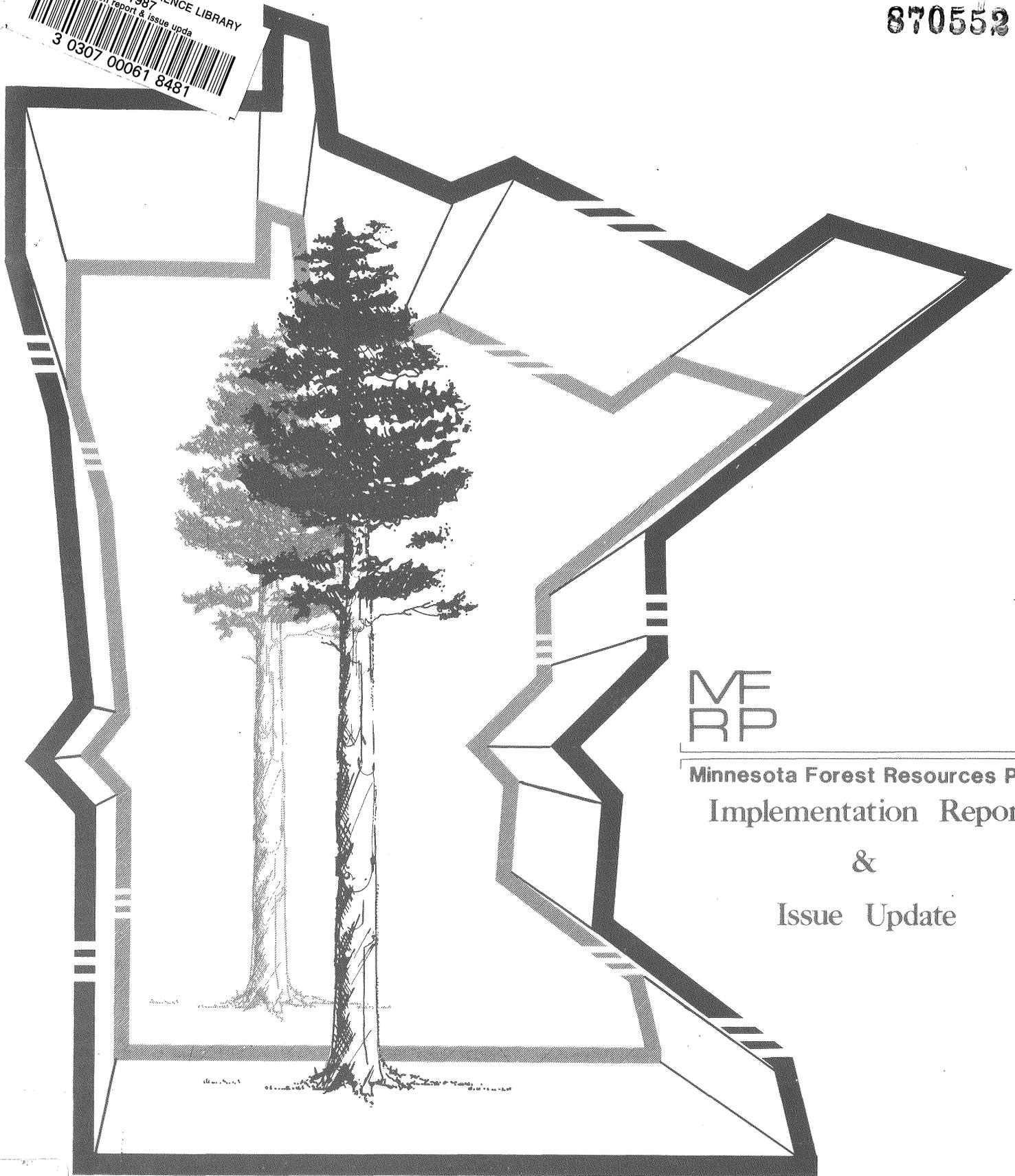


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Minnesota Forest Resources Plan
Implementation Report
&
Issue Update

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

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Implementation Report & Issue Update

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INTRODUCTION

The Department of Natural Resources, Division of Forestry released the first Minnesota Forest Resource Plan (MFRP) in July of 1983. The plan was the culmination of several years of effort by individuals throughout Minnesota's forestry community. The plan consisted of seven volumes centered around major issue areas affecting Minnesota's forest resources. An assessment document was produced which evaluated Minnesota's forest resources and forest resource management. Using information from that document and comments from numerous discussion groups, ten primary issues were identified. Goals, strategies, objectives, and recommended actions were developed for each of the ten issues. Recommendations were made for the Division of Forestry as well as other agencies and organizations. Strategies and recommended actions were integrated into the Division of Forestry's operations through the development of descriptions, directions, priorities, and budgets for each of the Division's programs.

The Division of Forestry recently completed an update of the 1983 MFRP. One of the objectives of the update was to check the progress being made in implementing the 1983 plan. In November of 1985, the Division sent a survey to all of the agencies and organizations that participated in developing the 1983 MFRP. The survey requested that each agency and organization provide an update as to what accomplishments they had made since 1983 in relation to the recommendation made for them under each of the ten issues.

This document presents the results of that survey and the corresponding accomplishments for the Division of Forestry. Of the 48 agencies contacted, 28 responded. Therefore, the accomplishments are not all inclusive. There are certain to be many pertinent activities which are not captured in this document. However, the document should provide a basic picture of the activities which are moving Minnesota towards the attainment of its forest resource goals.

This document also presents issue update sections with discussion on topics in the forefront of each issue area. New developments were emphasized even though many of the discussion areas from the 1983 MFRP are still pertinent.

This effort is an attempt to continue the active involvement and cooperation of the many agencies and groups which assisted in the MFRP planning process. Checking our progress now will serve to refocus efforts on the goals identified in the MFRP, and to reevaluate the MFRP planning process and its effectiveness in guiding us towards the attainment of those goals.

NOTE: The issue, goals, and strategies presented in this document are restatements of those developed for the 1983 MFRP.

ECONOMIC CONTRIBUTION OF TIMBER RESOURCES

Issue

Minnesota's timber resources are contributing less than their potential to the state's economic growth and development.

Goal

To manage Minnesota's renewable timber resources to encourage expansion of the forest products sector of the state economy.

Update

THE FOREST PRODUCTS INDUSTRY

The forest products industry in Minnesota is very diversified. Nearly 14 million acres of forest land in Minnesota is available for forest management. Timber harvested from that land is manufactured into various products including: wood pulp, paper, lumber, oriented strand board (OSB), waferboard, hardboard, packaging material, furniture, railroad ties, posts, poles, piling, and many other specialty products (Allen 1986).

ECONOMIC CONTRIBUTIONS

Although timber and fuelwood harvest levels showed only a slight increase, the total economic contribution of forest products manufacturing increased nearly one-third from 1983 to 1985.

Minnesota Forest Industry Statistics 1983-85
(Allen 1985,86)

	1983	1984	1985	Change 1983-85
Timber and fuelwood harvested from commercial forest land in MN (MM cords)	4.16	4.40	4.26	+2.4%
Value of forest products manufactured in MN (billion \$):				
Primary forest products	1.07	1.26	1.24	+16%
Secondary forest products	1.78	2.26	2.53	+42%
Total	2.85	3.52	3.77	+32%

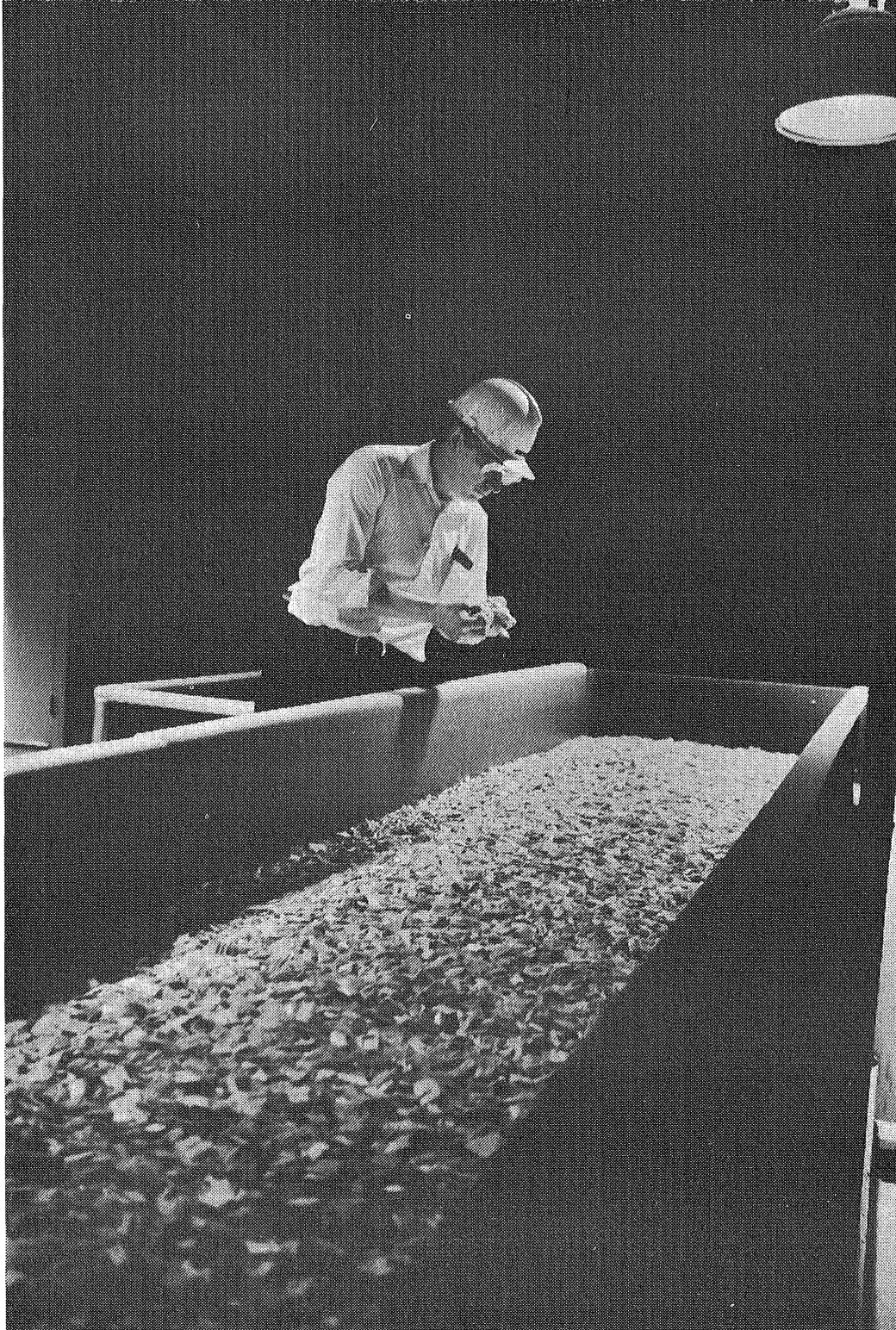
More than 50,000 people were employed by forest products manufacturers in Minnesota between 1983 and 1985. Approximately 118,000 additional people were employed in related trades and service industries (Allen 1985,86).

