintain a balanced suppression force. Improve capabilities and increase standards of ground resources.
- * Using the joint U.S. Forest Service/Division economic analysis, explore joint suppression capabilities and develop dispatching procedures that provide an efficient mix of resources.
- * Strengthen training in fire suppression methods. Use tools such as the fire simulator.

Fire Management

- * Expand efforts to train other DNR personnel to conduct prescribed burns.
- * Encourage the use of prescribed burning whenever possible according to Operational Order 47.
- * Use the Private Forest Management Program to achieve prescribed burning goals.
- * Increase cooperation and communications between and within DNR disciplines in fire management activities.

- * Increase use of prescribed burning as a training tool (i.e., hazard reduction burns).
- * Inform the public of the benefits of prescribed burning.
- * Clarify laws regarding prescribed burning on non-state land (i.e., liability, assistance, easements, etc.).
- * Seek funding for an expanded prescribed burning program.

REGIONAL EMPHASIS

Same as Statewide.

WILDFIRE PROTECTION AND MANAGEMENT PROGRAM FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>						
St. Paul	fte's	10.6	11.0	11.0	12.0	12.0
Region	fte's	1.0	2.0	2.0	2.5	2.5
Area and District	fte's	<u>45.7</u>	<u>46.0</u>	<u>48.0</u>	<u>50.0</u>	<u>50.0</u>
TOTAL STAFFING NEEDED		57.3	59.0	61.0	64.5	64.5
<u>Regional Staffing Distribution</u>						
Prevention	fte's	6.7	8.0	10.0	12.5	12.6
Presuppression	fte's	20.7	20.7	20.7	20.7	20.7
Suppression	fte's	19.3	19.3	19.3	19.3	19.2
<u>Budget Needs (B)</u>						
General Fund (O&P)	\$(000's)	1,645.2	2,000.0	2,100.0	2,200.0	2,310.0
Fire Fighting Fund	\$(000's)	750.0	950.0	950.0	1,500.0	1,500.0
Fire Protection - Federal	\$(000's)	150.0	125.0	100.0	75.0	50.0
Rural Community - Federal	\$(000's)	<u>140.0</u>	<u>125.0</u>	<u>125.0</u>	<u>125.0</u>	<u>125.0</u>
TOTAL BUDGET NEEDED		2,685.0	3,200.0	3,275.0	3,900.0	3,985.0
<u>Targets</u>						
<u>Prevention</u>						
1. Public information distribution (Smokey Bear material and other).	pieces of information	65,000	65,000	65,000	65,000	65,000
2. Issue and inspect burning permits.	permits	65,000	65,000	67,000	69,250	70,750
3. Fire prone property contacts.	contacts	0	5,500	5,500	5,500	5,500
<u>Presuppression</u>						
4. Daily weather observation/maintain weather station, distribute weather, etc.	fte's	4.6	4.6	4.6	4.6	4.6
5. Maintain or update cooperative agreements.	agreements	55	55	55	55	45
6. Maintain/develop fire department agreements.	agreements	90	90	90	90	90
7. Develop new/resign equipment agreements.	agreements	800	800	800	800	800
8. Recruit/train/retrain specialized hourly employees (S.C., Tower, Dispatch).	people	405	405	405	405	405
9. Administer and train township fire wardens.	wardens	2,300	2,300	2,300	2,300	2,300
10. Prepare/administer aerial detection contracts.	contracts	26	26	26	26	26
11. Update area fire plans.	plans	13	6	7	6	7
<u>Suppression</u>						
12. Suppress wildfires.	fires	1,627	1,640	1,550	1,510	1,475
13. Acres burned.	acres	50,000	41,800	39,000	38,200	36,875

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
14. Prepare fire reports.	reports	1,627	1,640	1,550	1,510	1,475
15. Produce yearly fire report.	reports	1	1	1	1	1
Training						
16. Basic fire training.						
a. basic firefighter.	people	50	30	30	30	30
b. specialized teams.	people	40	50	50	50	50
c. rural fire departments.	departments	90	90	90	90	90
17. NIIMS conversion training.						
a. Forestry personnel.	people	35	20	20	10	10
b. others.	people	100	10	10	20	20
18. Fire behavior training/fire danger system.						
a. train/retrain area spec.	people	24	17		17	
19. National training courses/develop or maintain currency in national mobility.						
a. attend training courses in/out-state.	courses	5	30	30	30	30
20. Fire prevention training.						
a. attend specialized training.	people	18	20	20	20	20
21. Simulator training - Division personnel.	people		84	84	84	84
22. Prescribed burn training.	people					
Other Programs						
23. Assist other states with economic analysis under federal project.	states	3	3	3	3	3
State-Federal Cooperative Targets						
24. Inspect and inventory excess/Title XVI property placed with fire departments.	inspections	560	150	560	100	560
25. Process requests for excess property.	applications	145	150	150	150	150
26. Process requests for Title XVI funds.	applications	400	400	400	400	400

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.



Minnesota Forest Resources Plan

Administrative and Technical Support Services

The mission of the Administrative and Technical Support Services Program is to provide the basic level of maintenance and administrative support required to attain the goals of other Division programs.

MANAGEMENT INFORMATION SYSTEMS

ACTIVITY DESCRIPTION

In 1982, with funding provided by the Legislative Commission on Minnesota Resources (LCMR), the Division 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 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.

The following is a discussion of the major activities of the MIS program:

I. Systems Development

The development of computerized systems is normally the most visible product of an MIS unit. The process of developing a system consists of several steps. The amount of effort involved in each step depends on the size, complexity, and use of the system. The four major steps in developing a computerized system are: The needs analysis, which results in an agreement of what problems or issues the system will address and the method selected to solve them; the design of the system, which is the documentation of the system, and specifications for the programming and administrative procedures; the programming, which is the actual development of the computer program and the creation of the users manual; and the implementation, which incorporates the system into the organization's operations.

The primary objectives of systems development are to:

- * Obtain Division commitment to systems development, maintenance and integration.
- * Economically develop and maintain effective systems.
- * Integrate systems where applicable.

II. Data Processing Program Coordination/Integration/Administration

There are many actors involved in natural resources data processing. A high level of coordination is necessary between these actors to insure that the MIS unit is providing the products and services that are needed and desired by the Division, the Department, and the natural resources community.

The primary objectives of data processing coordination, integration, and administration are to:

- * Optimize the use of existing data processing (DP) equipment in the most effective, efficient and appropriate manner.
- * Coordinate the evaluation and procurement of hardware and software for the Division.
- * Promote security, data privacy and compliance with copyright policies and regulations.

III. Support Services

The installation, consultation, maintenance and facilities management activities cover the complete life cycle of computer equipment, systems and supporting software. Determining equipment needs, installing hardware and software, installing upgrades to the hardware and software, trouble shooting malfunctions of hardware and software, performing daily backup procedures and providing miscellaneous supplies are all important support services. The primary objective of support services is to provide information management assistance to the Division and outside the Division as appropriate.

IV. Information and Education

Data processing is rapidly introducing many changes to the Division. To keep current with changing needs, lines of communication need to be open and active throughout the Division. This currently takes place on a daily and a somewhat informal basis.

Various user groups within and outside of the Division provide a more formal basis for communication. There are user groups for many of the various systems being developed within the Division. Other computer related user groups include the Department's MIS technical steering committee, field user groups, and the Information Management Bureau (IMB) group, the State's computer center.

Training is a vital component in the successful application of continually changing computer technology. The MIS unit evaluates, coordinates, and schedules Division computer training. The MIS unit's role is to anticipate the Division's training needs and provide for these needs through: a) training sessions presented directly by MIS staff, b) coordination with non-MIS unit provided training sessions, and c) distribution of training schedules and course catalogs supplied by external training programs and educational facilities.

The primary objectives are to:

- * Improve communications between the MIS unit and Division staff.
- * Increase understanding and awareness of MIS Program roles, goals, products and services to all levels of Division personnel.

GOAL

Coordinate, provide direction and be responsible for the processing of the Division of Forestry's information.

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. 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 may 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 with data processing facilities outside of the Division to improve compatibility, increase use of existing capabilities and decrease the duplication of efforts. The program will explore options in the office automation, Divisionwide equipment upgrading, and the 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.

MAJOR OBJECTIVES AND STRATEGIES FOR F.Y. 1987-1991

- * 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.

REGIONAL EMPHASIS

Region I

Region I's primary emphasis will be to improve field access to data systems, increase training on the Division's existing systems, and to explore hardware maintenance contracts. These objectives will be met by presenting needs and concerns to the Divisionwide computer user group.

Region II

Region II's primary emphasis will be to increase the number of people using personal computers and to improve the overall expertise of computer users.

These objectives will be met by continued emphasis on:

- * Upgrading computer equipment and improving access through networking or multi-terminal systems. Increase storage capacity as needed.
- * Increasing introductory and advanced training available to present and potential computer users.

Region III

Develop network capability in Area forestry offices, including other DNR discipline representatives where possible. Additional work is needed to complete the nursery information system.

Region V

Same as Statewide Direction.

MANAGEMENT INFO. SYSTEMS FIVE YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	17	17	17	17	17
<u>Budget Needs (B)</u>						
Salaries	\$(000's)	650	650	650	650	650
Supplies and Expenses	\$(000's)	40	40	40	40	40
Projects						
TOTAL BUDGET NEEDED		690	690	690	690	690

Targets

1. Timber sales system enhancements.	X					
2. Inventory edits.	X					
3. Old fire data.			X			
4. Equipment plan.			X			
5. Forest development system. (C)				X		
6. Inventory development. (C)					X	
7. Accomplishment Reporting			X			
8. Redesign timber sales system. (C)						X

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

(C) F.Y. 1989-1991 projects are subject to later review and revision.

FOREST RESOURCE PLANNING

ACTIVITY DESCRIPTION

Forest Resource Planning is designed to help coordinate 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 of 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.

GOAL

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

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.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

- * 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.

REGIONAL EMPHASIS

Region I

Continue involvement in the area planning process. The region will limit special project assignments and, generally, lower targets for those areas actively involved in developing area plans.

Region II

- * Cut back on area targets during the area planning process.
- * Consider sharing staff of non-planning areas with those doing planning to continue meeting targets.
- * Establish a planning guide containing timelines, area and region responsibilities, and sources of information for those starting the area planning process.
- * Additional Region II direction or strategy will be contained in the "Region Staff Special Emphasis Annual Work Plan".

Region III

The Cambridge Area plan should be completed during F.Y. 1988. Implementation of the completed Moose Lake Area plan will continue, with emphasis on the land sale/land exchange portion.

FOREST RESOURCE PLANNING FIVE-YEAR ACTION PLAN -- STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	14.5	13.3	13.3	13.3	13.3
<u>Budget Needs (B)</u>						
Salaries	\$(000's)	435.0	399.0	399.0	399.0	399.0
Supplies and Expenses	\$(000's)	106.6	97.8	97.8	97.8	97.8
Projects		<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
TOTAL BUDGET NEEDED		541.6	496.8	496.8	496.8	496.8

Targets

1. Prepare final draft of MFRP.	plans	1 (C)			1	
2. Hold regional workshops.	workshops	4	4	4	4	4
3. Prepare annual work plans and accomplishment reports.	plans/reports	2	2	2	2	2
a. Region II.	plans/reports	3	3	3	3	3
4. Complete Area plans. (D)	plans	2	4	2	2	2
5. Develop forest recreation sub-area plans. (E)	plans	4				
6. Provide planning expertise to the Department and the Division for special high priority projects.	projects	15	10	10	10	10
7. Update and revise Division policies and manuals.	policies/manuals	2	2	2	1	1

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

(C) Will be completed in February 1987. Work will begin in F.Y. 1989 on the four-year MFRP update.

(D) Park Rapids and Orr Area plans will be completed in F.Y. 1987. Cambridge, Lewiston, Baudette and Littlefork Area plans will be completed in F.Y. 1988. The order of the remaining plans has not yet been determined.

(E) Recreation sub-area plans will be completed during F.Y. 1987.

PUBLIC AFFAIRS

ACTIVITY DESCRIPTION

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. Information efforts 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.

GOAL

Achieve increased public awareness and understanding of the Division; its programs, products, and services.

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.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

- * 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 decisionmaking.
- * 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).
- * Participate annually with the Department of Agriculture and an advisory committee in organizing the state's Arbor Day/Arbor Month program.
- * Draft necessary policy directives for clear definition of Division information and education roles and responsibilities.
- * Promote forestry facilities and services (especially recreation).
- * Use township fire wardens to distribute information since they are already an established network. It would also help them to gain more recognition in the communities.

- * Target the hunters and recreationists.
- * Distribute information and literature through the PFM program.
- * Cooperate with the DNR Bureau of Information and Education and with Region information and education personnel.
- * Maintain close contact with region and area fire prevention specialists and Township Fire Wardens.
- * Conduct periodic forest user surveys to assess public needs and expectations.

REGIONAL EMPHASIS

Region I

Continue public relations efforts and media contacts throughout the Region. Increase efforts in the Bemidji Area. Cooperate with the Regional Public Information Specialist to obtain training and guidance to increase the effectiveness of the region's public affairs program.

Region II

Encourage program managers to use their influence with various individuals, groups and associations. Promote the importance of forests and forest management to overall economy including all benefits, not just wood. Use media, especially local radio, newspapers and television. Work on listed strategies as time permits.

Region III

Major emphasis will be on training Region personnel in the area of marketing. This may be coordinated through the Regional Information Specialist. Marketing efforts will emphasize the multiple uses of state forests, forest fire protection and forest insect and disease protection efforts.

Region V

Same as Statewide Direction.

PUBLIC AFFAIRS FIVE-YEAR ACTION PLAN -- STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	10	10.5 (C)	12 (D)	12.5 (E)	12.5
<u>Budget Needs (B)</u>						
Salaries	\$(000's)	300	315	360	375	375
Supplies and Expenses	\$(000's)	73.5	77.2	88.2	91.9	91.9
Projects:	\$(000's)	---	20	37	157	162
Printing, design layouts						
Major "focus" project						
Project Learning Tree workshops						
Increased Arbor Day program						
TOTAL BUDGET NEEDED		373.5	412.2	485.2	623.9	628.9

Targets M = 1,000

Promotion and Publicity

1. Promote existing Division of Forestry recreational opportunities and facilities by assisting to:
 - a. Produce recreation user maps. maps 2 2 2 2 2
 - b. Advertise state forest land efforts 5 5 5 5 5
and station locations.
 - c. Prepare interpretive maps, items 5 5 10 10 15
brochures, and other user information.
2. Coordinate annual Arbor Day.
 - a. Encourage Division foresters celebrations 75 75 75 85 85
to participate in community and school Arbor Day celebrations.
 - b. Distribute Arbor Day material schools 2,100 2,100 2,100 2,100 2,100
to schools, statewide.
 - c. Promote Arbor Day seedling M seedlings 225 225 225 225 225
program for schools and non-profit civic organizations.
3. Recognize TREE CITY USA recipients 32 32 33 33 34 recipients.
4. Publicize PFM and urban efforts 5 5 5 5 5 forestry community assists.
5. Initiate and maintain media contacts 5 5 10 10 15 contacts.
6. Develop printed material and projects 4 6 10 10 15 displays.

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
Training and Public Education						
7. Coordinate I&E training with fire prevention efforts.	sessions	3	3	3	3	3
8. Design public education materials for forest users.	items	5	5	5	5	5
9. Strengthen public affairs skills and abilities within the Division.	training hours	100	150	200	250	250
Planning						
10. Maintain a long-range comprehensive public affairs plan.		Develop	Update	Update	Update	Update
11. Draft I&E policy directives.	policies	1	2	3	3	3
12. Maintain a marketing plan.		Develop	Update	Update	Update	Update

- (A) One fte = 1730 hours/year.
 (B) Budget estimates are in 1987 dollars.
 (C) 1/2 fte from field.
 (D) 1 fte secretary, 1/2 fte graphics assistance.
 (E) 1/2 fte from field.