INDUSTRY ACTIVITY

Since 1981, three new waferboard manufacturing plants, two new oriented strand board (OSB) manufacturing plants, and two new paper mills have begun, or will soon begin operations in Minnesota and one paper mill expanded. Many smaller plant expansions have also taken place. This development involved over 900 million dollars in investment, created over 1800 jobs, and increased wood usage by over one million cords annually. The industry suffered a slight setback when the Boise Cascade Insulite plant closed in International Falls in 1985. However, a new sheathing board plant should open in International Falls in 1987. In addition, at least one more new waferboard plant is expected to be established in Minnesota in the near future.

ASPEN USAGE

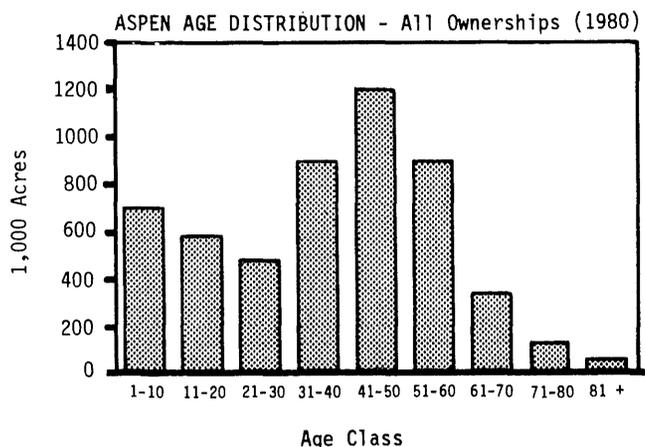
Aspen forests comprised 39 percent of Minnesota's commercial forest land in 1977 (Jakes 1980b). In 1980 approximately one million cords of aspen were harvested. The sudden growth of the waferboard industry, announced expansions in the paper industry, and potential expansion in the wood products industry are expected to push aspen use to over two million cords annually by the year 2000 (Krantz 1981).



Wood chips are converted into paper for magazines and catalogs (Champion International, Sartel).

ASPEN RECYCLING

The abundance of the aspen resource in Minnesota has been a key ingredient in the expansion of the state's forest industry. However, this abundant supply is in jeopardy because about one-half of this resource is overmature and in danger of being lost if not harvested in the near future. Division foresters have identified over 70,000 acres of overmature and poorly stocked aspen stands in need of harvesting and natural regeneration (recycling). Most of these stands are not economical to harvest. Therefore funding from the Reinvest In Minnesota Act (R.I.M.) will be used to recycle 7,000 acres per year. The young, vigorous, fully-stocked aspen stands created through this recycling program will have immediate and long-term benefits for several wildlife species and will create long-term timber benefits.



HARDWOOD AVAILABILITY

Large surpluses of some species are available. These species, such as paper birch and other dense hardwoods, have, until recently, been considered non-marketable. Continued development of markets and industrial facilities for these species is needed. However, the majority of these surpluses can only be utilized by industries requiring lower quality hardwoods. The supply of high quality hardwoods for grade lumber and veneer production continues to decrease.

MARKET DEMAND

The market for many commercial forest tree species (other than aspen) remains down. Even the high value species, such as black spruce, jack pine, and black walnut are currently in low demand.

TIMBER SALE PROCEDURES

Public timber sale procedures can affect the supply of harvestable timber. Existing public timber sale procedures may not permit enough flexibility to allow harvest levels to correspond to changing market cycles. Timber sale methods such as consumer scaling and lump-sum sales have been used to improve management efficiency and improve the responsiveness of the volumes and products

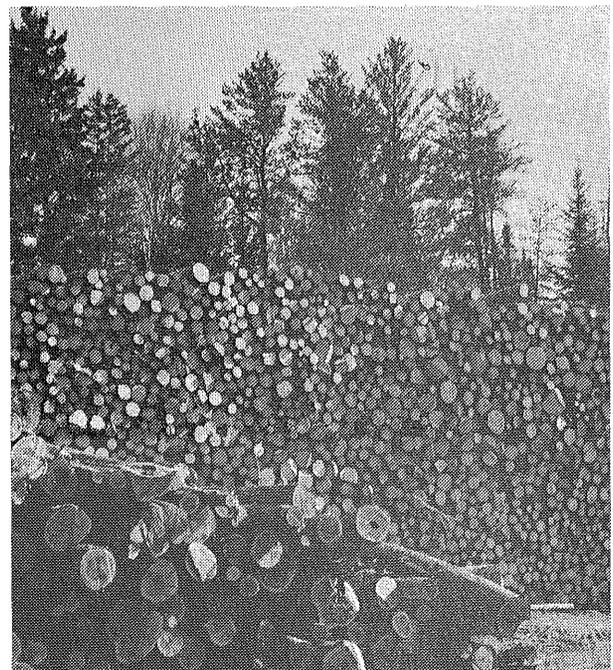
grown and removed from the land to changing market conditions. Other methods, including site preparation credits and negative bidding, have not been used by some public agencies because of legislative and policy restrictions. Timber sales legislation will be introduced in the 1987 legislative session that will streamline administrative procedures and make public timber sales more competitive.

HARVEST RESIDUES

An estimated 40 percent of the residues remaining after harvest presently are not used (Krantz 1981). This unused timber is primarily tops, short logs, and cull logs (unmerchantable logs due to roughness, rot, or species). Markets need to be developed for this material.

VEGETATION CONTROL

Newly established softwood plantations generally need treatment to control competing vegetation. This involves a choice between herbicide (aerial or ground application) and mechanical release methods. The proper use of registered herbicides can reduce management costs and provide necessary control of competing vegetation. Improvements in mechanical equipment to perform release operations is needed.



Harvests from Minnesota's commercial forest land increased 21% between 1980 and 1985.

TMPIS

The Division has implemented the "Timber Management Planning Information System" (TMPIS) in its area planning process. This is a computerized management program which generates stand prescription summaries that aid field foresters in focusing their management efforts on productive sites in need of management activities.



Cable skidder hauls tree length aspen logs from harvest site.

TMPIS will help foresters provide a continual and consistent supply of wood fiber through increased forest productivity and the sustained yield regulation of the forest land base. A reliable source of wood fiber is important to provide stability to Minnesota's forest industry and to attract new industry investments.

TO MEET EXPECTED FUTURE DEMAND, FOREST LAND USE CONVERSIONS MUST BE DISCOURAGED AND THE FOREST LAND BASE STABILIZED.

Forest lands are being steadily converted to other uses such as agriculture, housing, recreational subdivisions, and roads. Land

use conversions need to be discouraged. Quality forest lands must be identified, protected, and managed intensively.

TAX REFORM LEGISLATION

The Minnesota forest products industry has invested in expansion and modernization totalling more than \$900 million over the past five years (Allen 1986). Federal tax law changes may have drastic effects on future industry investment decisions. Changes enacted during the 99th Congress which will have the greatest effect on the forest industry include the repeal of investment tax credits and the phase out of the capital gains treatment for timber by 1988.

MN WOOD PROMOTION COUNCIL (MWPC)

Representatives from Minnesota's wood products industry met in early 1985 to begin formation of the MWPC. Initial funding was secured by MWPC through grants from the Blandin Foundation and the Minnesota Department of Agriculture. MWPC is a non-profit organization that will represent small to medium-sized wood product manufacturers, distributors, and associated businesses in strengthening the forest products industry in Minnesota.

STRATEGY

Practice multiple-use management on an extensive, stable forest land base through interdisciplinary planning and a multiple-use emphasis on all ownerships of commercial forest land.