HUMAN RESOURCES DEVELOPMENT

ACTIVITY DESCRIPTION

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 elements 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 in-service training to improve knowledge, skills and abilities needed to function effectively in their current position. Continuing education opportunities are also made available to enable personnel 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.

GOAL

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

STATEWIDE DIRECTION

The Division needs to further develop and refine its in-service training and continuing education efforts. 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.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

- * Develop and implement an effective human resources planning program to improve overall productivity of the Division's workforce.
- * Develop and strengthen in-service technical skills, training and continuing education programs, especially in the area of management and supervisory training. Use 4% of Division time and budget resources to accomplish this.

- * Recruit capable personnel for the Division; adopt a proactive approach.
- * Complete a classification study of all Division field professional and technical positions, as well as selected staff positions.
- * Continue implementation of the Division's annual individual training plan development program.
- * Include participation of all working classes in the Division Human Resources Development Program.
- * Reinstate the trainee program and expand it to a full 12-month mobility assignment for all entry level professionals.
- * Further develop the Personnel Development Supervisor Position through specific training and experience.
- * Expand the responsibility and authority of the Personnel Development Supervisor Position in the areas of personnel development and management.
- * Ensure implementation of the present Division Annual Individual Training Plan Development Program.
- * Incorporate human resource planning into the routine daily planning functions of Division Management.
- * Develop and implement a Management Training Program in the Division of Forestry.
- * Use training and continuing education opportunities outside of state government to complement and diversify the program.
- * Use all 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.
- * Develop and implement Divisionwide policy encouraging personnel to use self-help training opportunities.
- * Use training and continuing education opportunities outside of the areas of traditional professional forestry training to fill the gaps left by traditional academic forestry training.
- * Use mobility assignments throughout the Division and Department to strengthen and diversify Division employees' knowledge, abilities, skills and experience base.
- * Recognize individual accomplishments in the areas of training and continuing education.
- * Promote cooperative training and continuing education efforts with all natural resource management agencies.
- * Maintain the student intern program.
- * Actively pursue the Division's affirmative action goals.

REGIONAL EMPHASIS

Region I

Continue to provide training opportunities for all personnel. Seek additional training to meet the changing needs of employees, especially in the areas of personnel management and natural resource management.

Region III

Promote individual development through use of special job assignments, in-service training, manager exchange program and outside training opportunities.

HUMAN RESOURCE DEVELOPMENT FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>						
1. St. Paul	fte's	2.9	2.9	2.9	2.9	2.9
2. Region I	fte's	2.4	2.4	2.4	2.4	2.4
3. Region II	fte's	3.8	3.8	3.8	3.8	3.8
4. Region III	fte's	2.9	2.9	2.9	2.9	2.9
5. Region IV, V and VI	fte's	<u>1.1</u>	<u>1.1</u>	<u>1.1</u>	<u>1.1</u>	<u>1.1</u>
TOTAL STAFFING NEEDED		13.1	13.1	13.1	13.1	13.1
<u>Budget Needs (B)</u>						
Salaries	\$(000's)	393	393	393	393	393
Supplies and Expenses	\$(000's)	<u>96.29</u>	<u>96.29</u>	<u>96.29</u>	<u>96.29</u>	<u>96.29</u>
TOTAL BUDGET NEEDED		489.29	489.29	489.29	489.29	489.29
<u>Targets</u>						
1. In-service training.	training days	2,208	2,208	2,208	2,208	2,208
2. Continuing education sessions.	training days	1,472	1,472	1,472	1,472	1,472
3. Develop F.Y. 87 training schedule for Division in-service.	schedules	1	1	1	1	1
4. Recruit professional and technical foresters.	visits	1	1	1	1	1
5. Classification studies completed.	positions	100	100	10	10	10

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

LAW ENFORCEMENT

ACTIVITY DESCRIPTION

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 firerelated law enforcement; 2) State land timber trespass investigation and enforcement; and 3) Enforcement of Division of Forestry recreational area rules and regulations.

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.

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.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

- * 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.

LAW ENFORCEMENT FIVE YEAR ACTION PLAN - KEY TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	4.2	5.7	6.7	7.7	9.2
<u>Budget Needs (B)</u>						
Salaries	\$(000's)	126.0	171.0	201.0	231.0	276.0
Supplies and Expense	\$(000's)	6.0	7.0	8.0	9.0	10.0
TOTAL BUDGET NEEDED		132.0	178.0	209.0	240.0	286.0
<u>Targets</u>						
Fire Laws						
1. Conduct surveillance operations.	number	9	9	12	12	12
2. Fires investigated.	number	750	825	770	775	760
3. Written warnings.	number	380	370	345	345	345
4. Citations.	number	145	180	245	265	265
5. Complaints.	number	8	9	13	14	20
6. Fire billings.	number	185	240	315	380	380
Timber Laws						
7. Written warnings.	number	14	18	27	30	36
8. Theft citations.	number	15	23	31	38	47
9. Trespass, Timber - civil.	number	37	37	38	38	38
10. Trespass, Land - civil.	number	13	13	13	13	13
11. Xmas tree - criminal actions.	number	9	9	12	13	15
Recreation Areas						
12. Written warnings.	number	120	145	165	200	260
13. Citations.	number	37	65	90	103	110
14. Criminal complaints.	number	9	9	9	9	9
15. Vehicle warnings.	number	90	120	140	155	165
Training						
16. Level I training.	persons	28	28	28	28	28
17. Level II training.	persons	28	14	16	26	18
18. Level III training.	persons	20	20	20	20	20

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

MAINTENANCE AND ADMINISTRATION

ACTIVITY DESCRIPTION

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.

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 present a pleasing appearance to Division stations.

MAJOR STRATEGIES AND OBJECTIVES FOR F.Y. 1987-1991

- * Improve personnel and fiscal support services provided to program staff and supervisors.
- * Assess capital improvement needs and develop long-range capital improvement budgets.
- * Examine the advantages and disadvantages of equipment purchases under the lease option and its costs to the Division.
- * Seek economical alternatives to building maintenance and repair.
- * Provide liaison to the Commissioner's Office, Field Services, and Regional Administration on the distribution of equipment and equipment dollars.
- * Continue to implement the Division's office consolidation plan resulting in reduced administrative costs and increased efficiency in area operations.
- * Pay all bills within 30 days as required by law.

MAINTENANCE AND ADMIN. FIVE YEAR ACTION PLAN - STAFFING, BUDGET TARGETS

STATEWIDE	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	45	45	45	45	45
<u>Budget Needs (B)</u>						
Salaries	\$(000's)	1,350.0	1,350.0	1,350.0	1,350.0	1,350.0
Supply and Expenses	\$(000's)	<u>330.8</u>	<u>330.8</u>	<u>330.8</u>	<u>330.8</u>	<u>330.8</u>
TOTAL BUDGET NEEDED		1,680.8	1,680.8	1,680.8	1,680.8	1,680.8

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

BIBLIOGRAPHY

- Gray, Gerald J., Paul V. Ellefson and David C. Lothner. 1985. Timber Supply and Demand: A Lake States Regional Perspective. University of Minnesota and North Central Forest Experiment Station, St. Paul, MN.
- Jakes, Pamela J. 1980. Minnesota Forest Statistics, 1977. Resource Bulletin NC-53. USDA Forest Service, North Central Forest Experiment Station, St. Paul, MN 55108.
- Minnesota Department of Economic Security, Research and Statistical Service Office. 1980. Minnesota Labor Force Estimates, 1966-1978. Also: "Labor Market Information Survey" various issues.
- Minnesota Department of Energy and Economic Development, Policy Analysis Division. 1986. 1986 Economic Profile of Minnesota. St. Paul, MN 55155.
- Minnesota Department of Natural Resources, Division of Forestry. 1982. State Forest Road Plan. St. Paul, MN 55146.
- Minnesota Department of Natural Resources, Division of Forestry. 1983. Minnesota Forest Resources Plan:
Volume 1 Concept Document 27 p.
Volume 2 Issues Document 54 p.
Volume 3 Assessment 304 p.
Volume 4 Goals and Strategies 47 p.
Volume 5 Objectives and Recommendations 78 p.
Volume 6 Program and Budget 115 p.
Volume 7 Annual Budget Implementation 37 p.
St. Paul, MN 55155-4044
- Minnesota Department of Natural Resources, Division of Fish and Wildlife. 1985. "Forestry/Wildlife Habitat Management Guidelines." St. Paul, MN 55146.
- Minnesota Forest Industries, Inc. Various issues of "Forest Industries Facts and Figures." Duluth, MN.
- Minnesota State Planning Agency, Office of the State Demographer. 1983. Minnesota Population Projections: 1980-1020. St. Paul, MN 55155.
- U.S. Department of Commerce, Bureau of the Census. 1984. General Population Characteristics, 1960-1980. Government Printing Office.



Minnesota Forest Resources Plan

Appendix A

Assessment Tables

TABLE 1

Regional Population

	1960	1970	1980	1985	1990	2000	Percentage Increase				
							1960- 1970	1970- 1980	1980- 1985	1985- 1990	1990- 2000
Region 1	336,899	334,549	362,950	373,162	383,487	405,549	-0.7	8.5	2.8	5.7	5.8
Region 2	332,795	318,200	329,940	311,455	327,186	331,256	-4.4	3.7	-5.6	-0.8	1.2
Region 3	330,923	374,896	466,386	493,846	553,742	643,318	13.3	24.4	5.9	18.7	16.2
Region 4	527,418	519,578	526,256	526,679	536,398	541,366	-1.5	1.3	0.1	1.9	0.9
Region 5	360,532	383,369	404,565	412,790	429,142	447,616	6.3	5.5	2.0	6.1	4.3
Region 6	1,525,297	1,874,380	1,985,873	2,075,041	2,140,933	2,231,184	22.9	6.0	4.5	7.8	4.2
State	3,413,864	3,804,972	4,075,970	4,192,973	4,370,888	4,600,289	11.5	7.1	2.9	7.2	5.2
U.S.	179,323,175	203,302,031	226,545,805	238,740,000	249,617,000	267,955,000	13.4	11.4	5.6	4.6	7.3

Sources:

Bureau of the Census, Department of Commerce, 1960, 1970, 1980 General Population Characteristics.

Minnesota State Demography Unit, Minnesota Population Projections: 1980-2000, 1983.

Office of State Demographer, Minnesota State Planning Agency, Population Notes, August 1985.

Office of State Demographer, Minnesota State Planning Agency, Minnesota Population and Household Estimates, 1985, August 1986.

TABLE 2

U.S. and Minnesota
Percent of Population by Age Group

Age	1960		1970		1980		1990		2000	
	U.S.	MN	U.S.	MN	U.S.	MN	U.S.	MN	U.S.	MN
0-14	31.1	32.9	28.3	30.2	22.6	23.0	21.9	22.5	20.9	20.5
15-24	13.4	13.1	17.8	17.5	18.8	19.4	14.2	14.2	13.4	13.9
25-44	26.2	23.9	23.6	22.4	27.7	27.6	32.5	32.8	29.8	29.8
45-64	20.1	19.8	20.5	19.2	19.6	18.2	18.6	17.9	22.8	22.8
65+	9.2	10.3	9.8	10.7	11.3	11.8	12.8	12.6	13.1	13.0

Sources:

Bureau of the Census, Department of Commerce, 1960, 1970, 1980 General Population Characteristics.

Bureau of the Census, Department of Commerce, Provisional Projections of Population by Age and Sex, series P-25, No. 937, August 1983.

Minnesota State Demography Unit, Minnesota Population Projections: 1980-2010, 1983.

TABLE 3

U.S., State and Regional Per Capita Income
(1984 dollars)

	1970	1975	1980	1984	Average Annual Percent Change			
					1970- 1975	1975- 1980	1980- 1984	1970- 1984
Region 1	7,340	9,039	9,450	10,320	4.3	0.9	2.2	2.5
Region 2	8,841	10,294	10,446	10,320	3.1	0.3	-0.3	1.1
Region 3	7,608	8,073	8,730	9,810	1.2	1.6	3.0	1.8
Region 4	8,788	10,623	10,825	11,530	3.9	0.4	1.6	2.0
Region 5	9,618	10,314	11,418	12,460	1.4	2.1	2.2	1.9
Region 6	12,243	13,037	14,446	15,490	1.3	2.1	1.8	1.7
State	10,439	11,353	12,223	13,212	1.7	1.5	2.0	1.7
U.S.	10,569	11,284	11,989	12,988	1.4	1.2	1.7	1.4

Sources:

Bureau of Economic Analysis, Department of Commerce, State Personal Income - Estimates for 1929-82, 1984.

Bureau of Economic Analysis, Department of Commerce, computer tape.

Policy Analysis Division, Minnesota Department of Energy and Economic Development, 1986 Economic Profile of Minnesota, July 1986.

TABLE 4

Minnesota Employment By Sector

	1970	1975	1980	1984	Annual Average Change			
					1970- 1975	1975- 1980	1980- 1984	1970- 1984
Agriculture	155,558	166,572	152,936	145,861	1.4	-1.7	-1.2	-0.5
Ag. Services	5,963	9,521	13,308	16,620	9.8	6.9	5.7	7.6
Mining	14,816	14,546	16,213	10,578	-0.4	2.2	-11.3	-2.0
Construction	75,915	84,850	102,543	99,160	2.3	3.9	-0.8	1.9
Manufacturing	320,948	318,104	381,513	383,837	-0.2	3.7	0.2	1.3
TCPU	88,538	99,787	110,643	109,512	2.4	2.2	-0.3	1.5
Wholesale	83,058	110,654	123,117	122,278	5.9	2.2	-0.2	2.8
Retail	252,961	306,797	374,926	394,189	3.9	4.1	1.3	3.2
FIRE	82,128	108,959	144,702	160,241	5.8	5.8	2.6	4.9
Service	275,530	371,480	473,884	544,766	6.2	5.0	3.5	5.0
Government	263,223	292,889	306,733	300,771	2.2	0.9	-0.5	1.0
TOTAL	1,618,638	1,884,159	2,200,518	2,287,813	3.1	3.1	1.0	2.5

Source:

Bureau of Economic Analysis, Department of Commerce, Computer tape employment series, April 1984.

TABLE 5

Regional Employment*

	Region 1		Region 2		Region 3		Region 4		Region 5		Region 6	
	1975	1984	1975	1984	1974	1984	1975	1984	1975	1984	1975	1984
Agriculture	40,598	33,147	3,122	2,896	27,743	27,124	56,772	49,813	26,930	24,017	11,231	8,864
Ag. Services	1,654	2,374	915	1,408	924	1,966	1,553	2,795	1,184	2,070	3,359	6,154
Mining	129	191	13,116	7,622	151	201	418	480	311	316	421	1,507
Construction	7,431	79.5	8,091	4,969	7,746	11,132	13,009	13,390	7,866	8,652	40,707	53,119
Manufacturing	10,371	12,406	16,093	13,216	20,778	24,755	33,462	40,199	33,254	39,271	204,146	253,900
TCPU	6,912	7,234	8,652	7,149	6,876	9,304	8,189	9,709	6,909	8,039	62,406	68,321
Wholesale	5,930	6,083	5,095	4,239	5,302	7,031	13,896	14,049	6,995	7,354	73,319	83,545
Retail	23,255	27,336	22,398	24,067	26,341	38,565	38,043	43,698	28,989	36,571	167,771	223,986
FIRE	5,416	8,177	4,509	6,167	6,027	10,213	9,241	14,232	7,949	11,184	75,817	110,269
Service	26,019	33,129	25,620	30,425	26,907	40,690	35,511	47,426	21,222	57,621	216,201	335,374
Government	26,069	26,154	27,461	27,752	29,936	32,159	35,511	47,426	41,222	57,621	216,201	335,374
TOTAL	153,784	164,136	135,072	129,910	158,731	203,138	246,421	272,848	187,316	220,876	1,002,766	1,296,905

* Due to disclosure limitations in the data, some county employment by sector were estimated.