Intensify management on the most suitable timberland to increase productivity and quality of the forest resource. Improve timber management and utilization efficiency while continuing to produce substantial outputs of other forest resources.

Encourage expansion of the forest products sector of the state economy by providing a better business climate. Increase the annual timber harvest on all commercial forest land from the 1980 level of 2.4 million cords to approximately 3.8 million cords by 1990 to meet projected demands for timber. Assure forest products manufacturers that timber supplies will continue to be available to meet anticipated needs.

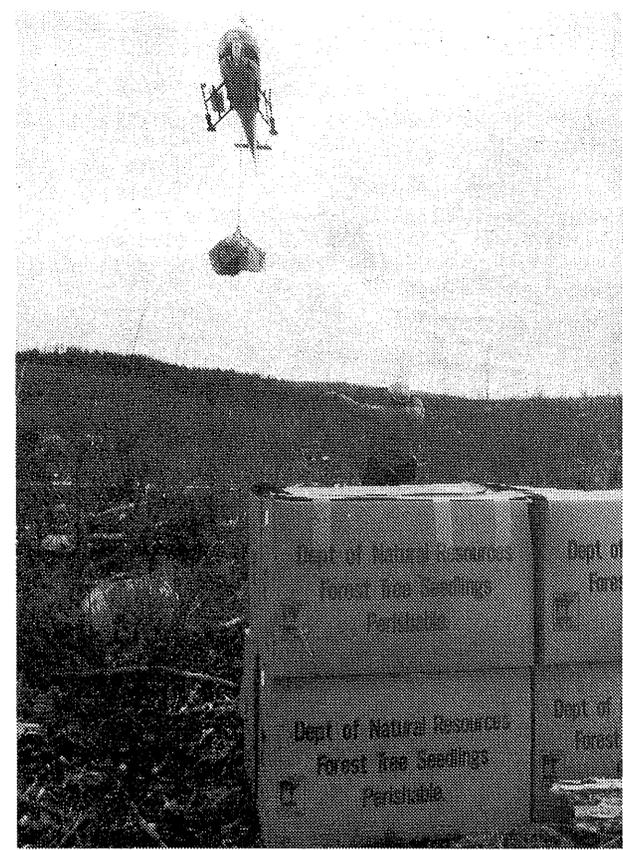
SELECTED ACCOMPLISHMENTS F.Y. 1984-86

DEPARTMENT OF NATURAL RESOURCES

Division of Forestry

TIMBER MANAGEMENT PROGRAM F.Y. 1984-86

Wood Harvested.....thousand cords	1600
Aspen Recycling.....acres	1600
Artificial Regeneration.....thousand acres	42.9
Seedlings Produced.....million seedlings	71.7
Timber Stand Improvement.....acres	19,500



Reforestation of inaccessible harvest sites is made possible through air lifts of tree seedlings.

- * Hired a Tree Improvement Specialist in 1985 to accelerate the Division's Tree Improvement Program and to coordinate with the MN Tree Improvement Cooperative. Revised the Minnesota Tree Improvement Plan.
- * Prepared the Timber Management Planning Information System (TMPIS) for 3 of the Division's administrative areas. This is an automated timber management plan which addresses sustained yields, regulated forests, regeneration needs, species distribution and diversity, and fuelwood production.
- * Developed and implemented 5 pest management guidelines and control strategies for each major timber type in Minnesota in an effort to integrate pest management techniques into forest management activities. These guidelines are being implemented through the Division's planning efforts.
- * Began risk rating on Minnesota's forest lands. To date, 16,000 acres have been completed.
- * Provided technical soils information on 3,644 acres of forest regeneration projects.
- * Assisted in the collection of forest productivity and other interpretive data for each soil unit in 10 soil surveys.

 UTILIZATION AND MARKETING F.Y. 1984-86

Development Opportunities	
Identified and Promoted.....opportunities	133
Development Organization	
Assists.....assists	316
Presentations, workshops, tours ...number	90
Market Information	
Publications.....issues	28
.....copies circulated	55,000
Major Market Research and	
Development Projects.....projects	30
Individual Marketing Assists.....assists	575
Forest Products	
Processing.....major analysis/assists	40
.....incidental technical assists	540
Technical Harvesting Assistance....assists	180

-
- * Updated industrial wood supply and apparent demand projections for Minnesota.
 - * Produced a semi-annual Minnesota forest products price report with a circulation of 1,000.
 - * Published, in cooperation with the Minnesota Extension Service, a forest products marketing newsletter bi-monthly with a circulation of 3500.
 - * Published Minnesota Wood Market Outlook, a semi-annual report on apparent demand for industrial wood in Minnesota.
 - * Completed and distributed the 1986 forest products industry directory. This is a cooperative project with the Minnesota Extension Service and the Natural Resource Research Institute (NRR).



Over 20 million tree seedlings were 'lifted' from Division of Forestry nursery beds in 1986 for distribution to public and private landowners across the state.

- * Began updating the Phase I inventory, now referred to as Forest Inventory and Analysis (FIA). This inventory is invaluable to the forest industry in Minnesota in making investment decisions. The original inventory is nearly 10 years old.

Division of Minerals

- * Worked, in cooperation with the Division of Forestry, to develop reclamation options for peatland sites following mining activity. Post-mining reclamation steps will be planned to not preclude timber production.

OTHER AGENCIES

Iron Range Resources Rehabilitation Board (IRRRB)

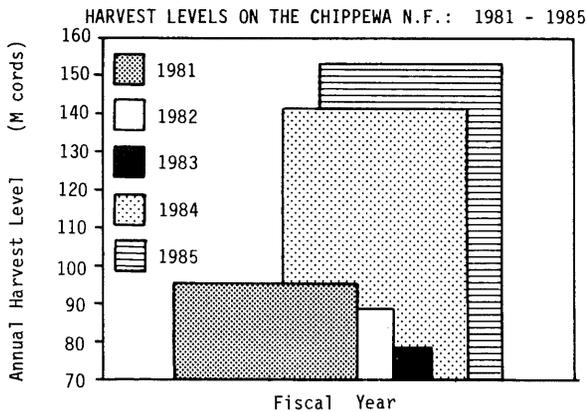
- * Supported development of a Wood Products Industrial Park in Hibbing. Efforts began with funding of a feasibility study and an implementation plan in 1984. The first business in this new industrial park opened in the spring of 1986. In addition, the IRRRB spent nearly 3 million dollars to establish or retain 360 jobs in 15 wood-using industries in northern Minnesota.
- * Planted over 1 million trees on abandoned mine lands since 1978. Since 1983, the majority of these seedlings have been produced by the IRRRB's own growth chamber in Calumet.

Minnesota Department of Energy and Economic Development

- * Developed a brochure entitled MINNESOTA: Where Wood is a Growing Industry, in cooperation with the IRRRB, the Minnesota Trade Office, and the Division of Forestry. This publication outlines timber resources as well as industries derived from these resources. It also describes opportunities in the industry and lists contact agencies.
- * Established a wood industry development program to work with community development agencies, industry groups, other state agencies, entrepreneurs, and large corporations to promote the wood industry in Minnesota.
- * Analyzed the market for wood products in Minnesota, specifically medium density fiberboard.

U.S. Forest Service - Chippewa National Forest

- * Substantially increased harvest levels for the Chippewa National Forest:



- * The percentage of hardwoods and softwoods harvested was:

FY 84: Softwoods = 31%
Hardwoods = 69%

FY 85: Softwoods = 29%
Hardwoods = 71%

Volumes of timber sold during these same two years was very close to the 75% hardwood, 25% softwood ratio recommended in the 1983 MFRP.

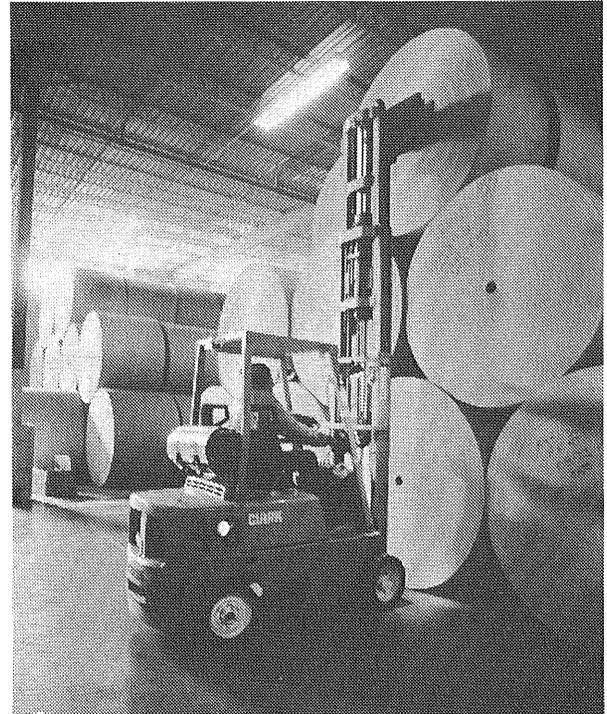
- * Provided for regeneration of a variety of timber types to meet timber, recreation, wildlife, and other resource needs in the Chippewa National Forest Plan.
- * Has a member on the State Unmerchantable Species Task Force. This task force is composed of industry, state, federal, and county representatives who look for ways to improve the utilization of northern hardwoods.

U.S. Forest Service - Superior National Forest

- * Plans for an annual harvest of no more than 194,000 cords through the first ten years of their planning period. This is down from the 244,000 cords shown in the 1983 MFRP.
- * The Superior National Forest Plan incorporates a trend towards a higher hardwood component in their future harvests. It projects a 60% hardwood, 40% softwood mix compared to the 50%/50% mix indicated in the 1983 MFRP.
- * Conducted annual meetings between U.S. Forest Service Rangers, DNR foresters, and county representatives to review and coordinate timber sale programs. This resulted in cooperation in road maintenance and property boundary location.

U.S. Forest Service - North Central Forest Experiment Station

- * Made a concerted effort to transfer TWIGS (The Woodsman's Ideal Growth Projection System) to the forestry community of Minnesota and throughout the North Central Region. New research is expanding the capabilities of TWIGS for simulating and analyzing forest management opportunities in Minnesota and elsewhere.



Rolls of paper used to manufacture roofing material (CertainTeed Corporation, Shakopee).

- * Developing an Eastern Region Growth and Yield Simulator (ERGYS). ERGYS will organize, assemble, document, and provide access to 10 different growth and yield simulation models.

U.S. Forest Service - State and Private Forestry

- * Provided funding for a Woodland Council Administrator to coordinate the activities of all natural resources related industries, agencies and other interested parties involved in the Woodland Council Initiative in selected counties in Minnesota. Assistance will be provided to each participating county in action planning, local meetings, field days, and publicity.

There are currently four counties active in this pilot program which has been directed towards involving woodland owners, foresters from the public, private, and educational sectors, and other interested parties to bring about increased levels of forest management on non-industrial private woodlands in Minnesota.

Bureau of Indian Affairs

- * Completed compartment reconnaissance on over 95% of the lands it administers.

Region 5 Regional Development Commission

- * Funded a study of Region 5's wood resources. Published the report entitled "Market Research For Low Quality Hardwoods and Identification of Additional Forest Products Processing Opportunities for Private Industry in Cass, Crow Wing, Morrison, Todd, and Wadena Counties". This report has received wide spread distribution and use throughout Minnesota, the Upper Great Lakes States, and Eastern States. The report has also been sent to European firms interested in Minnesota wood resources.

University of Minnesota - Agricultural Experiment Station

- * Supports more than a dozen research projects aimed at increasing timber and other forest resource yields. These projects involve approximately 6.5 scientist years of effort annually.

University of Minnesota - College of Forestry

- * Conducted over a dozen research projects sponsored by outside agencies. These include:
 - Wood-Based Industry Structure as a Force in Improving Productivity.
 - Comparing the Costs of Producing Wood Grown from Short Rotation Plantations.
 - Forest Management and Site Productivity of Southeastern Minnesota.
- * Initiated the Minnesota Tree Improvement Cooperative in 1981 in cooperation with the Minnesota DNR and several other organizations. The Blandin Foundation provided much of the initial funding for the cooperative.

The goal of the Cooperative is to increase the quantity and quality of timber yields in Minnesota through the application of genetic principles via breeding and management programs. The Cooperative seeks to achieve this goal by effectively and efficiently combining members' resources.

- * Hired a tree improvement specialist.

University of Minnesota - Extension Service

- * Promoted efficient utilization of timber by:
 - Producing "Timber Harvesting News", a periodical newsletter dealing with harvesting techniques and policies, and their impacts, and distributed it to approximately 800 loggers and foresters.

- Preparing a new publication on marketing timber for non-industrial private forest landowners.
- Conducting short courses and workshops on wood drying methods, kiln drying, hardwood lumber grading, and lumber retailing skills.
- Updating the Minnesota Forest Products Directory in cooperation with the DNR and the University of Minnesota Natural Resource Research Institute. This directory lists all forest products firms in Minnesota.
- * Offered several conferences, workshops and meetings that present information on silviculture, multiple-use management, use of native wood, and other forestry subjects to non-industrial private forest landowners.

Minnesota Forestry Association (MFA)

- * MFA is the coordinating body for the Minnesota Woodland Council Initiative through a joint grant from the National Forest Products Association and Minnesota Forest Industries.

Society of American Foresters

- * Actively supported improvement and expansion of the University of Minnesota's College of Forestry research programs and facilities.
- * Cosponsored the 1984 Governor's Conference on Forestry.
- * Presented testimony to the Governor's Commission on Wood Products.

ENERGY PRODUCTION FROM FOREST RESOURCES

Issue

Minnesota's forest resources can help meet increasing energy demands, but a program to manage the use of these resources will be needed to maintain both environmental and forest resource quality.

Goal

To help meet Minnesota's changing energy demands through increased use of forest resources for energy production.

Update

COMMERCIAL FIBER FUEL CONSUMPTION

The Forest Industry continues to be the major volume consumer of fiber fuel, using over 960,000 tons of wood residue and pellets each year. However, significant expansion has occurred in the use of fiber fuels by private businesses and organizations (over 72 firms or organizations), government and public organizations (over 33 organizations), and schools (over 84). Annual fiber fuel use in these four sectors is expected to increase by over 40% to over one million cord equivalents by 1995 (MN DNR, 1986).

WOOD FIBER SUPPLIES

There is increasing interest in the large-scale use of wood fiber for energy by public utilities and the taconite processing industry. With only 30-40% of the 4 million cord equivalents of wood resources available for energy currently being used, there appears to be a substantial amount of wood fiber fuel available for such opportunities. However, the availability of wood fiber within procurement distances will limit the size of these operations.

IMPACT OF OIL PRICES

Perhaps the most significant development in the realm of energy production from forest resources since 1983 has been the drastic decrease in the price of petroleum in the world market. This has resulted in the slowing of alternative energy industries, including fiber fuels. Many of the firms and organizations which recently converted to fiber fuels from fossil fuels are now switching back to fossil fuels. They are,



Wood fuel briquettes (a form of fiber fuel) are comprised of processed sawdust and sawmill residue.

however, retaining the ability to burn fiber fuels in anticipation that fossil fuel prices will eventually rise again. This set back in the fiber fuel industry is viewed as temporary. Fossil fuels are limited, non-renewable resources whose supplies are governed by international politics. Their supplies will eventually be outpaced by worldwide demand and prices will climb to the point where fiber fuels are once again an attractive alternative.

RESIDENTIAL FUELWOOD USE

During the 1984-85 heating season, 1.4 million cords of wood were consumed for domestic use in Minnesota. This fuelwood produced heat equivalent to burning 160 million gallons of #2 fuel oil or 21 billion cubic feet of natural gas. When compared to the 1.3 million cords consumed in the 1979-80 heating season, it appears that residential woodburning in the state has stabilized and that wood consumption is no longer increasing at the rate seen in the late 1970's.

DOMESTIC/INDUSTRIAL COMPETITION

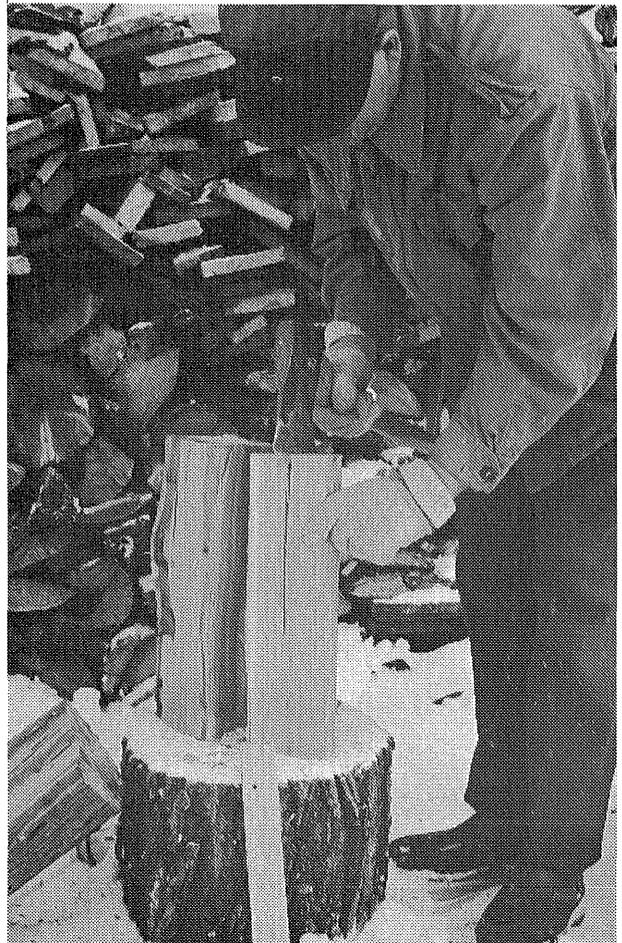
The only competition that exists between domestic fuelwood consumers and the forest products industry is in the area of sawbolt (a short sawlog) or sawlog quality hardwoods. Currently, loggers can receive the same dollar return for sawbolt quality wood when sold as firewood as when sold as sawbolt material to a sawmill. Loggers also find it much easier to market this wood as firewood. This may continue to be a problem until forest managers are able to discourage the sale of sawbolt quality hardwoods as firewood. Forest managers may have to play a more active role in searching out markets for such material. Sawmills may also have to look at increases in the price paid for sawbolt quality material.

IMPROVING FOREST MANAGEMENT

Although there is little concern that increased consumption of wood for domestic fuel will compete for the same resources used for manufacturing forest products, there is concern that harvesting fuelwood may damage future forest crops. Indiscriminate firewood cutting often damages timber and other forest resources. However, properly conducted fuelwood removal is an excellent way to improve timber stands and maintain environmental quality. Information and education programs can provide an excellent source of forest management information to private landowners who are managing woodlots for fuelwood. Through these programs, damage to future forest resources could be reduced.