Source:

Bureau of Economic Analysis, Department of Commerce, Computer tape employment series, April 1984.

TABLE 6

Annual Average Regional Employment Growth Percentage
1975-1984

	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Non-Metro State	State
Agriculture	-2.0	-0.8	-0.2	-1.4	-1.2	-2.3	-1.3	-1.4
Ag. Services	4.0	4.9	4.8	6.9	6.4	6.8	6.2	6.4
Mining	4.5	-4.2	3.2	1.5	0.2	15.2	-4.0	-3.0
Construction	0.7	-4.3	4.1	0.3	1.1	3.0	0.5	1.2
Manufacture	2.0	-2.0	2.0	2.1	1.9	2.5	1.5	2.1
TCPU	0.5	-1.9	3.1	1.9	1.7	1.0	1.1	1.0
Wholesale	0.3	-1.9	3.2	0.1	0.6	1.5	0.4	1.1
Retail	1.8	0.8	4.3	1.6	2.6	3.3	2.3	2.8
FIRE	4.7	1.4	6.0	4.9	3.9	4.3	4.7	4.4
Service	2.7	1.9	4.8	3.3	3.8	5.0	3.4	4.3
Government	0.3	0.1	0.8	0.2	---	0.3	0.3	0.3
TOTAL	0.7	-0.4	2.8	1.1	1.9	2.9	1.3	2.2

Source:

Bureau of Economic Analysis, Department of Commerce, Computer tape employment series, April 1984.

TABLE 7

Historical Unemployment Rates

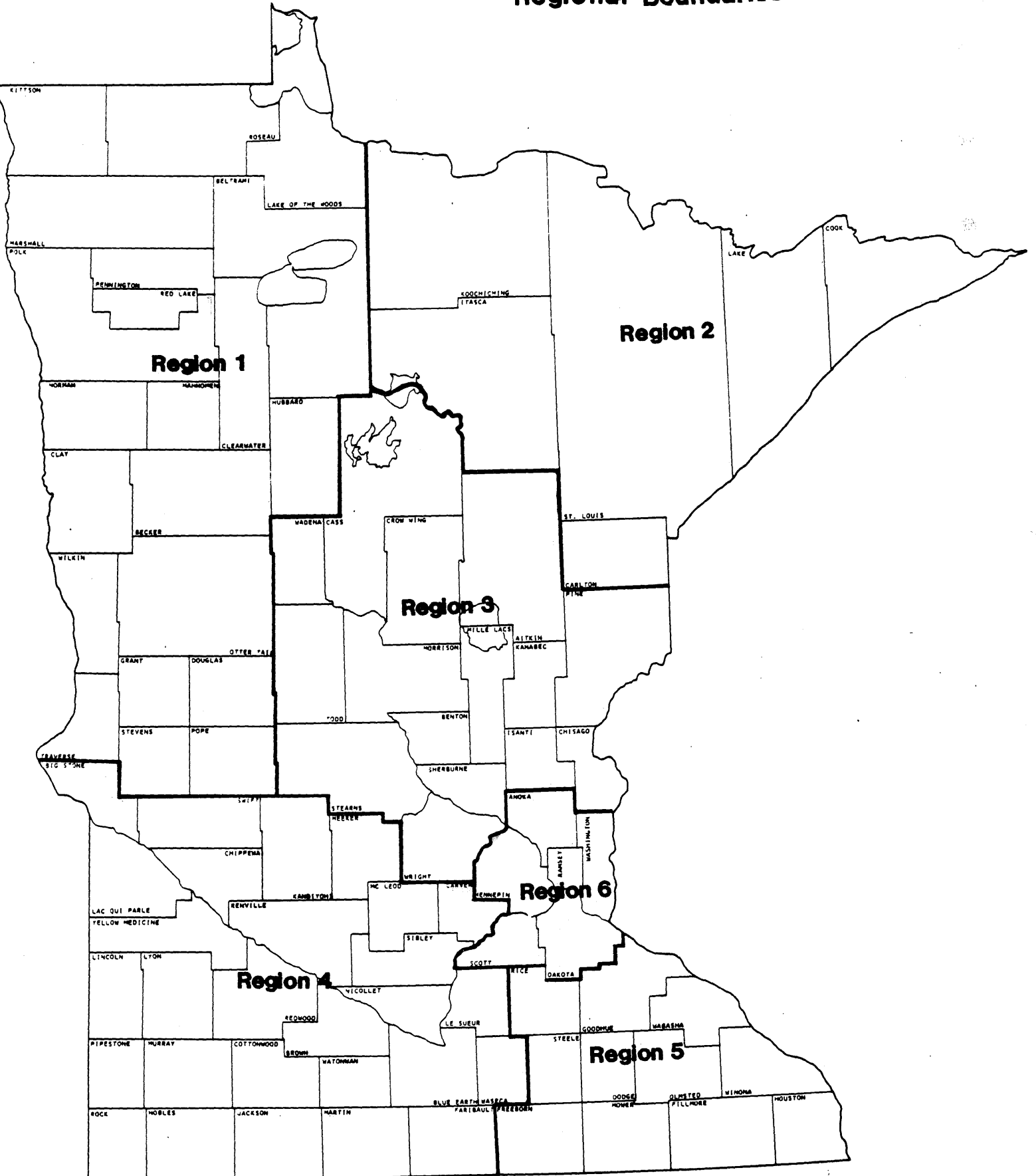
5 Year Average	U.S.	Minnesota	Non-Metro	Regions					
				1	2	3	4	5	6
1966-1970	3.9	3.6	5.1	6.0	5.9	6.1	4.4	4.0	2.8
1971-1975	6.1	5.6	6.2	7.5	7.5	8.0	5.4	5.4	4.8
1976-1980	6.8	5.0	6.2	7.0	8.1	7.6	4.8	4.9	4.2
1981-1985	8.3	6.8	8.6	8.9	14.4	9.3	6.7	6.6	5.3

Sources:

U.S. Bureau of Economics, Department of Commerce, Survey of Current Business, various issues.

Research and Statistical Service Office, Minnesota Department of Economic Security, Minnesota Labor (Work) Force Estimates 1966-1978 and Labor Market Information Survey, various issues.

Minnesota Department of Natural Resources, Regional Boundaries





Minnesota Forest Resources Plan

Appendix B

Program Time Allocations - Fiscal Years 1982-1986 (Statewide, Regional)

Division of Forestry
 Program Time Allocations - Fiscal Years 1982-1986
 Full-time Equivalents (A)

STATEWIDE

	FY 82	FY 83	FY 84	FY 85	FY 86
State Forest Management					
Land Administration	6.89	6.55	7.20	5.80	6.70
Forest Recreation	12.83	15.09	20.50	18.10	16.60
State Forest Roads	14.35	12.63	15.00	13.40	15.80
Timber Management (B)	139.53	145.71	149.10	137.30	129.60
Fish and Wildlife Habitat	3.44	3.82	4.30	3.80	3.80
Nursery and Tree Improvement	3.45	3.00	17.90	16.70	16.90
Cooperative Forest Management					
Private Forest Management (C)	34.41	36.55	38.10	34.50	39.24
County Cooperative (C)	10.32	11.19	12.00	8.18	5.20
Urban Forestry (C)	.93	1.09	2.50	4.50	2.26
Pest Management	10.85	9.46	8.60	7.70	6.00
Forest Soils (D)	--	--	--	--	--
Forest Resource Assessment					
Forest Resource Assessment and Analysis	69.35	76.09	80.20	68.60	32.40
Utilization and Marketing	7.35	8.58	10.00	7.80	8.50
Fire Management (E)	46.08	48.24	46.70	56.80	60.60
Technical and Admin. Support Services					
Forest Resource Planning (F)	1.80	1.98	11.00	10.55	10.30
Maintenance and Administration (C)	52.17	54.08	65.51	63.97	84.07
Public Affairs (C)	4.70	4.85	7.17	8.86	10.00
Human Resources Development (C)	8.54	7.85	14.42	17.50	13.13
Management Info. Systems (D)	--	--	--	--	--
Economics and Statistics (D)	--	--	--	--	--
TOTALS	426.99	446.76	504.20	484.06	461.10

- (A) Actual time reported by program from July 1 through June 30 for years 1982-1986. One full-time equivalent (fte) = 1730 hours/year. Time includes work performed by all but 12 full-time complement personnel. Time reported for fiscal years 1984-1986 also includes work performed by 90% positions, seasonal or non-tenured laborers and student workers.
- (B) Includes timber sales, forest development and regeneration.
- (C) Beginning fiscal year 1984 administrative time for Private Forest Management, County Assistance Program and Urban Forestry was reported as Human Resources Development, Public Affairs or Maintenance and Administration.
- (D) Time is not specifically reported for these programs. It is allocated to other programs depending upon the nature of the work performed.
- (E) Includes time spent on law enforcement work.
- (F) Prior to fiscal year 1984 time spent on planning activities was reported to the program for which the planning was done. Since fiscal year 1984 time allocated to Forest Resource Planning is mostly time spent on area forest resource plans and the statewide forest resource plan.

Division of Forestry
 Program Time Allocations - Fiscal Years 1982-1986
 Full-time Equivalents (A)

REGION 1

	FY 82	FY 83	FY 84	FY 85	FY 86
State Forest Management					
Land Administration	1.73	1.53	1.88	1.56	2.16
Forest Recreation	1.76	1.73	1.87	1.38	1.40
State Forest Roads	5.65	4.09	5.03	3.64	5.18
Timber Management (B)	36.17	39.45	43.48	37.70	35.69
Fish and Wildlife Habitat	1.08	1.13	1.23	.85	.91
Nursery and Tree Improvement	.28	.42	.52	.55	.25
Cooperative Forest Management					
Private Forest Management (C)	5.56	5.64	6.58	6.67	6.01
County Cooperative (C)	2.31	2.50	2.65	1.28	1.26
Urban Forestry (C)	.09	.08	.22	.24	.25
Pest Management	1.65	1.14	1.14	1.22	1.13
Forest Soils (D)	--	--	--	--	--
Forest Resource Assessment					
Forest Resource Assessment and Analysis	8.68	6.62	7.36	8.24	5.40
Utilization and Marketing	2.28	2.26	1.84	.90	1.41
Fire Management (E)	8.09	11.18	10.35	13.80	12.40
Technical and Admin. Support Services					
Forest Resource Planning (F)	.07	.05	.49	.62	.67
Maintenance and Administration (C)	13.79	13.29	14.82	13.71	16.70
Public Affairs (C)	.94	.76	1.15	1.38	1.22
Human Resources Development (C)	2.26	2.35	3.04	3.61	2.42
Management Info. Systems (D)	--	--	--	--	--
Economics and Statistics (D)	--	--	--	--	--
TOTALS	92.39	94.22	103.65	97.35	95.76

- (A) Actual time reported by program from July 1 through June 30 for years 1982-1986. One full-time equivalent (fte) = 1730 hours/year. Time includes work performed by all but 12 full-time complement personnel. Time reported for fiscal years 1984-1986 also includes work performed by 90% positions, seasonal or non-tenured laborers and student workers.
- (B) Includes timber sales, forest development and regeneration.
- (C) Beginning fiscal year 1984 administrative time for Private Forest Management, County Assistance Program and Urban Forestry was reported as Human Resources Development, Public Affairs or Maintenance and Administration.
- (D) Time is not specifically reported for these programs. It is allocated to other programs depending upon the nature of the work performed.
- (E) Includes time spent on law enforcement work.
- (F) Prior to fiscal year 1984 time spent on planning activities was reported to the program for which the planning was done. Since fiscal year 1984 time allocated to Forest Resource Planning is mostly time spent on area forest resource plans and the statewide forest resource plan.

Division of Forestry
 Program Time Allocations - Fiscal Years 1982-1986
 Full-time Equivalents (A)

REGION 2

	FY 82	FY 83	FY 84	FY 85	FY 86
State Forest Management					
Land Administration	2.34	2.16	2.30	2.02	2.17
Forest Recreation	5.15	5.21	5.04	5.30	5.78
State Forest Roads	5.21	4.42	4.95	5.10	4.73
Timber Management (B)	56.74	52.71	54.25	52.50	52.94
Fish and Wildlife Habitat	.97	.98	.93	1.00	1.06
Nursery and Tree Improvement	.54	.56	.74	.52	.28
Cooperative Forest Management					
Private Forest Management (C)	5.38	5.93	5.97	6.07	6.72
County Cooperative (C)	4.52	4.58	4.26	3.35	3.00
Urban Forestry (C)	.07	.10	.38	.31	.56
Pest Management	1.90	2.26	2.30	2.10	1.65
Forest Soils (D)	--	--	--	--	--
Forest Resource Assessment					
Forest Resource Assessment and Analysis	6.31	8.47	8.17	9.04	1.70
Utilization and Marketing	2.23	1.94	2.31	1.96	1.93
Fire Management (E)	8.70	10.29	8.67	10.95	15.40
Technical and Admin. Support Services					
Forest Resource Planning (F)	.21	.13	.37	.34	.36
Maintenance and Administration (C)	18.73	19.68	21.44	19.79	23.33
Public Affairs (C)	1.34	1.33	1.78	2.37	2.42
Human Resources Development (C)	1.99	1.55	3.92	4.54	3.81
Management Info. Systems (D)	--	--	--	--	--
Economics and Statistics (D)	--	--	--	--	--
TOTALS	122.33	122.3	127.78	127.76	127.84

- (A) Actual time reported by program from July 1 through June 30 for years 1982-1986. One full-time equivalent (fte) = 1730 hours/year. Time includes work performed by all but 12 full-time complement personnel. Time reported for fiscal years 1984-1986 also includes work performed by 90% positions, seasonal or non-tenured laborers and student workers.
- (B) Includes timber sales, forest development and regeneration.
- (C) Beginning fiscal year 1984 administrative time for Private Forest Management, County Assistance Program and Urban Forestry was reported as Human Resources Development, Public Affairs or Maintenance and Administration.
- (D) Time is not specifically reported for these programs. It is allocated to other programs depending upon the nature of the work performed.
- (E) Includes time spent on law enforcement work.
- (F) Prior to fiscal year 1984 time spent on planning activities was reported to the program for which the planning was done. Since fiscal year 1984 time allocated to Forest Resource Planning is mostly time spent on area forest resource plans and the statewide forest resource plan.

Division of Forestry
 Program Time Allocations - Fiscal Years 1982-1986
 Full-time Equivalent (A)

REGION 3

	FY 82	FY 83	FY 84	FY 85	FY 86
State Forest Management					
Land Administration	1.39	1.43	1.50	1.24	1.23
Forest Recreation	5.00	6.14	10.00	8.90	6.68
State Forest Roads	2.63	3.23	4.37	3.59	4.51
Timber Management (B)	27.95	28.41	33.36	31.00	26.90
Fish and Wildlife Habitat	.85	.99	.98	.74	.60
Nursery and Tree Improvement	.92	.47	13.57	14.77	20.62
Cooperative Forest Management					
Private Forest Management (C)	11.93	11.40	11.53	11.90	12.22
County Cooperative (C)	2.68	3.11	3.09	2.70	1.54
Urban Forestry (C)	.13	.09	.25	.29	.48
Pest Management	2.00	1.44	1.60	1.50	.89
Forest Soils (D)	--	--	--	--	--
Forest Resource Assessment					
Forest Resource Assessment and Analysis	6.51	4.79	5.56	4.71	1.39
Utilization and Marketing	.56	1.26	1.53	1.30	1.44
Fire Management (E)	16.69	14.84	16.09	20.30	20.20
Technical and Admin. Support Services					
Forest Resource Planning (F)	.22	.46	1.04	.99	1.13
Maintenance and Administration (C)	13.00	13.64	18.56	20.67	16.40
Public Affairs (C)	1.32	1.40	1.88	2.35	2.81
Human Resources Development (C)	2.07	1.79	2.94	4.21	3.19
Management Info. Systems (D)	--	--	--	--	--
Economics and Statistics (D)	--	--	--	--	--
TOTALS	93.85	94.89	127.85	131.36	122.23

- (A) Actual time reported by program from July 1 through June 30 for years 1982-1986. One full-time equivalent (fte) = 1730 hours/year. Time includes work performed by all but 12 full-time complement personnel. Time reported for fiscal years 1984-1986 also includes work performed by 90% positions, seasonal or non-tenured laborers and student workers.
- (B) Includes timber sales, forest development and regeneration.
- (C) Beginning fiscal year 1984 administrative time for Private Forest Management, County Assistance Program and Urban Forestry was reported as Human Resources Development, Public Affairs or Maintenance and Administration.
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Division of Forestry
 Program Time Allocations - Fiscal Years 1982-1986
 Full-time Equivalents (A)

REGION 5

	FY 82	FY 83	FY 84	FY 85	FY 86
State Forest Management					
Land Administration	1.17	.99	.82	.65	.52
Forest Recreation	.51	.77	.63	.93	.94
State Forest Roads	.36	.28	.38	.39	.26
Timber Management (B)	4.55	4.90	6.60	5.00	3.16
Fish and Wildlife Habitat	.47	.55	.78	1.10	1.04
Nursery and Tree Improvement	.55	.43	.28	.33	.15
Cooperative Forest Management					
Private Forest Management (C)	9.54	10.42	8.97	8.13	9.26
County Cooperative (C)	.05	.08	.11	.06	.06
Urban Forestry (C)	.07	.20	.16	.57	.62
Pest Management	1.66	1.55	1.66	1.72	1.60
Forest Soils (D)	--	--	--	--	--
Forest Resource Assessment					
Forest Resource Assessment and Analysis	2.62	2.74	1.55	2.01	.58
Utilization and Marketing	.38	.46	1.49	1.39	1.21
Fire Management (E)	2.14	2.64	2.47	2.55	1.67
Technical and Admin. Support Services					
Forest Resource Planning (F)	.006	.002	.11	.13	.18
Maintenance and Administration (C)	3.11	3.72	4.57	4.53	3.55
Public Affairs (C)	.63	.84	1.58	1.70	1.62
Human Resources Development (C)	.64	.68	1.15	1.37	1.07
Management Info. Systems (D)	--	--	--	--	--
Economics and Statistics (D)	--	--	--	--	--
TOTALS	28.46	31.25	33.31	32.56	27.49

- (A) Actual time reported by program from July 1 through June 30 for years 1982-1986. One full-time equivalent (fte) = 1730 hours/year. Time includes work performed by all but 12 full-time complement personnel. Time reported for fiscal years 1984-1986 also includes work performed by 90% positions; seasonal or non-tenured laborers and student workers.
- (B) Includes timber sales, forest development and regeneration.
- (C) Beginning fiscal year 1984 administrative time for Private Forest Management, County Assistance Program and Urban Forestry was reported as Human Resources Development, Public Affairs or Maintenance and Administration.
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Division of Forestry
 Program Time Allocations - Fiscal Years 1982-1986
 Full-time Equivalent (A)

REGION 6

	FY 82	FY 83	FY 84	FY 85	FY 86
State Forest Management					
Land Administration		.03			
Forest Recreation					
State Forest Roads					
Timber Management (B)	.23	.28			
Fish and Wildlife Habitat					
Nursery and Tree Improvement	.24	.25		.09	
Cooperative Forest Management					
Private Forest Management (C)	.12	.09			
County Cooperative (C)					
Urban Forestry (C)	.45	.26			
Pest Management	.83	.34			
Forest Soils (D)					
Forest Resource Assessment					
Forest Resource Assessment and Analysis					
Utilization and Marketing	.75	1.09			
Fire Management (E)	.19	.03			
Technical and Admin. Support Services					
Forest Resource Planning (F)		.01			
Maintenance and Administration (C)	.04	.23			
Public Affairs (C)	.07	.01			
Human Resources Development (C)	.01	.08			
Management Info. Systems (D)					
Economics and Statistics (D)					
TOTALS	2.93	2.70		.09	

- (A) Actual time reported by program from July 1 through June 30 for years 1982-1986. One full-time equivalent (fte) = 1730 hours/year. Time includes work performed by all but 12 full-time complement personnel. Time reported for fiscal years 1984-1986 also includes work performed by 90% positions, seasonal or non-tenured laborers and student workers.
- (B) Includes timber sales, forest development and regeneration.
- (C) Beginning fiscal year 1984 administrative time for Private Forest Management, County Assistance Program and Urban Forestry was reported as Human Resources Development, Public Affairs or Maintenance and Administration.
- (D) Time is not specifically reported for these programs. It is allocated to other programs depending upon the nature of the work performed.
- (E) Includes time spent on law enforcement work.
- (F) Prior to fiscal year 1984 time spent on planning activities was reported to the program for which the planning was done. Since fiscal year 1984 time allocated to Forest Resource Planning is mostly time spent on area forest resource plans and the statewide forest resource plan.

Division of Forestry
 Program Time Allocations - Fiscal Years 1982-1986
 Full-time Equivalent (A)

ST. PAUL

	FY 82	FY 83	FY 84	FY 85	FY 86
State Forest Management					
Land Administration	.26	.41	.64	.50	.66
Forest Recreation	.41	1.24	3.01	2.32	1.78
State Forest Roads	.50	.61	.40	.66	1.13
Timber Management (B)	13.89	19.96	11.92	10.90	10.44
Fish and Wildlife Habitat	.07	.17	.36	.16	.20
Nursery and Tree Improvement	.92	.87	1.23	.57	.65
Cooperative Forest Management					
Private Forest Management (C)	1.88	3.07	2.67	1.76	2.53
County Cooperative (C)	.76	.92	2.38	.79	.40
Urban Forestry (C)	.12	.36	1.33	3.05	.42
Pest Management	2.81	2.73	1.78	1.15	.68
Forest Soils (D)	--	--	--	--	--
Forest Resource Assessment					
Forest Resource Assessment and Analysis	45.23	53.47	56.59	44.50	23.30
Utilization and Marketing	1.15	1.57	2.70	2.29	2.56
Fire Management (E)	10.27	9.26	8.51	9.13	10.56
Technical and Admin. Support Services					
Forest Resource Planning (F)	1.29	1.33	6.94	8.46	8.00
Maintenance and Administration (C)	3.50	3.52	6.41	5.27	18.81
Public Affairs (C)	.40	.51	.78	1.06	2.80
Human Resources Development (C)	1.57	1.40	3.37	3.77	2.89
Management Info. Systems (D)					
Economics and Statistics (D)					
TOTALS	85.03	101.4	111.02	96.34	87.81

- (A) Actual time reported by program from July 1 through June 30 for years 1982-1986. One full-time equivalent (fte) = 1730 hours/year. Time includes work performed by all but 12 full-time complement personnel. Time reported for fiscal years 1984-1986 also includes work performed by 90% positions, seasonal or non-tenured laborers and student workers.
- (B) Includes timber sales, forest development and regeneration.
- (C) Beginning fiscal year 1984 administrative time for Private Forest Management, County Assistance Program and Urban Forestry was reported as Human Resources Development, Public Affairs or Maintenance and Administration.
- (D) Time is not specifically reported for these programs. It is allocated to other programs depending upon the nature of the work performed.
- (E) Includes time spent on law enforcement work.
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Minnesota Forest Resources Plan

Appendix C

Regional Program Targets - Fiscal Years 1987-1991

REGIONAL FIVE-YEAR ACTION PLANS

The following section lays out, by program, regional five-year action plans to carry out the program direction for that region. This is the Division's first attempt to project targets and staffing and budget needs at a regional level as part of the statewide planning effort. Therefore, tables in this section may be incomplete or nonexistent for some programs. As part of the MFRP implementation, the Division will develop a more formal work planning process at the regional level.

LAND ADMINISTRATION FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION II	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	2	2	2	2	2
<u>Budget Needs (B)</u>						
1. General Fund	\$(000's)	54	54	54	54	54
2. Resource 2000	\$(000's)	54	54	54	54	54
TOTAL BUDGET NEEDED		108	108	108	108	108
<u>Targets</u>						
	M = 1,000					
	MM = 1,000,000					
<u>Leases and Permits</u>						
1. Administer leases.	leases	100	100	110	110	110
2. Process special use permits.	permits	20	20	20	20	20
<u>Acquisition, Sale, Exchange</u>						
3. Propose or review land sales.	M acres					
4. Develop a gift policy.	policies					
5. Acquire lands.	acres	200	200	200	200	200
6. Review and process land exchanges and land transfers. (C)	proposals	12	12	12	12	12
7. Acquire rights-of-way.	miles	1	1	1	1	1
8. Transfer administrative control.	acres					
9. Transfer trust status.	acres					
<u>Classification</u>						
10. Propose or review land classifications involving DNR administered lands.	parcels					

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

(C) Exchange projections based on exchanges in various stages of processing. Figures are based on best estimate of what may develop.

STATE FOREST RECREATION FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION II	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's		8	8	8.5	8.5
<u>Budget Needs (B)</u>						
General Fund	\$(000's)		25	25	30	30
Dedicated Campground Receipts	\$(000's)		50	55	60	65
LCMR	\$(000's)		125	125	125	125
Capital Improvements	\$(000's)		50	50	60	60
Water Access - G&F	\$(000's)		60	65	70	75
Trails - General	\$(000's)		25	25	30	30
Canoe and Boating	\$(000's)		335	345	375	385
TOTAL BUDGET NEEDED						
<u>Targets</u>						
Development and Rehabilitation						
1. Rehabilitate or expand existing facilities in sub-areas as outlined in area or sub-area plans.	campsites		25	20	10	10
	day-use areas		1	1	1	1
	miles of trail		2	2	2	2
2. Develop new sub-areas as outlined in area or sub-area plans.						
a. Campgrounds	campgrounds		1		1	
b. Day-use areas	areas			1		1
c. Trails (new)	miles		25	25	15	10
d. Water accesses	accesses		1	1	1	1
3. Develop cooperative projects with other divisions, agencies and private sector to integrate outdoor recreation efforts.	projects					
Operations and Maintenance						
4. Operate and maintain forest recreation facilities in accordance with the budget.	campgrounds		23	24	24	25
	day-use areas		24	24	25	25
	miles of trail		450	500	520	525
	water accesses		78	80	80	80
	canoe & boat		66	66	66	66

(A) One fte = 1730 hours/year.
 (B) Budget estimates are in 1987 dollars.

STATE FOREST ROADS FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION II	Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u>						
1. Build new roads.	miles		7.5	7.5	7.5	7.5
2. Reconstruct old roads.	miles		10.0	10.0	20.0	20.0
3. Bridges and large culverts.	projects		1	1	0	1

TIMBER MANAGEMENT FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION II	Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u>						
	M = 1,000					
	MM = 1,000,000					
Forest Regeneration						
1. Reforestation						
a. site preparation	M acres		5.0	4.5	4.5	4.5
b. natural regeneration	M acres		5.5	5.6	5.8	6.0
c. seeding	M acres		1.1	1.0	1.4	1.4
d. planting	M acres		4.4	4.0	3.8	3.8
Timber Stand Improvement						
2. Site analysis	acres		2500	2300	2300	2300
3. Maintenance/Protection (A)	acres		200	220	220	250
General Forest Development						
4. Conduct activities such as well capping, surveying, signing, fencing, or construction of erosion control structures.						

(A) Maintenance and protection of timber stands includes activities accomplished by work crews and contracted vendors using a variety of methods to accomplish pruning, non-commercial thinning, crop tree release, cull tree removal, brushing and rodent control.

TIMBER SALES FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION II	Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u> M = 1,000						
MM = 1,000,000						
1. Conduct timber sales program on state land.						
a. Timber offered.	M cords		410	400	380	380
b. Timber sold.	M cords		225	230	240	250
2. Appraise and supervizr special fuelwood sales.	permits		300	275	275	275
	M cords		3,000	2,800	2,800	2,800
3. Scale timber harvested on state land.						
a. Division scale.	M cords		90	90	95	100
b. Consumer scale.	M cords		135	140	145	150
4. Timber scale inspections by Region staff.	inspections		50	50	50	50
5. Conduct special projects (will vary depending on funding and necessary tasks.	projects		1	1	1	1

FISH AND WILDLIFE HABITAT FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION II	Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u> M = 1,000						
MM = 1,000,000						
1. Conduct joint promotional events with the Section of Wildlife to advertise and/or publicize RIM projects (i.e., media events, tours or presentations to sportsmen groups).	man-hours I&E	240	200	200	200	200
2. Aspen recycling.	M acres	2.8	2.8	2.5	2.0	2.0

PRIVATE FOREST MANAGEMENT FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION I		Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u>		M = 1,000					
1.	Total assists	assists	1,400	1,450	1,500	1,500	1,500
	a. field	assists	1,070	1,115	1,130	1,130	1,130
	b. incidental	assists	335	335	370	370	370
2.	Total management plans/acres	plans	665	665	750	600	600
		acres	25,800	25,800	25,000	24,000	20,000
	a. comprehensive plans/acres	plans	155	100	150	150	150
		acres	12,500	20,000	20,000	20,000	20,000
	b. brief plans/acres	plans	510	565	600	450	450
		acres	13,300	5,800	5,000	4,000	4,000
3.	Total site preparation	acres	7,580	9,000	7,000	5,000	4,000
	a. natural	acres	1,270	1,270	1,270	1,500	1,500
	b. artificial	acres	6,310	7,730	5,730	3,500	2,500
4.	Total reforestation	acres	7,730	9,000	7,000	4,000	3,000
5.	Total timber stand improvement	acres	620	620	1,000	2,000	2,000
6.	Habitat improvement	acres	2,400	4,000	3,500	2,000	2,000
7.	Recreation improvement	acres	2,030	2,000	2,000	2,000	2,000
8.	Timber sales	sales	85	85	85	95	95
		acres	1,440	1,440	1,440	1,550	1,550
		M bd. feet	310	310	310	400	400
		cords	25,400	25,400	25,400	25,400	25,400

PRIVATE FOREST MANAGEMENT FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION II		Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u>		M = 1,000					
1.	Total assists	assists	1,470	1,455	1,520	1,520	1,565
	a. field	assists	970	955	1,020	1,020	1,065
	b. incidental	assists	500	500	500	500	500
2.	Total management plans/acres	plans	350	340	350	360	355
		acres	12,900	11,900	12,200	12,200	12,100
	a. comprehensive plans/acres	plans	100	90	100	100	110
		acres	7,000	6,300	7,000	7,000	7,700
	b. brief plans/acres	plans	250	250	250	260	245
		acres	5,900	5,600	5,200	5,200	4,400
3.	Total site preparation	acres	960	1,050	1,035	1,080	1,120
	a. natural	acres	460	600	585	630	670
	b. artificial	acres	500	450	450	450	450
4.	Total reforestation	acres	1,335	1,235	1,275	1,255	1,285
5.	Total timber stand improvement	acres	430	455	460	460	460
6.	Habitat improvement	acres	1,310	1,445	1,680	1,665	1,800
7.	Recreation improvement	acres	500	455	430	435	440
8.	Timber sales	sales	65	70	70	75	75
		acres	1,960	2,025	2,020	2,120	2,215
		M bd. feet					
		cords	33,900	35,300	34,800	35,700	36,300