PEAT RESOURCE

Minnesota contains between 6 and 7 million acres of peatland. Deposits are found throughout the state, except in the extreme southwest and southeast. Approximately 50 percent of the state's peat resource is publicly owned, with most of the public ownership concentrated in the northern part of the state. It is estimated that



Eighteen percent of Minnesota households used wood as a major or supplemental heat source during the 1984-85 heating season (Bostrom, MPCA, October 1985).

approximately 10 percent of Minnesota's peatlands have energy potential. About 90 percent of these peatlands would be suited for milled peat harvesting. Ten percent would be suited for sod peat.

STRATEGY

Monitor and anticipate changes in market forces and advances in technology that determine the demand for energy resources from forest lands.

Encourage industry and public institutions to use more wood residues for fuel.

Expand existing fuelwood management efforts, which make domestic fuelwood available from residues and low value timber, if demand increases. Do this by:

- 1) initiating a managed fuelwood harvest program that assures protection of timber, wildlife, and other forest resources on both public and private lands;
- 2) increasing information and education programs; and
- 3) increasing marketing and utilization assistance.

Cooperate with the DNR, Division of Minerals and the Interagency Peat Task Force to ensure coordinated development of peat, biomass, and other nontimber energy resources.

SELECTED ACCOMPLISHMENTS F.Y. 1984-86

DEPARTMENT OF NATURAL RESOURCES

Division of Forestry

- * Published the "Status of Fiber Fuel Use in Minnesota" twice annually, in cooperation with the Minnesota Department of Energy and Economic Development (DEED), and the Fiber Fuels Institute. This publication is a resource handbook to encourage fiber fuel use in Minnesota and is distributed to 2000 potential fiber fuel users.
- * Completed 16 major analyses to convert from traditional energy sources to wood energy.
- * Completed 46 cooperative projects to promote wood as an energy source and to distribute technical information about wood energy.
- * Printed and distributed the results of the 1985 residential fuelwood use survey in cooperation with the Minnesota Pollution Control Agency.
- * Cooperated with DEED in preparing a fiber fuels reference manual.
- * Promoted wood energy use by responding to numerous requests for technical information and through various reports, articles, workshops, presentations, and tours.
- * Prepared the Timber Management Planning Information System (TMPIS) for 3 of the Division's administrative areas. This is an automated timber management plan which addresses, among other things, fuelwood production.
- * Appraised and supervised the sale of 7,100 special fuelwood permits on state land, totalling 32,000 cords of wood.

Division of Fish and Wildlife

- * Cooperated with the Division of Forestry in the planning, design, and development of energy production on appropriate state forest areas through the coordination of forestry and wildlife activities established by the DNR Wildlife/Forestry Coordination Policy and the Forestry/Wildlife Guidelines to Habitat Management.

Division of Minerals

- * Conducted peat marketing and peat combustion tests in northern Minnesota facilities. Several of these facilities are seriously interested in using peat as an alternative to coal or wood chips.

OTHER AGENCIES

Iron Range Resources and Rehabilitation Board (IRRRB)

- * Used funds from the Northeast Minnesota Economic Protection Fund to support 24 energy conversions through grant and loan programs. These conversions were predominately from oil/natural gas to some form of biomass material such as peat pellets, green chips, or wood pellets.
- * Converted two of its own facilities to use alternate energy forms: Giants Ridge Recreational Facility (wood pellets) and Ironworld, USA (peat). These conversions resulted in an annual injection of over \$700,000 into the regional economy for purchases of alternate fuels.
- * Financially supports two private peat manufacturing firms in northern Minnesota. The IRRRB is planning to turn over the Wilderness Valley Farm Peat Research Station to the Natural Resources Research Institute in Duluth.

Minnesota Department of Energy and Economic Development (DEED)

- * DEED's Office of Alternative Energy Engineering (AEE) has conducted test burns of soy-straw and oat hulls in commercial boilers to evaluate combustion properties. Tests thus far have resulted in one wood products firm using oat hulls as a wood products drying fuel.
- * Eighty-five school buildings in 67 Minnesota school districts converted boilers to fiber fuels. Thirty-eight of these conversions received grants, loans, or a combination of both from DEED's Energy Finance Division.
- * DEED's AEE "School Technical Assistance Program" conducted workshops and visited 93 schools. Engineers involved with the program have made recommendations for fiber fuel conversions at 52 schools.
- * Provided assistance in coordinating shared savings programs enabling wood conversions at St. Cloud University, Bemidji State University, and at Brainerd State Hospital.
- * DEED's Energy Information Center currently has five pieces of literature available for public distribution dealing with forest related energy resources. During 1985, AEE began publication of a quarterly newsletter called Minnesota Energy Alternatives which is dedicated to developing Minnesota's indigenous energy resources.
- * Aired public service announcements over Minnesota radio stations addressing fiber fuels.

- * Published two Legislative Commission on Minnesota Resources funded studies entitled: "Economic Assessment of Bioenergy Crop Production Systems in Minnesota" and "The Assessment of Barriers to the Development of Alternative Energy Businesses in Minnesota".

U.S. Forest Service - North Central Experiment Station

- * Completed a major research effort that analyzed the short- and long-term opportunities and impacts for wood energy in northeastern Minnesota.

University of Minnesota - Agricultural Experiment Station

- * Supported the following research projects related to energy production from forest resources:
 - Wood Bioenergy Crops on Marginal Lands.
 - Systems for the Drying and Processing of Fuel-Wood Chips.
 - Conservation of Energy and Raw Material Through Improved Lumber Drying.

University of Minnesota - Extension Service

- * Conducted workshops for non-industrial private forest landowners in southeast Minnesota on managing hardwood timber stands to produce fuelwood and improve stand quality.
- * Conducted seminars for approximately 700 homeowners and others to learn about selection, installation and operation of wood burning stoves and furnaces.
- * Produced several television and radio programs and newspaper articles on wood heating safety.

University of Minnesota - College of Forestry

- * Developed a dewatering press that reduces the moisture content of green wood chips, thereby reducing energy costs for industries that burn wood and increasing the value of forest residue.
- * Developed analyses for the feasibility of various sizes and locations of wood energy installations.
- * Cooperated with counties and the U.S. Forest Service North Central Forest Experiment Station in developing analyses of potential wood for energy supplies, and harvesting site impacts from increased utilization.

- * Conducted research projects on the policy options to encourage management and use of forest residues in northeastern Minnesota, development of an engineering economic analysis for converting existing space and process heating equipment to wood residue fuels in northern Minnesota, and the productivity and harvesting costs associated with various harvest systems that might be used to gather woody fuels.

FOREST PROTECTION PROGRAM EFFECTIVENESS

Issue

Cyclical funding of the wildfire protection program and increased development of permanent and seasonal homes in rural areas diminish the program's effectiveness in reducing forest resource, life, and property losses.

The effectiveness of forest insect and disease and other forest protection programs in reducing resource losses is restricted because of insufficient integration of the programs into land use, silvicultural, and other forest management decisions.

Goal

To provide efficient forest resource protection.

Update

The DNR Division of Forestry provides primary wildfire protection on 22.8 million acres of forest and non-forest land in northeastern, north central, and southeastern Minnesota. In the lightly forested western, south central, and metropolitan areas rural fire departments suppress most wildfires with the Division supplying personnel and equipment when necessary.

COOPERATIVE AGREEMENTS

The DNR enters into cooperative fire protection agreements with rural fire departments, other states, federal agencies, and others. The DNR trains local fire department personnel in wildfire control techniques and helps fire departments obtain surplus federal equipment. However, both of these programs are limited due to administrative and program time availability.

Fire reporting remains a problem. In some parts of the state, it is estimated that the majority of the wildfires suppressed by fire departments go unreported. Fire occurrences may be double of what are actually reported.

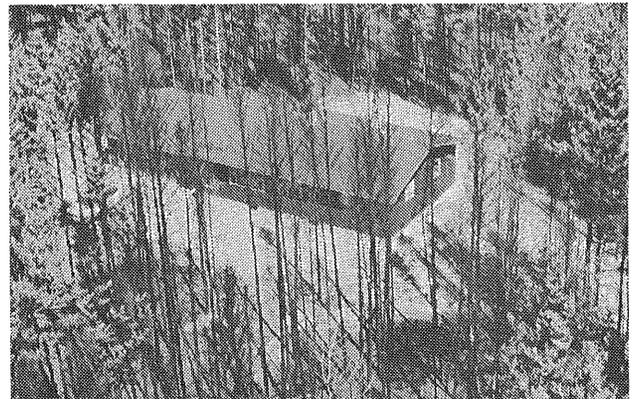
RURAL/URBAN INTERFACE

Construction of large numbers of scattered permanent and seasonal homes in rural areas in recent years has made fire protection more difficult. Development of homes in forest types that are highly susceptible to fire causes especially acute problems.

FIRE PROGRAM FUNDING

Funding of fire protection programs continues to be a concern. Adequate funding of direct suppression, prevention, and presuppression

programs, and related expenses such as equipment, would reduce emergency suppression costs and, most importantly, reduce losses. Funding needs to be stable.