PRIVATE FOREST MANAGEMENT FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION III	Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u> M = 1,000						
1. Total assists	assists	4,280	4,400	4,400	4,400	4,400
a. field	assists	1,530	1,575	1,600	1,600	1,600
b. incidental	assists	2,750	2,825	2,800	2,800	2,800
2. Total management plans/acres	plans	510	550	575	575	575
	acres	29,100	29,000	30,000	30,000	30,000
a. comprehensive plans/acres	plans	235	235	260	260	260
	acres	25,750	25,000	26,000	26,000	26,000
b. brief plans/acres	plans	280	315	315	315	315
	acres	3,350	4,000	4,000	4,000	4,000
3. Total site preparation	acres	1,350	1,450	1,550	1,550	1,550
a. natural	acres	825	825	1,000	1,000	1,000
b. artificial	acres	475	625	550	550	550
4. Total reforestation	acres	1,850	2,000	2,500	1,500	1,500
5. Total timber stand improvement	acres	855	1,000	1,500	2,000	2,000
6. Habitat improvement	acres	1,650	2,000	2,000	2,000	2,000
7. Recreation improvement	acres	590	590	750	1,000	1,000
8. Timber sales	sales	145	160	150	150	175
	acres	2,375	2,475	2,500	2,500	3,000
	M bd. feet	1,040	1,050	1,025	1,025	1,025
	cords	27,900	28,900	30,000	30,000	33,000

PRIVATE FOREST MANAGEMENT FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION V	Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u> M = 1,000						
1. Total assists	assists	7,100	6,100	6,200	6,200	6,200
a. field	assists	1,200	1,350	1,350	1,350	1,350
b. incidental	assists	5,900	4,750	4,850	4,850	4,850
2. Total management plans/acres	plans	425	430	440	425	425
	acres	11,950	8,150	8,350	8,250	8,250
a. comprehensive plans/acres	plans	75	70	70	70	70
	acres	8,250	3,700	3,700	3,700	3,700
b. brief plans/acres	plans	350	360	370	355	355
	acres	3,700	4,450	4,650	4,550	4,550
3. Total site preparation	acres	2,150	1,700	1,725	1,650	1,650
a. natural	acres	1,750	370	370	370	370
b. artificial	acres	400	1,340	1,355	1,280	1,280
4. Total reforestation	acres	2,250	1,650	1,650	1,500	1,500
5. Total timber stand improvement	acres	1,850	1,240	1,340	1,340	1,240
6. Habitat improvement	acres	810	3,120	3,400	3,550	3,550
7. Recreation improvement	acres	3,550	1,300	1,350	1,400	1,450
8. Timber sales	sales	90	90	90	90	90
	acres	1,950	1,280	1,300	1,280	1,290
	M bd. feet	1,280	2,600	2,600	2,550	2,550
	cords	2,535	1,050	1,050	1,050	1,050

URBAN FORESTRY FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGIONS	Unit of Measure	1987	1988 (A)	1989	1990	1991
<u>Targets</u>						
Region I						
1. Individual urban assists	assists	135	135	140	150	150
2. Community urban assists	assists	32	32	35	35	35
Region II						
1. Individual urban assists	assists	135	137	145	150	155
2. Community urban assists	assists	22	23	25	27	27
Region III						
1. Individual urban assists	assists	150	150	150	150	150
2. Community urban assists	assists	35	35	35	35	35
Region V						
1. Individual urban assists	assists	150	250	300	350	400
2. Community urban assists	assists	150	200	300	350	400

(A) Increase reflects change level request for 5 field specialist positions.

COOP. COUNTY FOREST MGMT. FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION II	Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u>						
1. Auxiliary Forest Tax	counties	3	3	3	3	3

FOREST PEST MANAGEMENT FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION I		Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u>							
	M = 1,000						
	MM = 1,000,000						
1.	Conduct surveys and investigations to determine presence of forest pests and evaluate damage or potential damage.	MM acres		3.0	3.0	3.0	3.0
2.	Conduct risk rating of Minnesota's forest lands.	M acres		4	3	2	2
3.	Provide forest protection assistance on seed orchards.	sites		1	1	1	1
4.	Monitor major pest populations with pheromone traps.	traps		150	150	150	150
5a.	Provide technical review by pest and soil specialists of forest development proposals utilizing pesticides.	% reviewed		10	10	10	10
5b.	Review forest development proposals using pesticides.	% reviewed		100	100	100	100
6.	Publish I&E materials (newsletters, news articles, etc.), scientific papers and the Annual Report.	public.		2	3	4	5
7.	Conduct special projects to develop management strategies by studying biology, impact and/or possible control practices.	projects		2	2	2	2

FOREST PEST MANAGEMENT FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION II		Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u>		M = 1,000					
		MM = 1,000,000					
1.	Conduct surveys and investigations to determine presence of forest pests and evaluate damage or potential damage.	MM acres		3	3	3	3
2.	Conduct risk rating of Minnesota's forest lands.	M acres		4	2	0	0
3.	Provide forest protection assistance on seed orchards.	sites		2	2	2	2
4.	Monitor major pest populations with pheromone traps.	# types		210	210	210	210
5a.	Provide technical review by pest and soils specialists of forest development proposals utilizing pesticides.	% reviewed		10	10	10	10
5b.	Review forest development proposals using pesticides.	% reviewed		100	100	100	100
6.	Publish I&E materials (newsletters, news articles, etc.), scientific papers and the Annual Report.	public.		5	5	5	5
7.	Conduct special projects to develop management strategies by studying biology, impact and/or possible control practices.	projects		2	2	2	2

FOREST SOILS FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION I	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	1	1	1	1	1
<u>Budget Needs (B)</u>						
1. General Fund	(\$000's)	30.0	30.0	30.0	30.0	30.0
<u>Targets</u>	M = 1,000 MM = 1,000,000					
Forest Soil Interpretation and Management Assistance						
1. Provide technical forest soils information on forest management intensification projects.						
a. State land.	M acres	0.9	0.9	0.9	0.9	0.9
b. Private land.	M acres	0.1	0.05	0.05	0.05	0.05
2. Assist the forest roads program to identify potential gravel deposits.	projects	3	3	3	3	3
3. Review forest development projects using soil active and soil mobile pesticides to provide for safe, effective, and economical use.	% of total	100	100	100	100	100
4. Prepare articles and soil survey supplements.	articles	3	3	3	3	3
Minnesota Cooperative Soil Survey Targets						
5. Collect forest productivity and other interpretive data for major soil units on state-administered land in each soil survey, and correlate soils data with timber inventory information.	plots	100	50	50	10	10
6. Attend field technical reviews of county soil surveys.	reviews attended	3	1	1	1	1
Special Projects						
7. Respond to requests for soils information (i.e., relate soils to timber inventory, hazardous waste compaction, insects and disease, seed orchards).	projects	1	4	4	4	4

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

FOREST SOILS FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION II	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	1	1	1	1	1
<u>Budget Needs (B)</u>						
1. General Fund	(\$000's)	30.0	30.0	30.0	30.0	30.0
<u>Targets</u>	M = 1,000 MM = 1,000,000					
Forest Soil Interpretation and Management Assistance						
1. Provide technical forest soils information on forest management intensification projects.						
a. State land.	M acres	0.9	0.9	0.9	0.9	0.9
b. Private land.	M acres	0.1	0.05	0.05	0.05	0.05
2. Assist the forest roads program to identify potential gravel deposits.						
	projects	2	3	3	3	3
3. Review forest development projects using soil active and soil mobile pesticides to provide for safe, effective, and economical use.						
	% of total	100	100	100	100	100
4. Prepare articles and soil survey supplements.						
	articles	3	3	3	3	3
Minnesota Cooperative Soil Survey Targets						
5. Collect forest productivity and other interpretive data for major soil units on state-administered land in each soil survey, and correlate soils data with timber inventory information.						
	plots	50	50	50	10	10
6. Attend field technical reviews of county soil surveys.						
	reviews attended	1	1	1	1	1
Special Projects						
7. Respond to requests for soils information (i.e., relate soils to timber inventory, hazardous waste compaction, insects and disease, seed orchards).						
	projects	2	5	5	5	5

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

FOREST SOILS FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION III	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte	.8	.8	.8	.8	.8
<u>Budget Needs (B)</u>						
1. General Fund	(\$000's)	24.0	24.0	24.0	24.0	24.0
<u>Targets</u>	M = 1,000 MM = 1,000,000					
Forest Soil Interpretation and Management Assistance						
1. Provide technical forest soils information on forest management intensification projects.						
a. State land.	M acres	1.0	1.0	1.0	1.0	1.0
b. Private land.	M acres	.15	.1	.1	.1	.1
2. Assist the forest roads program to identify potential gravel deposits.						
3. Review forest development projects using soil active and soil mobile pesticides to provide for safe, effective, and economical use.	% of total	100	100	100	100	100
4. Prepare articles and soil survey supplements.						
	articles	3	2	2	2	2
Minnesota Cooperative Soil Survey						
<u>Targets</u>						
5. Collect forest productivity and other interpretive data for major soil units on state-administered land in each soil survey, and correlate soils data with timber inventory information.						
	plots	100	50	50	10	10
6. Attend field technical reviews of county soil surveys.						
	reviews attended	3	2	2	1	1
Special Projects						
7. Respond to requests for soils information (i.e., relate soils to timber inventory, hazardous waste compaction, insects and disease, seed orchards).						
	projects	4	3	3	3	3

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

FOREST SOILS FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION V	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	.2	.2	.2	.2	.2
<u>Budget Needs (B)</u>						
1. General Fund	(\$000's)	6.0	6.0	6.0	6.0	6.0
2. RC&D Grant (C)	(\$000's)	10.0	20.0			
<u>Targets</u>	M = 1,000 MM = 1,000,000					
Forest Soil Interpretation and Management Assistance						
1. Provide technical forest soils information on forest management intensification projects.						
a. State land.	M acres	.2	.2	.2	.2	.2
b. Private land.	M acres	.1	.05	.05	.05	.05
2. Assist the forest roads program to identify potential gravel deposits.						
3. Review forest development projects using soil active and soil mobile pesticides to provide for safe, effective, and economical use.	% of total	100	100	100	100	100
4. Prepare articles and soil survey supplements.						
Minnesota Cooperative Soil Survey Targets						
5. Collect forest productivity and other interpretive data for major soil units on state-administered land in each soil survey, and correlate soils data with timber inventory information.						
6. Attend field technical reviews of county soil surveys.	reviews attended	1	0	0	0	0
Special Projects						
7. Respond to requests for soils information (i.e., relate soils to timber inventory, hazardous waste compaction, insects and disease, seed orchards).						

(A) One fte = 1730 hours/year.

(B) Budget estimates are in 1987 dollars.

(C) Contract work to evaluate prime forest land. See Regional Direction statement.

UTILIZATION AND MARKETING FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION II	Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u> M = 1,000						
MM = 1,000,000						
Forest Products Industrial Development						
1. Identify and promote development opportunities.						
a. program initiated	opportunities	1	2	2	3	3
b. request initiated	opportunities	12	12	12	12	12
2. Assist development organizations.	assists	15	20	15	15	15
3. Prepare promotional articles and programs.	articles	3	5	5	5	5
4. Incidental assists.	assists	40	40	40	40	40
Wood Energy Development						
5. Wood energy information publications.	issues	--	--	--	--	--
6. Public media promotional articles and programs.	articles	3	3	5	5	4
7. Cooperative promotional or technical projects with other organizations.	projects	1	1	2	2	2
8. Individual energy conversion analyses.	analyses	2	1	1	1	1
9. Initiate other technical assists.	assists	30	25	30	30	30
initiated.						
Forest Products Marketing						
10. Market information publications.	issues	4	4	4	4	4
11. Public media promotional articles and programs.	articles	1	2	2	2	2
12. Major market research and development projects.	projects	2	3	3	3	3
13. Individual marketing assists.	assists	45	50	50	50	50
Forest Products Processing						
14. Secondary industry.						
a. major analyses completed	analyses	1	1	2	2	2
b. incidental technical assists	assists	10	10	15	15	15
15. Primary industry.						
a. major analyses completed	analyses	4	4	5	5	5
b. incidental technical assists	assists	20	25	25	30	30
16. Harvesting - technical assists.	assists	35	35	30	30	30
17. Presentations, workshops given.	workshops	3	5	5	5	5

REGION I	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>						
Region	fte's	0.2	0.5	0.5	0.6	0.6
Area and District	fte's	<u>11.9</u>	<u>12.0</u>	<u>12.5</u>	<u>12.9</u>	<u>12.9</u>
TOTAL STAFFING NEEDED		12.1	12.5	13.0	13.5	13.5
Regional Staffing Distribution						
Prevention	fte's	1.6	2.0	2.5	3.0	3.3
Presuppression	fte's	5.5	5.5	5.5	5.5	5.5
Suppression	fte's	5.0	5.0	5.0	5.0	5.0
<u>Targets</u>						
Prevention						
1. Public information distribution (Smokey Bear material and other).	pieces of information	10,000	10,000	10,000	10,000	10,000
2. Issue and inspect burning permits.	permits	12,000	12,000	12,000	12,500	13,000
3. Fire prone property contacts.	contacts		500	500	500	500
Presuppression						
4. Daily weather observation/maintain weather station, distribute weather, etc.	fte's	1.4	1.4	1.4	1.4	1.4
5. Maintain or update cooperative agreements.	agreements	10	10	10	10	0
6. Maintain/develop fire department agreements.	agreements	20	20	20	20	20
7. Develop new/resign equipment agreements.	agreements	200	200	200	200	200
8. Recruit/train/retrain specialized hourly employees (S.C., Tower, Dispatch).	people	100	100	100	100	100
9. Administer and train township fire wardens.	wardens	700	700	700	700	700
10. Prepare/administer aerial detection contracts.	contracts	8	8	8	8	8
11. Update area fire plans.	plans	3	2	2	2	2
Suppression						
12. Suppress wildfires.	fires	387	390	350	350	325
13. Acres burned.	acres	25,750	17,550	15,750	15,750	14,625
14. Prepare fire reports.	reports	387	390	350	350	325
15. Produce yearly fire report.	reports	1	1	1	1	1
Training						
16. Basic fire training.						
a. rural fire departments.	departments	50	20	20	20	20
17. Simulator training - Division personnel.	number		25	25	25	25

REGION I	Unit of Measure	1987	1988	1989	1990	1991
Fire Management						
18. Acres of prescribed burning completed, inc. all state land regardless of Division.	acres	2,500	5,000	5,000	5,000	5,000
State-Federal Cooperative Targets						
19. Inspect and inventory excess/ Title XVI property placed with fire departments.	inspections	130	40	130	50	120

(A) One fte = 1730 hours/year.