Fire protection for homes and cabins built in densely forested areas is an increasing concern. The fire hazard for dwellings like this can be reduced by establishing larger buffer zones between conifers and dwellings; thinning the conifers surrounding dwellings; planting fire resistant hardwoods interspersed among the conifers; and providing adequate access for fire suppression equipment.

ANALYSIS OF FIRE PROGRAM

The Legislative Commission on Minnesota Resources provided the Division of Forestry with the funds to conduct an economic analysis of forest fire protection in Minnesota. A National Fire Management Analysis process developed by the U.S. Forest Service was used to determine the optimal level of fire protection to provide based on economic efficiency. The results of the

analysis indicate that effective implementation of a 14 percent increase in presuppression expenditures would result in a 51 percent decrease in acreage burned, as well as a 47 percent decrease in suppression costs and a 55 percent decrease in total losses. Presuppression expenditures include equipment costs, personnel salaries, training, fire planning, detection activities, fire records, air craft availability costs, and several activities classified as administration. Expenditures need to be concentrated on replacing the rapidly deteriorating fleet of fire suppression vehicles and intensifying training efforts.

MINNESOTA INCIDENT COMMAND SYSTEM (MNICS)

The Minnesota Incident Command System (MNICS) program has been progressing primarily in the area of suppression training. The program allows different agencies to combine overhead during fire suppression to reduce administrative costs, share fire equipment resources, and more efficiently use personnel. Currently, all federal land management agencies and the Division of Forestry are involved. Rural fire departments will be included at a later date. Future emphasis is needed in improving reimbursement procedures between agencies and providing training in the coordination of interagency prevention and presuppression activities.

PRESCRIBED BURNING

In recent years, increased attention has been given to reducing resource losses by improving integration of forest protection programs into silvicultural and other resource management programs. Prescribed burning is an accepted management tool which can and should be used by resource managers to achieve management objectives. Prescribed burning is used for wildlife habitat improvement, site preparation for tree planting and seeding, restoration and maintenance of prairie ecosystems, control of forest insect pests and diseases, wildfire hazard reduction and aesthetic improvement.

INTEGRATED PEST MANAGEMENT

The Division Pest Management activities attempt to integrate forest pest management guidelines and techniques into forest nursery production and forest management practices from site preparation to harvest. Emphasis is placed on encouraging greater species diversity within stands and greater age class and species diversity between adjacent stands. This diversity can reduce losses to insects, disease, and fire and can improve wildlife habitat. Most forest managers need additional training in integrated pest management (IPM) techniques.

INSECT AND DISEASE WORKING GROUP

Insect and disease outbreaks often involve large areas and interspersed ownerships. An interagency forest insect and disease working group should be established to reduce duplication of efforts and increase effectiveness of insect and disease activities.



Annual timber losses from spruce budworm exceed 200,000 cords per year, worth an estimated \$9.4 million. This is enough timber to supply a major paper mill. Annual timber losses due to forest pests far exceed the losses from any other source.

PESTICIDE USE

Public concern exists over the use of pesticides in forest management and its effects on public health and the environment. Less than 1% of Minnesota's commercial forest lands are treated with pesticides each year. This percentage is small but critical to the success of forest management practices. All pesticides used in forest management in Minnesota are authorized for use by federal and state regulatory agencies. The Department of Natural Resources has revised its policy for pesticide use on state-administered lands.

Continued controversy over pesticide use is impacting the Division's program administration costs, ability to provide protection to young plantations, and forest pest management capabilities. Use of controversial pesticides and application techniques must be reevaluated. Alternative techniques, such as ground application of pesticides and mechanical site preparation, should be explored as alternatives to aerial applications and pesticide use in general.

SOIL AND WATER QUALITY

Certain forest management practices, including road construction, fire break clearing, some harvesting and site preparation techniques, pesticide use, recreation, and grazing have the potential to impact soil and water quality in site-specific situations. The Division of Forestry hired three regional soil specialists to advise foresters on site-specific forest management practices which minimize these impacts.

STRAGETY

Increase efforts in fire prevention, hazard reduction, and fuels management.

Public agencies will maintain their responsibility and capability to provide initial attack on wildfires.

The DNR will increase coordination with rural fire departments to reduce hazards to rural property and to provide efficient wildfire protection.

Continue efforts to develop and incorporate integrated pest management techniques into forest management programs.

Public agencies will increase efforts on nursery, Christmas tree, and urban pest management.

The DNR will revise its policy on pesticide use to clarify the role of pesticides in natural resource management and to require stricter pesticide use reporting and monitoring.

Improve the management capability and flexibility of the DNR, Division of Forestry pesticide program, within legal and safety constraints.

Develop forest management applications sections for county soil surveys by incorporating landform, vegetative cover, and soils information.

Design management practices to mitigate the impact of forest management activities on soil and water quality.



Forest Managers must consider soil erosion and water quality concerns. State policies and regulations govern forest management activities within buffer zones adjacent to streams, rivers, and lakes.

SELECT ACCOMPLISHMENTS F.Y. 1984-86

DEPARTMENT OF NATURAL RESOURCES

Division of Forestry

FIRE MANAGEMENT PROGRAM F.Y. 1984-86

Suppressed Wildfires.....fires	3,660
Issued and Inspected Burning Permits.....permits	196,700
Updated Division of Forestry Administrative Area Fire Plans	47
Conducted Prescribed Fires.....acres	4397
Distributed Rural Wildfire Information	365,000
Provided Specialized Fire Investigation.....people	82
Trained Rural Fire Departments in Wildfire Control Techniques.....departments	636
Conducted Conversion Training for MNICS.....people	552
Inspected Excess Property for State Fire Crews and RFD's As Part of the Excess Property Program.....inspections	3,000

- * Actively participated in inter-state fire suppression. From the fall of 1985 through the summer of 1986, the Division of Forestry had three major mobilizations where approximately 260 people and various equipment and supplies were sent to seven states. The Division assisted the U.S. Forest Service, Bureau of Land Mangement (BLM), Bureau of Indian Affairs (BIA), Oregon State Forestry, and the California Department of Forestry in fire suppression efforts.
- * Participated in a basic firefighting and overhead training session. This session was developed by the Minnesota Incident Command System overhead team and had individuals from the U.S. Forest Service, BIA, National Park Service, the DNR Division of Enforcement, and the Division of Forestry conducting and receiving training. A total of 6000 hours of training was provided.
- * Updated the Division's prescribed burning guidelines in December, 1985.
- * To meet state-federal cooperative targets, the Division of Forestry conducts surveys to determine the presence of forest pests and evaluate damage or potential damage on 13.5 million acres annually.
- * Pest management guidelines and strategies are being developed for each major timber type in Minnesota. Five such guidelines have been developed and are being incorporated into the Division's area planning process.

- * Hired a forest pesticide specialist to provide technical guidance, training, and supervision for management programs which use pesticides. This specialist actively participated in initiating and developing a revision of the DNR policy for pesticide use.
- * Evaluated the effectiveness of 17 pest management systems. As part of that evaluation, field reviews of projects using pesticides were conducted to determine their effectiveness and methods for improvement. The Division is increasing its monitoring of the environmental impacts of pesticides used in forest management. All the forest development proposals using pesticides are reviewed to ensure safe, effective, and economical use of those pesticides.
- * Provided over 800 hours of forest pest management training for DNR forest managers on methods to integrate pest management techniques into silvicultural systems, harvest practices, and allowable cut projections. Provided pesticide use training.
- * Established a memorandum of understanding with the MN Department of Agriculture on Cooperative Gypsy Moth Suppression program.
- * Participated in the Gypsy Moth Advisory Council and expanded the Gypsy Moth monitoring program. Over 2300 traps have been established since 1983.
- * Provided technical soils information on over 12,000 acres of forest regeneration projects and 32 forest road projects.

OTHER AGENCIES

U.S. Forest Service - Chippewa National Forest

- * Annually updates a cooperative fire protection agreement with the DNR Division of Forestry.
- * Held one day workshops in 1984 in each District of the Chippewa National Forest on coordination of management prescriptions with wetlands objectives. Future integrated resource management training will also touch on water quality standards.

U.S. Forest Service - North Central Forest Experiment Station

- * Developed a program to impart resistance to specific diseases of forest trees using the technology of somaclonal variation. This procedure offers the possibility of producing trees in tissue culture with resistance to specific diseases in a period of 2 to 5 years rather than the traditional 20 to 30 years. This technique has already shown high promise and some resistant somaclones are being field tested this year.

- * Summarized available research information on the effects of forest management on water quality and presented it as "Forest Harvesting and Water -- the Lake States Experience" at the August 1985 S.A.F. Region V Technical Conference.

University of Minnesota - Agricultural Experiment Station

- * Adjusted soil surveys in forested counties to better accommodate forest management needs.
- * An associate scientist for the soil survey has been officed at the Cloquet Forestry Center to assist in dissemination of forest soils information.

University of Minnesota - Extension Service

- * Provides a clinic to answer public questions on the telephone and examines sample materials in a laboratory to assist Twin Cities residents with plant insect and disease problems.
- * Answered thousands of questions annually on urban tree pest problems.
- * Produced a new publication on the use of herbicides in forest management.

University of Minnesota - College of Forestry

- * Hired a forest weed control specialist to develop a forest weed control program with cooperators statewide.
- * Incorporated the topic of integrated pest management practices in silvicultural systems, harvest practices, and allowable cut projections into several courses. Information is being developed for use by managers and for short courses for practitioners. Several courses also present the topic of the effects of forest management on water quality.

FOREST RESOURCE MANAGEMENT ON PRIVATE LAND

Issue

Production of forest resources on non-industrial private forest land (NIPF) is below the level needed to meet expected statewide demand.

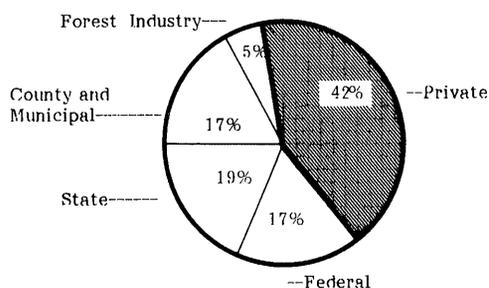
Goal

To improve multiple-use management on non-industrial private forest (NIPF) lands and provide urban forestry assistance to benefit the landowners, economy, and environment of Minnesota.

Update

Approximately 120,000 farmers and other individuals own about 5.6 million acres of commercial forest land in Minnesota. These lands must play an increasingly important role in supplying timber, fish and wildlife habitat, recreation, and other resources if projected demands for these goods and services are to be met.

MINNESOTA COMMERCIAL FOREST LAND OWNERSHIP



LOCAL LAND USE PLANNING

Loss of forest land, forest land fragmentation, and reduction in the size of forest ownerships often result from local land use planning decisions. Private, as well as public, foresters could play a considerably greater role in promoting local land use zoning restrictions that would discourage conversion or development of highly productive forest land.

NON-TIMBER CONSIDERATIONS

Private landowners have diverse objectives for owning forest land, including recreation, emotional satisfaction, residence, and

speculation. Since non-timber considerations are so important to many NIPF owners, regular coordination of private forest management activities with wildlife, fisheries, and recreation specialists is essential. The Division of Forestry's PFM foresters are guided in this respect by the Forestry/Wildlife Coordination Policy and the Forestry/Wildlife Guidelines to Habitat Management.

CONSULTING FORESTERS

Less than 10 percent of the timber sold from private lands is the result of state PFM assistance (Banzhaf 1980). The state PFM budget is not large enough to adequately serve all of the landowners who request help. Private consulting foresters could play a greater role in assisting private forest landowners. The Minnesota Association of Consulting Foresters has been formed to promote use of private consulting foresters.

INCENTIVES PROGRAMS

Much has happened recently in the realm of government incentive programs for encouraging resource management on NIPF lands. The 1985 Federal Farm Bill's Conservation Reserve Program (CRP) had three sign-up periods in its first year with a total of 667,000 acres of erodible crop land accepted into the program in Minnesota. Roughly ten thousand acres of this is scheduled to be planted to trees and/or shrubs. The sodbuster and swampbuster provisions of this bill should discourage conversion of highly erodible

woodlands and wetlands to agricultural uses. The Reinvest In Minnesota (RIM) Act of 1986 has a reserve program which is similar to the CRP. The first sign-up period for this program was fall, 1986. Other incentive programs will continue as in past years. CRP and RIM are not expected to have a very significant impact on the Federal Forest Incentives Program (FIP), the Federal Agricultural Conservation Program (ACP), or the Minnesota Forest Incentives Program (MNFIP). CRP and RIM are targeted for areas of the state, land types, and land ownerships where the majority of FIP, ACP and MN FIP activities have not taken place. Funding for these programs is expected to remain available at current levels.

MINNESOTA WOODLAND COUNCIL INITIATIVE

The Minnesota Woodland Council Initiative (MWCi) is a program funded by the National Forest Products Association and Minnesota Forest Industries that involves foresters from the public, private, and educational sectors, woodland owners, and other interested parties to bring about increased levels of forest management on NIPF lands. A primary emphasis of the MWCi is to establish county woodland committees to stimulate productivity on NIPF lands through information and education programs, marketing efforts, and the coordination of agency involvements with NIPF landowners. Four counties have formed a county woodland committee. In 1986, the U.S. Forest Service - State and Private Forestry provided funding for intensifying current MWCi activities and for expanding the program into additional counties.

SMALL WOODLAND OWNERS ASSOCIATIONS

The trend towards smaller private landownerships tends to make resource management less practical. This trend can be partly offset by developing private landowner associations/cooperatives. These associations can bring about increased levels of forest management on NIPF lands primarily through direct forestry assistance and information and education efforts for their members. The associations can make forest management more feasible and profitable to small landowners through the marketing and management of the combined resources of association members. There are currently four associations in Minnesota. Association members are primarily woodland owners with professional foresters providing assistance and organizational leadership.

FEDERAL TAX LEGISLATION

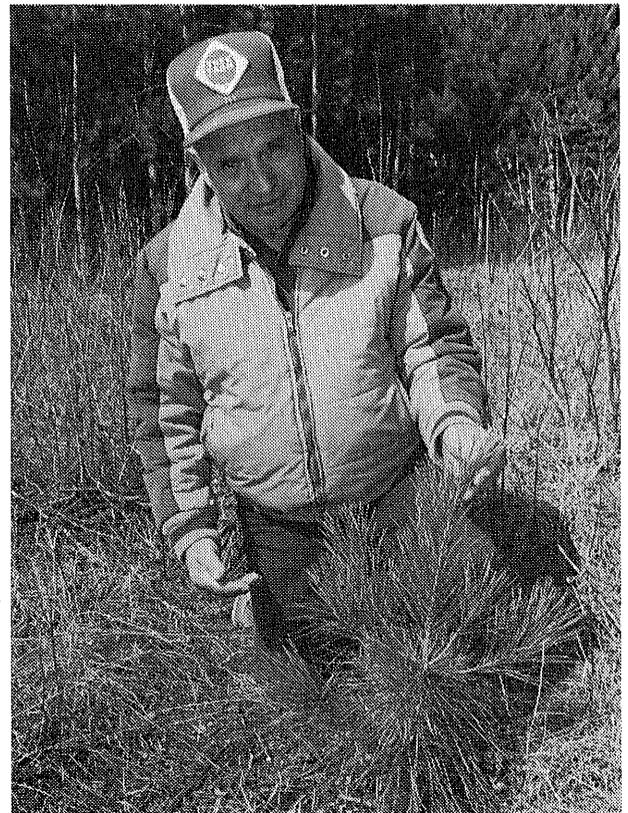
New federal tax legislation has caused a great deal of consternation in the forestry profession especially in respect to its effects on NIPF landowners and their investments in resource management. Originally, the tax legislation removed annual expensing of forest management costs, the reforestation tax credit, the amortization of reforestation project costs, and the capital gains treatment for timber. The final legislation restores the tax credit and amortization. It also makes some changes

to annual expense treatment, the details and ramifications of which are yet unclear. The major impact of the legislation is that capital gains treatment for timber will be phased out by 1988. This is expected to have minimal effect on NIPF landowners' investments in forest management.

MINNESOTA FOREST TAX LAWS

The three existing Minnesota forest tax laws remain the same. No new entries have been permitted since 1974 under the Auxillary Forest Tax Law. Allowing new entry under this tax law could improve timber management. A major problem with the Tree Growth Tax Law and the "2b" (formerly "3e") Property Tax Classification Law continues to be that approval of enrollment applications is at the discretion of the county boards. The state needs to seek ways to ensure consistent administration of these laws. One such method might be to require approval for applicants who meet a set of standard qualifications.

A new Forest Property Tax Program proposed in the Governor's Tax Plan creates a new tree growth classification which will reduce tax rates by two-thirds compared to the current "2b" classification. If the proposal becomes law, many of the landowners currently classified under the "2b" and other ad-valorem classifications are expected to enroll under the new system.



The Tree Farm program promotes forest management on non-industrial private forest land.

INFORMATION AND EDUCATION

The Division of Forestry has primary responsibility for one-to-one landowner technical assistance, and also plays a role in general forestry education in cooperation with the Information and Education Bureau. The Division has pursued this role by hiring a full time public affairs specialist working specifically on forestry information and education.

URBAN FORESTRY

The Division of Forestry program that may have the most potential for increasing the knowledge of Minnesota citizens about forestry is the urban forestry program. Since the majority of Minnesotans live and work in urban or suburban areas, this is the forestry program to which the greatest numbers of people could most easily be exposed on a regular basis. Most communities cannot handle their management and disease problems. Help is needed to manage residual trees and to remedy the effects of disease epidemics. Most urban forest landowners could use assistance in marketing or disposing of wood products in order to encourage management and care of their trees.

STRATEGY

Provide more effective public forestry assistance programs to landowners and communities. Encourage greater participation in these programs by consulting, industrial, and urban foresters.

Target assistance to landowners who make a commitment to manage their land.

Increase retention and improve management of NIPF lands by promoting incentive programs and encouraging revisions in property and income tax laws.

Emphasize multiple-use and environmental protection aspects of NIPF programs.

Improve urban forest management and assistance programs.

SELECTED ACCOMPLISHMENTS F.Y. 1984-86

DEPARTMENT OF NATURAL RESOURCES

Division of Forestry

PRIVATE FOREST MANAGEMENT F.Y. 1984-86

Total Management Plans.....plans	4,584
.....acres	184,828
Reforestation.....acres	22,171
Timber Stand Improvement (TSI).....acres	11,045
Wildlife Habitat Improvement.....acres	21,404
Recreation Improvement.....acres	4,957
Timber Sales.....sales	1,225
.....thousand board feet	130,000
Referrals to Consultants.....referrals	1,178
Marketing Assists.....assists	1,600



Dutch Elm Disease (DED) has led to the removal and replacement of millions of Elm trees in communities across the state. The Division of Forestry's Urban Forestry program assists communities with their urban vegetation management to lessen the impacts of insect and disease outbreaks such as DED and enhance the physical, social, and economic well-being of the communities.