REGION II	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>						
Region	fte's	0.2	0.5	0.5	0.7	0.7
Area and District	fte's	<u>14.0</u>	<u>14.0</u>	<u>14.5</u>	<u>14.8</u>	<u>14.8</u>
TOTAL STAFFING NEEDED		14.2	14.5	15.0	15.5	15.5
<u>Regional Staffing Distribution</u>						
Prevention	fte's	1.7	2.0	2.5	3.0	3.0
Presuppression	fte's	6.5	6.5	6.5	6.5	6.5
Suppression	fte's	6.0	6.0	6.0	6.0	6.0
<u>Targets</u>						
<u>Prevention</u>						
1. Public information distribution (Smokey Bear material and other).	pieces of information	20,000	20,000	20,000	20,000	20,000
2. Issue and inspect burning permits.	permits	10,000	10,000	10,000	10,500	10,500
3. Fire prone property contacts.	contacts		1,000	1,000	1,000	1,000
<u>Presuppression</u>						
4. Daily weather observation/maintain weather station, distribute weather, etc.	fte's	1.5	1.5	1.5	1.5	1.5
5. Maintain or update cooperative agreements.	agreements	10	10	10	10	10
6. Maintain/develop fire department agreements.	agreements	25	25	25	25	25
7. Develop new/resign equipment agreements.	agreements	250	250	250	250	250
8. Recruit/train/retrain specialized hourly employees (S.C., Tower, Dispatch).	people	150	150	150	150	150
9. Administer and train township fire wardens.	wardens	500	500	500	500	500
10. Prepare/administer aerial detection contracts.	contracts	8	8	8	8	8
11. Update area fire plans.	plans	7	2	2	2	2
<u>Suppression</u>						
12. Suppress wildfires.	fires	350	350	325	310	300
13. Acres burned.	acres	7,000	7,000	6,500	6,200	6,000
14. Prepare fire reports.	reports	350	350	325	310	300
15. Produce yearly fire report.	reports	1	1	1	1	1
<u>Training</u>						
16. Basic fire training.						
a. rural fire departments.	departments	40	25	25	25	25
17. Simulator training - Division personnel.	people		30	30	30	30

REGION II	Unit of Measure	1987	1988	1989	1990	1991
Fire Management						
18. Acres of prescribed burning completed, inc. all state land regardless of Division.	acres	1,000	2,500	2,500	2,500	2,500
State-Federal Cooperative Targets						
19. Inspect and inventory excess/ Title XVI property placed with fire departments.	inspections	160	40	160	60	150

(A) One fte = 1730 hours/year.

REGION III	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>						
Region	fte's	0.2	0.4	0.7	1.1	1.1
Area and District	fte's	<u>18.6</u>	<u>18.6</u>	<u>19.3</u>	<u>19.9</u>	<u>19.9</u>
TOTAL STAFFING NEEDED		18.8	19.0	20.0	21.0	21.0
<u>Regional Staffing Distribution</u>						
Prevention	fte's	2.8	3.0	4.0	5.0	5.0
Presuppression	fte's	8.0	8.0	8.0	8.0	8.0
Suppression	fte's	8.0	8.0	8.0	8.0	8.0
<u>Targets</u>						
<u>Prevention</u>						
1. Public information distribution (Smokey Bear material and other).	pieces of information	30,000	30,000	30,000	30,000	30,000
2. Issue and inspect burning permits.	permits	42,000	42,000	44,000	45,000	46,000
3. Fire prone property contacts.	contacts		3,000	3,000	3,000	3,000
<u>Presuppression</u>						
4. Daily weather observation/maintain weather station, distribute weather, etc.	fte's	1.4	1.4	1.4	1.4	1.4
5. Maintain or update cooperative agreements.	agreements	30	30	30	30	30
6. Maintain/develop fire department agreements.	agreements	35	35	35	35	35
7. Develop new/resign equipment agreements.	agreements	300	300	300	300	300
8. Recruit/train/retrain specialized hourly employees (S.C., Tower, Dispatch).	number	150	150	150	150	150
9. Administer and train township fire wardens.	wardens	800	800	800	800	800
10. Prepare/administer aerial detection contracts.	contracts	10	10	10	10	10
11. Update area fire plans.	plans	3	2	2	2	2
<u>Suppression</u>						
12. Suppress wildfires.	fires	840	850	825	800	800
13. Acres burned.	acres	17,000	17,000	16,500	16,000	16,000
14. Prepare fire reports.	reports	840	850	825	800	800
15. Produce yearly fire report.	reports	1	1	1	1	1
<u>Training</u>						
16. Basic fire training.						
a. rural fire departments.	departments	60	35	35	35	35
17. Simulator training - Division personnel.	people		25	25	25	25

REGION III	Unit of Measure	1987	1988	1989	1990	1991
State-Federal Cooperative Targets						
18. Inspect and inventory excess/ Title XVI property placed with fire departments.	inspections	250	50	100	50	100

(A) One fte = 1730 hours/year.

REGION V	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>						
Region	fte's	0.1	0.2	0.2	0.3	0.3
Area and District	fte's	<u>1.5</u>	<u>1.8</u>	<u>1.8</u>	<u>2.2</u>	<u>2.2</u>
TOTAL STAFFING NEEDED		1.6	2.0	2.0	2.5	2.5
<u>Regional Staffing Distribution</u>						
Prevention	fte's	0.6	1.0	1.0	1.5	1.6
Presuppression	fte's	0.7	0.7	0.7	0.7	0.7
Suppression	fte's	0.3	0.3	0.3	0.3	0.2
<u>Targets</u>						
<u>Prevention</u>						
1. Public information distribution (Smokey Bear material and other).	pieces of information	5,000	5,000	5,000	5,000	5,000
2. Issue and inspect burning permits.	permits	1,000	1,000	1,000	1,250	1,250
3. Fire prone property contacts.	number		1,000	1,000	1,000	1,000
<u>Presuppression</u>						
4. Daily weather observation/maintain weather station, distribute weather, etc.	fte's	0.3	0.3	0.3	0.3	0.3
5. Maintain or update cooperative agreements.	number	5	5	5	5	5
6. Maintain/Develop fire department agreements.	number	10	10	10	10	10
7. Develop new/resign equipment agreements.	number	50	50	50	50	50
8. Recruit/train/retrain specialized hourly employees (S.C., Tower, Dispat., etc.).	number	5	5	5	5	5
9. Administer and train township fire wardens.	number	300	300	300	300	300
10. Prepare/administer aerial detection contract.	number		0	0	0	0
11. Update area fire plans.	number		0	1	0	1
<u>Suppression</u>						
12. Suppress wildfires.	fires	50	50	50	50	50
13. Acres burned.	acres	250	250	250	250	250
14. Prepare fire reports.	reports	50	50	50	50	50
15. Produce yearly fire report.	reports	1	1	1	1	1
<u>Training</u>						
16. Basic fire training.						
a. rural fire departments.	departments	25	10	10	10	10
18. Simulator training - Division personnel.	people	2	4	4	4	4

REGION V	Unit of Measure	1987	1988	1989	1990	1991
State-Federal Cooperative Targets						
19. Inspect and inventory excess/ Title XVI property placed with fire departments.	inspections	90	20	90	20	110

(A) One fte = 1730 hours/year.

PUBLIC AFFAIRS FIVE YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

Region II	Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u>						
1. Advertise state forest lands and station locations.	articles	1	2	3	3	3
2. Publicize PFM and urban forestry community assists.	articles	10	10	10	10	10
3. Initiate and maintain media contacts.	contacts	10	10	10	10	10
4. Coordinate I&E training with fire prevention efforts.	joint sessions	1	1	1	1	1
- produce information for distribution through Township Fire Wardens.	newsletters	1	1	1	1	1
5. Design and conduct a public education program for forest users.	articles	1	1	1	1	1
6. Strengthen public affairs skills and abilities.	training hours	25	50	50	0	25
7. Participate in Project Learning Tree sessions.	sessions	2	2	2	2	2

HUMAN RESOURCE DEVELOPMENT FIVE-YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION II	Unit of Measure	1987	1988	1989	1990	1991
<u>Targets</u>						
1. In-service training.	training days	575	575	575	575	575
2. Continuing education sessions.	training days	230	230	230	230	230

LAW ENFORCEMENT FIVE YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION I	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	1	1.5	2	2.5	3
<u>Targets</u>						
<u>Fire Laws</u>						
1. Conduct surveillance operations.	number	2	2	3	3	4
2. Fires investigated.	number	200	200	175	175	160
3. Written warnings.	number	100	100	80	80	80
4. Citations.	number	25	35	40	50	50
5. Complaints.	number	2	2	3	4	5
6. Fire billings.	number	50	50	75	80	80
<u>Timber Laws</u>						
7. Written warnings.	number	2	2	4	6	10
8. Theft citations.	number	2	4	5	7	10
9. Trespass, Timber - civil.	number	15	15	15	15	15
10. Trespass, Land - civil.	number	2	2	2	2	2
11. Xmas tree - criminal actions.	number	2	2	3	3	3
<u>Recreation Areas</u>						
12. Written warnings.	number	30	40	50	50	60
13. Citations.	number	10	15	25	25	30
14. Criminal complaints.	number	3	3	3	3	3
15. Vehicle warnings.	number	20	30	40	40	40
<u>Training</u>						
16. Level I training.	persons	8	8	8	8	8
17. Level II training.	persons	8	2	2	8	8
18. Level III training.	persons	5	5	5	5	5

(A) One fte = 1730 hours/year.

LAW ENFORCEMENT FIVE YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION II	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	1	1.5	1.5	1.5	2
<u>Targets</u>						
Fire Laws						
1. Conduct surveillance operations.	number	2	2	3	3	4
2. Fires investigated.	number	175	175	160	175	175
3. Written warnings.	number	70	60	80	80	80
4. Citations.	number	40	40	50	60	60
5. Complaints.	number	2	2	3	3	4
6. Fire billings.	number	50	80	80	85	85
Timber Laws						
7. Written warnings.	number	6	8	15	15	15
8. Theft citations.	number	7	9	13	18	22
9. Trespass, Timber - civil.	number	15	15	15	15	15
10. Trespass, Land - civil.	number	6	6	6	6	6
11. Xmas tree - criminal actions.	number	2	2	3	4	5
Recreation Areas						
12. Written warnings.	number	40	40	50	50	75
13. Citations.	number	15	25	30	40	40
14. Criminal complaints.	number	2	2	2	2	2
15. Vehicle warnings.	number	30	40	40	50	50
Training						
16. Level I training.	persons	10	10	10	10	10
17. Level II training.	persons	12	4	4	12	4
18. Level III training.	persons	7	7	7	7	7

(A) One fte = 1730 hours/year.

LAW ENFORCEMENT FIVE YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION III	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	2	2.5	3	3.5	4
<u>Targets</u>						
Fire Laws						
1. Conduct surveillance operations.	number	5	5	6	6	7
2. Fires investigated.	number	350	425	410	400	400
3. Written warnings.	number	200	200	175	175	175
4. Citations.	number	75	100	150	150	150
5. Complaints.	number	4	4	6	6	10
6. Fire billings.	number	75	100	150	200	200
Timber Laws						
7. Written warnings.	number	4	6	6	6	8
8. Theft citations.	number	3	7	10	10	12
9. Trespass, Timber - civil.	number	5	5	5	5	5
10. Trespass, Land - civil.	number	2	2	2	2	2
11. Xmas tree - criminal actions.	number	3	3	4	4	5
Recreation Areas						
12. Written warnings.	number	40	50	50	75	100
13. Citations.	number	10	20	30	30	30
14. Criminal complaints.	number	3	3	3	3	3
15. Vehicle warnings.	number	30	40	50	50	60
Training						
16. Level I training.	persons	8	8	8	8	8
17. Level II training.	persons	6	6	8	4	4
18. Level III training.	persons	7	7	7	7	7

(A) One fte = 1730 hours/year.

LAW ENFORCEMENT FIVE YEAR ACTION PLAN - STAFFING, BUDGET, TARGETS

REGION V	Unit of Measure	1987	1988	1989	1990	1991
<u>Staffing Needs (A)</u>	fte's	0.2	0.2	0.2	0.2	0.2
<u>Targets</u>						
Fire Laws						
1. Conduct surveillance operations.	number	25	25	25	25	25
2. Fires investigated.	number	10	10	10	10	10
3. Written warnings.	number	5	5	5	5	5
4. Citations.	number		1	1	1	1
5. Complaints.	number	10	10	10	15	15
6. Fire billings.	number					
Timber Laws						
7. Written warnings.	number	2	2	3	3	3
8. Theft citations.	number	3	3	3	3	3
9. Trespass, Timber - civil.	number	2	2	3	3	3
10. Trespass, Land - civil.	number	3	3	3	3	3
11. Xmas tree - criminal actions.	number	2	2	2	2	2
Recreation Areas						
12. Written warnings.	number	10	15	15	25	25
13. Citations.	number	2	5	5	8	10
14. Criminal complaints.	number	1	1	1	1	1
15. Vehicle warnings.	number	10	10	10	15	15
Training						
16. Level I training.	persons	2	2	2	2	2
17. Level II training.	persons	2	2	2	2	2
18. Level III training.	persons	1	1	1	1	1

(A) One fte = 1730 hours/year.



Minnesota Forest Resources Plan

Appendix D

Summary of Forest Resource Laws

- I. Acquisition, Leasing, Exchange, and Sale of Forest Lands
 - A. Constitution of State of Minnesota
 - Article I, Section 13
 - Article XI, Section 5
 - Article XI, Section 10
 - Article XI, Section 11
 - Article XIII, Section 4
 - B. Minnesota Statutes
 - 1. Acquisition
 - Concurrent Jurisdiction of State and United States (1.041)
 - State Consent to Acquisition of Lands (1.045)
 - Lands Selected in Lieu of Grants from United States (84.027, subd. 8)
 - Property Grants from United States (88.063)
 - United States Lands (94.47)
 - Condemnation of Real Estate (84.027, subd. 9)
 - Procedures for Acquiring Land (84.0272)
 - Landowner's Rights (84.0274, subd. 6)
 - Acquisition for Trails (84.029, subd. 2)
 - Outdoor Recreation System (86A.07)
 - Tax-Forfeited Land for Reforestation Projects (84A.20, 84A.31---see Topic III)
 - State Reforestation Projects; Gifts (84A.28) and (84A.38)
 - State Reforestation Projects; Eminent Domain (84A.29) and (84A.39)
 - Land Suitable for Fire Protection (88.09)
 - Suitable Timber Lands (89.01, subd. 6)
 - Lands Within State Forests (89.032)
 - Lands Within State Forests (89.033)
 - Tax-Forfeited Lands; Inclusion in State Forests (89.034---see Topic III)
 - 2. Leasing
 - Conservation Purposes (84.153)
 - Suitable Uses (89.17)
 - Cultivation of Stagnant Swamp Trees (90.50)
 - Permits for Utility Companies (84.415)
 - Leases for Cottages and Camps (92.46)
 - Unsold Lands May be Leased (92.50)
 - 3. Exchange
 - Executive Council (92.31)
 - Conditions for Land Exchange (94.341 - 94.349)
 - Minnesota Land Exchange Board (94.341)
 - Classes of Land for Exchange (94.342)
 - Class A Exchanges (92.343)
 - Class B Exchanges (94.344)
 - Transfers of Title Between State and Local Units of Government (94.349)
 - Tax-Forfeited Lands; Classification, Use, and Exchange (282.01, subd. 1)
 - 4. Sale
 - Richard J. Dorer Memorial Hardwood Forest (89.022)
 - Lands Suitable for Agriculture (89.01, subd. 5)
 - Procedures for Sale of State Lands (92.01 - 92.29)
 - Lands Within National Forests (92.30)
 - Lands Suitable for Private Forest Management (92.321)

APPENDIX D

SUMMARY OF FOREST RESOURCE LAWS

The Constitution of the State of Minnesota and the Minnesota Statutes provide the basic authority for all actions taken by the Division of Forestry on forest lands within the state. Each of the policy statements which guides the Division of Forestry is founded, either explicitly or implicitly, upon state law.

Because of the diverse nature of forest resources, a wide range of laws affects them. It would be impractical to attempt to include all of these laws here. Therefore, particular laws have been selected and cited in a topical index for reference purposes. Seven topics were identified by the Division of Forestry for the creation of this index:

- I. Acquisition, Leasing, Exchange, and Sale of Forest Lands
- II. Management and Use of Forest Lands
- III. Tax-Forfeited Lands
- IV. Forest Land Taxation
- V. Wildfire Control
- VI. Timber Sales and Scaling
- VII. Forest Roads

In addition to the index, this appendix includes a brief narrative description of the laws that relate to each given topic. These descriptions are intended to give a general overview of the state's policies with respect to forest lands.

Discretion of Commissioner (94.50)
Tax-Forfeited Land Sales (Chapter 282---see Topic III)
Lands Near Water-Powers (89.26)
Lands Suitable for Forestry (89.27)
Lands Bordering on Public Waters (92.45)
Lands Valuable for Peat Deposits (92.461)

II. Management and Use of Forest Lands Within the State

A. Constitution of State of Minnesota

Article XI, Section 5

Article XI, Section 11

B. Minnesota Statutes

1. State Forest Policy and Planning

State Reforestation Projects (84A.21) and (84A.32)

Forest Resource Management Policy (89.002, subd. 1)

Reforestation Policy (89.002, subd. 2)

Forest Road Policy (89.002, subd. 3)

Commissioner's Duties (89.01, subd. 1)

Cooperative Planning (89.01, subd. 4)

Forest Resource Management Plan (89.012)

Unit Forest Resource Plans (89.013)

Realignment of State Forests (89.015, subd. 1)

Realignment of Administrative Units (89.015, subd. 2)

State Forests (89.021)

Forest Management Fund (89.04)

Commissioner's Regulatory Power (89.19)

Forestry Education (89.65)

Tax-Forfeited Lands, Inclusion in State Forests (89.034---see
Topic III)

Funds Apportioned to County (89.036)

Tax-Forfeited Lands; Classification (Chapter 282---see
Topic III)

2. Municipal, Memorial, and School Forests

Municipal and Memorial Forests for Timber Production
(459.06, subd. 1)

Tax-Forfeited Lands for Memorial Forests (459.06, subd. 2)

Withdrawal of Tax-Forfeited Lands from Memorial Forests
(459.06, subd. 3)

Cities May Establish Municipal Forests (459.07)

Educational Units May Establish Forests (89.41)

3. Private Forests

Private Forest Policy; Tree Growth Tax Law (270.32)

Auxiliary Forests; Taxation (88.47 - 88.53)

Auxiliary Forests; Restrictions (88.491)

State Forest Service to Private Forest Owners (88.79)

4. Recreation

Purpose of Omnibus Natural Resources and Recreation Act (86.02)

Policy Statement of Outdoor Recreation Act (86A.02, subd. 3)

Composition of Outdoor Recreation System (86A.04)

State Forest Sub-Areas Established by Outdoor Recreation Act
(86A.05, subd. 7)

Policy Statement of the Minnesota Wild and Scenic Rivers Act
(104.32)

5. Soil and Water
 - Policy Statement on Soil and Water Conservation (40.02)
 - Cooperation of State Agencies with Soil and Water Conservation Districts (40.13)
 - Policy Statement of Floodplain Management Act (104.01, subd. 3)
 - Policy Statement on Water Resource Conservation (105.38)
 - Drainage: Powers of County Boards and District Courts (106.22)
 - Policy Statement of the Minnesota Watershed Act (112.34)
 - Water Resources Board Authority over Watershed Districts (112.36)

III. Tax-Forfeited Lands

- A. Constitution of State of Minnesota
 - Article XI, Section 5
 - Article XI, Section 10
 - Article XI, Section 11
- B. Minnesota Statutes
 1. Classification of Tax-Forfeited Lands
 - Classification; Use; Exchange (282.01, subd. 1)
 - Conservation Lands Under the Supervision of County Board (282.01, subd. 2)
 - Duties of Commissioner of Revenue; Issuance of Conveyance (282.01, subd. 6)
 - Sales, When Commenced, How Land is Offered for Sale (282.01, subd. 7)
 - Non-Agricultural Lands, Classification; Sale, Conditions (282.011)
 - Prior Owner May Purchase; Conditions (282.012)
 - Placed in Auxiliary Forest by Purchaser (282.013)
 - Completion of Sale and Conveyance (282.014)
 - Proceeds of Sale (282.15)
 - Prohibited Purchasers (282.16)
 - Conveyance of Interests in Tax-Forfeited Lands to State and Federal Governments (282.017)
 - Tax-Forfeited Land; Meandered Lakes; Sale Exception (282.018)
 2. Non-Conservation Area Lands
 - Sale of Non-Conservation Lands (282.01, subd. 3)
 - List of Lands Offered for Sale (282.02)
 - Limitation in Use of Lands (282.03)
 - Veteran's Credit for Land in Agricultural Use (282.038)
 - Timber Sale; Tax-Forfeited Lands, Lease, Partition, Easements (282.04---see Topic VI)
 - Exemption of Certain Lands (282.06)
 - Auditor to Cancel Taxes (282.07)
 - Apportionment of Proceeds (282.08)
 - Forfeited Tax Sale Fund (282.09)
 - All Minerals Reserved (282.12)
 - Land Commissioner; Duties; Compensation; Land Exchanges (282.13)
 - Certain Powers and Duties May be Delegated (282.131)
 - Timber Defined (282.132)
 3. Conservation Area Lands
 - Classification of Forfeited Lands (282.14)
 - Sales of Forfeited Lands (282.15)
 - County Auditor to Lease Lands (282.18)

- Conveyance (282.21)
- Forfeited Lands; Classified and Sold (282.221, subd. 1)
- Forfeited Lands; Appraisal (282.221, subd. 2)
- Sale Procedures (282.222)
- Taxes Canceled (282.223)
- Conveyance (282.224)
- Mineral Rights Reserved (282.225)
- Lands Bordering Lakes and Streams, Easements to State (282.37)
- Timber Development Funds (282.38)
- Annual Appropriations; Lands Eligible; Certificates of Acreage (477A.12)
- Time of Payment, Deductions (477A.13)
- Use of Funds (477A.14)
- Taxes Canceled in Certain Cases (84.361)
- Structures May be Removed (84.362)
- May Sell Dead and Down Timber (84.363)
- Red Lake Game Preserve (84A.01)
- Red Lake Game Preserve; Management (84A.02)
- List of Lands Within Red Lake Game Preserve (84A.04)
- Title to Land in State (84A.07)
- Lands Classified (84A.08)
- Gifts Received (84A.09)
- Eminent Domain (84A.10)
- Reforestation Areas to be Set Off (84A.20)
- State Reforestation Projects (84A.31)
- Consolidated Conservation Areas Fund (84A.51)
- Certain Game Preserves, Areas, Projects; Control (84A.55)
- Tax-Forfeited Lands, Inclusion in State Forests (89.034)
- Timber Trespass on State Lands; Unlawful Possession and Sale; Rewards; Records (90.301)
- Structures, Standing Timber, or Minerals not to be Removed (272.38)
- Structures, Timber, or Minerals May be Seized (272.39)
- Removal (272.40)
- Tax-Forfeited Lands for Memorial Forests (459.06, subd. 2)
- Withdrawal of Tax-Forfeited Lands from Memorial Forests (459.06, subd. 3)

IV. Forest Land Taxation

- A. Constitution of State of Minnesota
 - Article X, Section 2
- B. Minnesota Statutes
 - 1. Minnesota Tree Growth Tax Law
 - Policy Statement of the Tree Growth Tax Law (270.32)
 - Growth Rate Determination (270.34)
 - Stumpage Value Determination (270.35)
 - Computation of Tax (270.36, subd. 1)
 - Tax Rates (270.34, subd. 2)
 - Tax Credit (270.37)
 - Application under Tree Growth Tax Law (270.38)
 - 2. Auxiliary Forest Taxation
 - Tax Rate on Land (88.51, subd. 1)
 - Yield Tax (88.51, subd. 2)
 - Payment of Yield Tax (88.52, subd. 1)
 - Cutting Procedure (88.52, subd. 2)
 - Assessment of Yield Tax (88.52, subd. 3)

- Yield Tax Constitutes a Lien (88.52, subd. 5)
- Exemption from Yield Tax (88.52, subd. 6)
- Auxiliary Forest Restrictions (88.491---see Topic II)
- 3. Class 3 Property; Agricultural-Nonhomestead Land and Seasonal Recreational-Residential Land (273.13, subd. 4)
- 4. Class 3e Property; Timberland (273.13, subd. 8a)
- 5. Class 4b Property; Vacant Land (273.13, subd. 9)
- 6. General Tax Provisions
 - Structures, Standing Timber, or Minerals not be be Removed (272.38---see Topic III)
 - Structures, Timber, or Minerals May be Seized (272.39---see Topic III)
 - Removal (272.40---see Topic III)
 - Taxes Unpaid; Persons Cutting Standing Timber Must Give Notice (272.41)
 - Liability for Violations (272.42)
- 7. Payments-in-Lieu
 - Annual Appropriations; Lands Eligible; Certificates of Acreage (477A.12)
 - Time of Payment, Deductions (477A.13)
 - Use of Funds (477A.14)
- 8. State Forest and Fifty-Fifty Lands
 - Funds Apportioned to County (89.036)

V. Wildfire Control

- A. Constitution of State of Minnesota
 - Article XI, Section 5
- B. Minnesota Statutes
 - 1. Commissioner's Authorities and Responsibilities
 - Firebreaks Along Highways (88.04, subd. 1)
 - Firebreaks (88.05)
 - State and Federal Relief Agencies (88.06)
 - Purchase for State Subdivisions (88.065)
 - Training of Volunteer Fire Departments (88.067)
 - Forest Fire Protection Districts (88.08)
 - Acceptance of Lands Necessary for Fire Protection (88.09, subd. 1)
 - Acquisition of Lands Necessary for Fire Protection (88.09, subd. 2)
 - Duties of Forest Officers (88.10)
 - Employing Fire-Fighters (88.11, subd. 1)
 - Commandeering Property (88.11, subd. 2)
 - Compensation of Employees (88.12, subd. 1)
 - Contracting Services (88.12, subd. 2)
 - Authority to Order Disposals (88.14, subd. 1)
 - Authority to Enter Private Property (88.14, subd. 3)
 - Permission to Set Fires (88.17, subd. 1)
 - Fire Wardens (88.18)
 - Measures for Railroads (88.20)
 - Road or Trail Closures (88.22)
 - Fishing Restrictions (88.27)
 - Commissioner's Duties (89.01, subd. 2)
 - Damages (89.01, subd. 3)
 - Inquiries into Fires (90.041, subd. 1)

2. Authorities and Responsibilities of Counties, Towns, and Cities
 - Notice of Cutting (88.13, subd. 4)
 - Disposal of Slashings (88.14, subd. 7)
 - Various Authorities of County Boards (88.29 - 88.41)
 - Authorization of Debt (88.42)
 - Firebreaks (88.43)
 - Authorization of Debt (88.44)
 - Cooperation of County and Municipal Officials (88.46)
 - Cooperation of Municipal Officials (88.04, subd. 4)
3. Private Rights and Responsibilities
 - Notice of Cutting (88.13, subd. 1)
 - Failure to Comply (88.14, subd. 2)
 - Disposal of Slashings (88.14, subd. 4)
 - Control of Burning (88.14, subd. 5)
 - Disposal of Slashings (88.14, subd. 6)
 - Preparation of Slashings for Burning (88.14, subd. 8)
 - Preparation of Debris for Burning (88.14, subd. 9)
 - Control of Fire (88.15, subd. 2)
 - Fire Restrictions (88.16, subd. 1)
 - Permissible Fires (88.16, subd. 2)
 - Reporting of Fires (88.16, subd. 3)
 - Control of Fire (88.19)
 - Responsibilities of Railroad Companies (88.21)
 - Violations and Penalties (88.75)
 - Rewards (88.76)
 - Disposal of Fines and Penalties (88.77)
 - Appeals (88.78)

VI. Timber Sales and Scaling

- A. Constitution of State of Minnesota
 - No sections relate to this topical area
- B. Minnesota Statutes
 1. Policy Statement
 - Statement of Policy for the State Timber Act (90.02)
 2. Authorities of the Executive Council and the Commissioner of Natural Resources
 - Settlement of Trespass Claims (90.031, subd. 3)
 - Establishment of Rules and Regulations (90.031, subd. 4)
 - Investigative Agents (90.031, subd. 5)
 - Commissioner's Duties (90.041, subd. 1)
 - Annual Reports (90.041, subd. 3)
 - Annual Public Meetings (90.041, subd. 4)
 3. Appraisals
 - Timber Appraisal Standards (90.045)
 - Bonding of Timber Sale Supervisor (90.051)
 - Authorities and Duties of a State Appraiser (90.061)
 - Value Estimates (90.061, subd. 4)
 - Duties of State Appraiser (90.061, subd. 5)
 - Supervisory Powers of State Appraiser (90.061, subd. 8)
 4. Public Auction Sales
 - Regular Auction Sales (90.101)
 - Intermediate Auction Sales (90.121)
 - Auction Sale Procedure (90.14)
 - Permits to Cut and Remove Timber (90.151)
 - Permits (90.151, subd. 1)

- Permit Specifications (90.151, subd. 2)
- Security of Permit Compliance (90.151, subd. 3)
- Suspension of Permits (90.151, subd. 8)
- Extensions of Permits (90.151, subd. 13)
- Bonding of Purchaser (90.161, subd. 1)
- Assignment of Permit (90.171)
- Annual Sales Report (90.172)
- Cash Deposits in Lieu of Bond (90.173)
- Billing Statements (90.181, subd. 1)
- Deferred Payments (90.181, subd. 2)
- 5. Informal Sales
 - Informal Sales (90.191)
 - Permits (90.191, subd. 2)
 - Scaling Requirement (90.191, subd. 3)
 - Special Use Permit (90.195)
 - Void Sales (90.201)
 - Permit Requirements (90.211)
 - Timber Sale Records (90.221)
 - Boundaries of Timber Sale Tract (90.231)
- 6. Scaling
 - Conditions for Scaling and Reporting (90.251)
 - Timber Scaling Specialist (90.251, subd. 1)
 - Scaling Reports (90.251, subd. 2)
 - Final Examination of Lands After Cutting (90.251, subd. 2)
 - Authority of the Scale (90.251, subd. 4)
 - Consumer Scaling (90.252)
 - Rescale (90.281)
- 7. Violations and Penalties
 - Conditions for Trespass (90.301)
 - Timber Trespass (90.301, subd. 1)
 - Taking Unlawfully Cut Timber (90.301, subd. 2)
 - Unlawful Possession of Land (90.311)
 - Violations by Scaler (90.41)
- 8. Timber Sales on Tax-Forfeited Lands; County Timber Sales
 - Timber Sold for Cash (282.04, subd. 1)

VII. Forest Roads

- A. Constitution of State of Minnesota
 - Article I, Section 13
 - Article XIII, Section 4
 - Article XIV, Section 1
- B. Minnesota Statutes
 - Roads Within Reserved Areas (84A.55, subd. 10)
 - Road Closures (88.22, subd. 1)
 - Forest Road Policy (89.002, subd. 3)
 - Road Inventory (89.012, subd. 2d)
 - Prioritization for Road Policy (89.012, subd. 3e)
 - Forest Management Fund (89.04, subd. 2b)
 - Public Highways Through State Forests (89.18)
 - Statutory Dedication of Roads (160.05, subd. 1)
 - Recovery of Real Estate, 15 Years (541.02)



Minnesota Forest Resources Plan

Appendix E

Glossary of Terms

APPENDIX E

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.

ASPEN RECYCLING PROJECT. One provision of the Reinvest in Minnesota (RIM) bill passed by the 1986 legislature authorizing funds for aspen recycling. In this process, overmature aspen trees are sheared to encourage regrowth of younger, healthy aspen stands capable of supporting increased wildlife populations.

ATV. All Terrain Vehicle (See ORV).

CLONE. Collection of genetically identical trees.

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 (Jakes 1980a).

CONSERVATION RESERVE PROGRAM (CRP). A provision of the 1985 Farm Bill which is designed to protect highly erodible and other marginal farmlands by removing them from cultivation; placing them instead into grass or trees.

CONSOLIDATED CONSERVATION (CON-CON) LANDS. Refers to approximately 1.6 million acres of lands (all but 67,000 acres are administered by DNR Forestry) which were forfeited due to tax-delinquency as a result of drainage projects in Beltrami, Lake of the Woods and Koochiching counties. The state holds title to the lands, and has assumed responsibility for paying off the drainage bonds.

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.

ENDANGERED SPECIES. Any species of animal or plant which is in danger of extinction throughout all or a significant portion of its range.

EVEN-AGED MANAGEMENT. The actions that will result in a forest, crop or stand composed of trees having no or relatively small differences in age (Ford-Robertson 1971).

FEATURED SPECIES. Preeminent wildlife species/community that management activities focus on (i.e., furbearers, owls).

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

FOREST LAND. Land at least 16.7 percent stocked by forest trees of any size, or formerly having such tree cover, and not currently developed for nonforest use. Includes afforested areas. The minimum forest area classified was 1 acre. Roadside, streamside and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams and clearings in forest areas were classed as forest if less than 120 feet wide.

FOREST ROAD. Any permanent roadway constructed and maintained for the purpose of accessing forest lands. Forest roads may be administered by the state, by counties, by townships or local units of government, by private industry, by federal agencies, or by private landowners (Minnesota DNR, Forestry 1982d).

FOREST SITE PRODUCTIVITY CLASS. A classification of forest land in terms of potential volume growth per acre in fully stocked natural stands.

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

GOAL. A concise statement expressed in terms of a desired state or process that operating programs are designed to achieve. A goal is normally expressed as a broad, general statement; is usually not quantifiable; and is timeless in that it usually has no specific date by which it is to be completed. Often, it would not be expected that a goal could ever be completely achieved. The goal is the principal statement from which objectives must be developed (USDA Forest Service 1980c).

GROWING STOCK TREES. All live trees of commercial species except rough and rotten trees (Jakes 1980a).

GROWING STOCK VOLUME. Net volume in cubic feet of live sawtimber and poletimber trees from stump to a minimum 4-inch top (of central stem) outside bark or to the point where the central stem breaks into limbs.

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

HARDWOODS. Dicotyledonous trees, usually broad-leaved and deciduous.

HARVESTING. A loose term for the removal of produce (i.e., a merchantable material) from the forest for utilization; comprising therefore cutting, sometimes further initial processing (e.g., with trees, topping and trimming) and extraction (removal from the forest). When "harvesting" timber, "harvesting" is a rough or quasi-synonym with logging (Ford-Robertson 1971).

INDUSTRIAL WOOD. All commercial roundwood products except fuelwood.

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.

LAND UTILIZATION PROJECT (LUP) LANDS. Refers to approximately 218,000 acres of marginal farmland purchased in the 1930's by the Federal government and leased to the State of Minnesota under a 50-year lease agreement due to expire in 1990. The state holds title to 21,000 of these acres.

MDF. Medium Density Fiberboard.

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

MORTALITY. The volume of sound wood in growing stock trees dying annually (Spencer 1982).

MULTIPLE-USE. The principle of forest management by which forest resources are utilized 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).

NATIONAL FOREST SYSTEM LAND. Federal lands which have been designated by Executive Order or statute as National Forests or purchase units, and other lands under the administration of the Forest Service including experimental areas and Bankhead-Jones Title III lands.

NET ANNUAL GROWTH. The net increase in the volume of trees during a specified year. Components of net annual growth include the increment in net volume of trees at the beginning of the specific year surviving to its end, plus the net volume of trees reaching the minimum size class during the year, minus the volume of trees that die during the year, and minus the net volume of trees that become rough or rotten trees during the year.

NET VOLUME IN BOARD FEET. The gross board-foot volume of trees less deductions for rot or other defect affecting use for lumber (see Sawtimber Volume).

NET VOLUME IN CORDS. Gross volume in cords less deductions for rot, roughness and poor form. Volume is computed for the central stem from a 1-foot stump to a minimum 4.0-inch top diameter outside bark, or to the point where the central stem breaks into limbs.

NONCOMMERCIAL SPECIES. Tree species of typical small size, poor form or inferior quality which normally do not develop into trees suitable for industrial wood products.

NONFOREST LAND. Land that has never supported forests and lands formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1 to 40-acre areas of water classified by the Bureau of Census as nonforest land. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide, and clearings, etc. more than 1 acre in size, to qualify as nonforest land.

NONPOINT POLLUTION SOURCES. Those sources of pollution that are diffuse in both origin and in time and points of discharge, and depend heavily on weather conditions such as rainstorms or snowmelt. Pollutants can originate on natural source areas as well as areas affected by man's activities.

OBJECTIVE or Target. A clear and specific statement of planned results to be achieved within a stated time period. The results indicated in the statement of objectives are those which are designed to achieve the desired state or process represented by the goal. An objective is measurable and implies time-phased steps to be taken and resources to be used which together represent the basis for defining and controlling the work to be done (USDA Forest Service 1980c).

OFF-ROAD ROAD VEHICLES (ORV's). Vehicles such as motorcycles, all-terrain vehicles, four-wheel drives and snowmobiles.

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.

OUTDOOR RECREATION SYSTEM (ORA). The outdoor recreation system consists of all natural state parks; recreational state parks; state trails; state scientific and natural areas; state wilderness areas; state forests; state wildlife management areas; state water access sites, which include all lands and facilities established by the commissioner of natural resources or the commissioner of highways to provide public access to water; state wild, scenic, and recreational rivers; state historic sites; and state rest areas, which include all facilities established by the commissioner of highways for the safety, rest, comfort and use of the highway traveler, and shall include all existing facilities designated as rest areas and waysides by the commissioner of highways. Each individual natural state park, recreational state park, and so forth is called a "unit." (Minn. Statutes, Chapter 86A)

OVERSTORY. That portion of the trees in a forest, with more than one roughly horizontal layer of foliage, which forms the upper or uppermost layer (after Ford-Robertson 1971).

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.

PASTURE. Land which is currently improved for grazing by cultivation, seeding, fertilization or irrigation.

PHENOTYPICALLY SUPERIOR. A forest tree exhibiting superior growth form and desirable growth characteristics (i.e., wood quality, straightness).

POINT POLLUTION SOURCES. Any discernible, confined and discrete conveyance from which pollutants are or may be discharged, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft.

POLETIMBER TREES. Live trees of commercial species at least 5.0 inches in diameter at breast height but smaller than sawtimber size, and of good form and vigor.

PRIMARY MANUFACTURING PLANTS. Plants using roundwood products such as sawlogs, pulpwood bolts, veneer logs, etc.

PRODUCTIVE-RESERVED FOREST LAND. Productive public forest land withdrawn from timber utilization through statute or administrative regulations.

PROGENY TEST. Means of determining the genetic worth of parent trees by measuring the performance of their offspring.

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

REINVEST IN MINNESOTA (RIM). A program designed to promote fish and wildlife habitat improvements in Minnesota.

REMOVALS. The net volume of growing stock or sawtimber trees removed from the inventory by harvesting; cultural operations, such as timber stand improvement; land clearing; or changes in land use.

RESOURCE MANAGEMENT UNIT (RMU). A geographical sub-division based upon significant differences in natural resources or resource characteristics. Factors considered include: surficial geology, land use and ownership patterns, physical and biological factors, and political and administrative boundaries.

ROAD. A general term denoting a public way for purposes of vehicular travel, including the entire area within the right of way.

ROTTEN CULL TREES. Live trees of commercial species that do not contain a saw log now or prospectively, primarily because of rot (e.g., when rot accounts for more than 50 percent of the total cull volume).

ROUGH TREES. (a) Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

ROUNDWOOD. Logs, bolts, pulpwood or other round sections cut from trees.

ROUNDWOOD EQUIVALENT. The volume of logs or other round products required to produce the lumber, plywood, woodpulp, paper or other similar products.

SALVABLE DEAD TREES. Standing or down trees that are considered currently or potentially merchantable by regional standards.

SAPLINGS. Live trees of commercial species 1.0 inch to 5.0 inches in diameter at breast height and of good form and vigor.

SAWTIMBER TREES. Live trees of commercial species containing at least one 12-foot saw log or two unctiguous 8-foot logs, and meeting regional specifications for freedom from defect. Softwood trees must be at least 9 inches in diameter and hardwood trees 11 inches in diameter at breast height.

SAWTIMBER VOLUME. Net volume of the saw log portion of live sawtimber trees in board feet.

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

SEED COLLECTION ZONES. Specific geographic zones from which forest tree seed is collected, and where seedlings grown from this seed are planted, that tend to show favorable tree form, vigor, growth, insect and disease resistance, etc. Zones are variable by species.

SEEDLINGS. 1) Containerized seedlings - forest tree seedlings grown in a greenhouse for 1-2 years in small containers ready for planting. 2) Bareroot stock - forest tree seedlings grown in an outdoor seedbed, sometimes in a transplant bed as well, and lifted for planting.

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.

Clonal Seed Orchard. Seed orchard established using clones through the use of grafting or rooted cuttings.

SELECTION CUTTING. Removal of mature timber, usually the oldest or largest trees, either as single scattered trees or small groups at relatively short intervals, commonly 5 to 20 years, repeated indefinitely, by means of which the continuous establishment of natural reproduction is encouraged and an uneven-aged stand is maintained (Ford-Robertson 1971).

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.

SILVICULTURAL PRESCRIPTION. Forest management methods and techniques to be applied to a forest stand in order to achieve a specified result (see Silviculture).

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

SITE INDEX. An expression of forest site quality based on the height of a free-growing dominant or co-dominant tree of a representative species in the forest type at age 50.

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.

SOFTWOODS. Coniferous trees, usually evergreen, having needles or scalelike leaves.

STAND-SIZE CLASSES. A classification of forest land based on the predominant size of timber present, that is: sawtimber, poletimber or seedlings and saplings.

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).

STATE FOREST ROAD. Any permanent road constructed, maintained, or administered by the Department of Natural Resources (DNR) for the purposes of accessing or traversing state forest lands.

STOCKING. The degree of occupancy of land by trees, measured by basal area and/or number of trees by size and spacing, compared to a stocking standard, i.e., the basal area and/or number of trees required to fully utilize the growth potential of the land.

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 (Forest Resource Management Act of 1982; Minn. Laws 1982, Chapter 511).

SWAMP LANDS. Lands received from the federal government (1.6 million acres remain) to encourage drainage and improvement. Receipts from these lands are deposited in a permanent trust fund and the interest allocated to public educational institutions on a per-pupil basis. About 1.1 million acres are within state forests.

THREATENED SPECIES. Any species of animal or plant which is likely to become an endangered species within the foreseeable future throughout all or a portion of its range.

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.

TMPIS. Timber Management Planning Information System.

TRAINING BOARD. Division of Forestry employee representatives who provide input into Division training and personnel development decisions. Each of the Division's four administrative regions, and all personnel classifications, are represented on the board.

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.

UNDERSTORY. The trees and other woody species growing under a more or less continuous cover of branches and foliage formed collectively by the upper portions of adjacent trees and other woody growth (after Ford-Robertson 1971).

UNEVEN-AGED MANAGEMENT. The course of actions involved in maintaining a forest or stand, composed of intermingling trees that differ markedly in age (after Ford-Robertson 1971).

UNMERCHANTABLE TIMBER. Timber species of no commercial value due to low quality, insufficient quantity, inaccessibility, lack of markets or other reasons.

VISITOR DAY. The use of an area for a total of 12 person-hours by one or more people, either continuously or spread over several visits (Schwarz 1976).

WAFFERBOARD. A panel product made from randomly aligned wood flakes bonded by resins under heat and pressure.

WILDERNESS (Federal). An area of undeveloped land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value (Wilderness Act 1964).

WILDFIRE. Any fire other than a controlled burn (prescribed burn) (Ford-Robertson 1971).

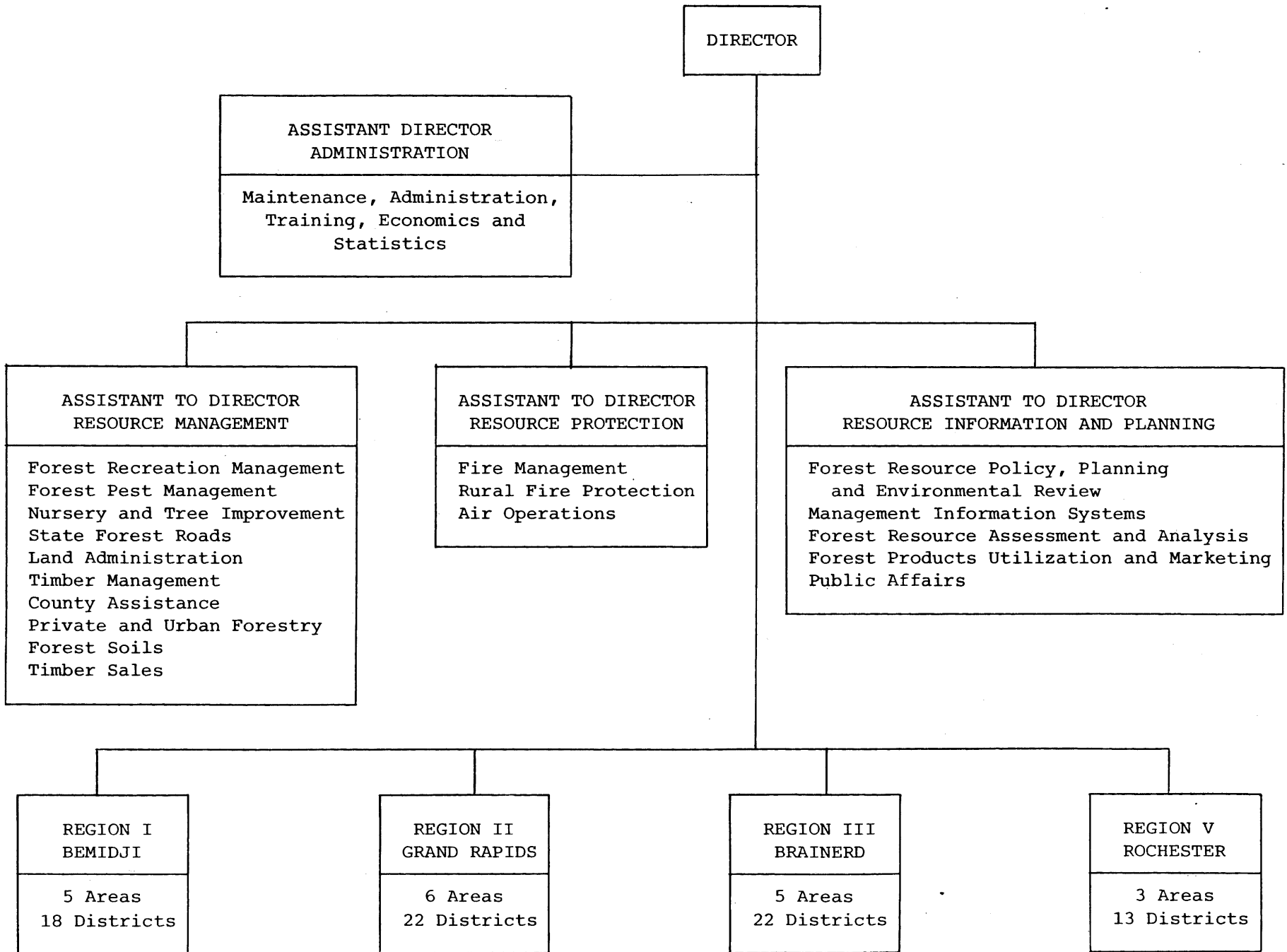


Minnesota Forest Resources Plan

Appendix F

Organizational Chart, DNR Division of Forestry (1987)

DIVISION OF FORESTRY - 1987





Minnesota Forest Resources Plan

Appendix G

Division of Forestry Administrative Boundaries and Office Locations

DIVISION OF FORESTRY

ADMINISTRATIVE BOUNDARIES & OFFICE LOCATIONS