- * The PFM program's 1986 annual meeting devoted nearly two days to wildlife considerations on NIPF lands.
- * Prepared over 1700 articles on forest management and sponsored 42 forestry field days dealing with private forest management. Also prepared displays for numerous fairs and exhibitions.
- * Developed memoranda of understanding with local Soil and Water Conservation Districts (SWCD's), Soil Conservation Service, and the DNR.
- * Developed a landowner-consultant referral policy to standardize the process for referring landowner requests for forest management assistance to consultants. This policy is currently being revised.

URBAN FORESTRY F.Y. 1984-86

Assistance to Individuals.....number	1,400
Assistance to Communitiesnumber	480
Urban Forestry Articles Prepared...number	20

- * Participated in community Arbor Day celebrations.

- * Provided training for Division staff, foresters, tree inspectors, community developers, governmental officials, and homeowners.
- * Prepared slide talks on the urban forestry program for presentation to interested city officials and community groups.

Division of Parks and Recreation

- * Established a model forest management demonstration area at Nerstrand Woods State Park.

OTHER AGENCIES

Minnesota Department of Energy and Economic Development

- * Assisted the Division of Forestry and several other agencies in developing a promotional brochure entitled "MINNESOTA: Where Wood is a Growing Industry".

U.S. Forest Service - North Central Forest Experiment Station

- * Completed a comprehensive analysis of NIPF landowners in Minnesota. The manuscript, entitled "The Private Landowners of Minnesota", will soon be published.

U.S. Fish and Wildlife Service

- * Provided advice to private landowners concerning the protection of threatened and endangered species through habitat management.

Soil Conservation Service

- * Provided approximately 10 person years annually in forestry assistance.
- * Provided \$65,000 in grant funds to Soil Conservation Districts to complete county inventories of private forest lands.

University of Minnesota - Agricultural Experiment Station

- * Undertook special studies on forest land taxation as background to legislative consideration of property tax law changes.
- * Supports the following research projects:
 - Control Programs for Dutch Elm Disease, Oak Wilt, and Other Shade Tree Diseases.
 - Windbreak, Shelterbelt and Small Woodland Studies.
 - Assessing and Encouraging Innovation in Forestry.

University of Minnesota - Extension Service

- * Developed a new computer software program which performs economic analyses of forestry investments and compares them to other types of investments. Used when working with groups of private forest landowners on evaluating forestry investment opportunities.
- * Offered a short course to 34 foresters on project analysis.
- * Contributed to expanding educational programs for NIPF landowners and persons involved in urban forestry including:
 - Developed a forestry correspondence course which was taken by 760 woodland owners.
 - Produced a new video tape program for use on public television or elsewhere that deals with forestry practices for NIPF owners.
 - Developed a woodland owners manual.
 - Initiated a Minnesota Volunteer Woodland and Wildlife advisor program for woodland owners.

University of Minnesota - College of Forestry

- * Incorporated several courses which address topics relating to NIPF lands and landowners, and urban forestry into curricula.
- * Initiated a new urban forestry curriculum in 1982 leading to a baccalaureate degree in this field.

Society of American Foresters

- * Promoted awareness and techniques of professional forester involvement in local land use planning decisions that affect forest land conversions. Meetings were held which emphasized participation on planning boards.
- * Developed a policy statement supporting revision of property and income tax laws to encourage private forest land retention and more intensive multiple-use forest management.
- * Contributed to NIPF landowner and urban forestry education programs, including:
 - Cosponsorship of annual woodland owners and users conferences.
 - Participation in elementary school education programs.
 - Participation in Project Learning Tree.

COUNTY FOREST MANAGEMENT

Issue

To meet the increasing demand for forest resources from county lands, a stable county land base, more intensive management, and improved coordination between counties and the DNR, Division of Forestry will be needed.

Goal

To encourage and support efforts to intensify the multiple-use, sustained-yield management of county forest lands.

Update

STATE-COUNTY RELATIONSHIP

The relationship between counties and the state have been changing during the past few years. Many counties have established sound forest management programs with a continually decreasing need for state assistance. The state and counties are entering a much more equitable relationship where the role of the state has shifted from that of a major provider of assistance to that of a cooperator. To acknowledge this, the Division of Forestry has scaled back its County Assistance Program and changed the name of this program to Cooperative County Forest Management. The Division has phased out all 8 of the previously existing county assistant positions.

The DNR needs to cooperate with the Minnesota Association of County Land Commissioners and the Attorney General's Office to clarify forestry laws that address the relationship between the counties and the state.

COUNTY FOREST INVENTORY

Since 1976, many of the forested counties in Minnesota have participated in completing Phase I and Phase II forest inventory on their lands. This was either accomplished by the counties themselves or through contracts with the Division of Forestry. A policy and procedure needs to be developed between the state and counties to maintain a consistent, timely Phase I and Phase II inventory data base for these county lands. The Division should also provide assistance to the counties on the use of Phase I and Phase II forest inventory data.

FORESTRY PROPERTY TAX

Inconsistencies exist in the application of forest property tax options among various counties. The forestry community needs to encourage legislation of tax law changes to provide for consistent use of tax laws. The Division of Forestry and counties should work with the Department of Revenue to provide direction in administering current forest tax laws.

STRATEGY

Support the continuing improvement of county land management programs.

Limit DNR management assistance to advisory and technical support in specialized areas.

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

Encourage stable tax-forfeited land ownership and greater cooperation between the state and counties in the multiple-use management of public forest lands.

SELECT ACCOMPLISHMENTS F.Y. 1984-86

DEPARTMENT OF NATURAL RESOURCES

Division of Forestry

COUNTY COOPERATIVE PROGRAM F.Y. 1984-86

Trees Planted	thousand seedlings	15.1
Timber Sales Reviewed	sales	7,110
Timber Sold	thousand cords	1,675
Assist in Tree Growth Tax Law Administration		
.....	thousand acres enrolled	436
Forest Access Roads Constructed and Maintained on County Lands	miles	333
Wildlife Habitat Management	projects	15
Recreational Development	projects	10
Assist in the Completion of Comprehensive Forest Management Plans	plans	3

*Accomplishments are the total for both county and DNR efforts.

-
- * Assisted 17 counties with Cooperative Stand Assessment (Phase II) inventory and provided Forest Inventory and Analysis (Phase I) county inventory reports to 23 counties.
 - * Assisted in the use of the Division's Timber Management Planning and Information System (TMPIS).
 - * Assisted in administering Agricultural Conservation Program (ACP) and Timber Stand Improvement (TSI) projects on county lands; county land sales, leases, easements and exchanges; land surveying; and aerial photography.

Division of Fish and Wildlife

- * Distributed DNR Forestry/Wildlife Guidelines to Habitat Management to county foresters.
- * Reviewed proposed land sales to determine if they contain any lakes or streams of concern to the Division and provided retention/disposal recommendations.

Division of Parks and Recreation

- * Provided assistance, upon request, in applying outdoor recreation management techniques.

OTHER AGENCIES

U.S. Forest Service - North Central Forest Experiment Station

- * Approved a five-year cooperative agreement with Itasca County to provide multiple-use prescriptions to meet the goals of the County Land Department, to assist the county in implementing the prescriptions, and to evaluate progress toward meeting the goals.

- * The above agreement resulted in a Computerized Habitat Analysis and Multiple-use Prescription System (CHAMPS). CHAMPS is currently under development with stage 1, a geographic database management subsystem, completed; stage 2, a multiple-use prescription subsystem, in preparation; and stage 3, a goal evaluation subsystem, scheduled for completion in 1987.

University of Minnesota - Extension Service

- * Developed microcomputer programs and held numerous training sessions to assist county foresters in assessing their timber and in automating office procedures.

University of Minnesota - Agricultural Experiment Station

- * Supported the following research projects which address county forest management and administration:

- MN County Forest Resources; Analysis of Policies, Programs, and Management Options.
- Remote Sensing Application to Forest, Agricultural, and Rangelands.
- Forest Resource Management Applications of Digital Image Processing and Geographic Information Systems.
- Development and Evaluation of Forest Change Estimation Methodology.

University of Minnesota - College of Forestry

- * Assisted in forest inventory design and implementing microcomputer-based analyses of harvest scheduling over long time periods.
- * Continued work on regeneration of conifer types and on adaptation of low-level, inexpensive aerial photos to meet county needs.
- * Conducted research projects specific to Minnesota counties: an analysis of timber inventory information for a timber supply analysis of St. Louis County tax-forfeited lands and research on Minnesota county forest policies addressing land disposal, program funding, and distribution of outputs.

FOREST LAND USE AND OWNERSHIP

Issue

To meet the increasing demand for forest resources from a shrinking forest land base, more efficient management of the most productive lands will be required and problems caused by interspersed ownerships must be resolved.

Goal

To achieve the optimum pattern of forest land ownership for multiple-use management of forest resources.

Update

FOREST LAND CONVERSION

The total area of forest land in the state continues to decrease. Most of the decrease has come from conversion of non-industrial private forest lands. The conversion of private lands to other uses usually occurs when economic or other factors become unfavorable toward continued forest resource use. The conversion of forest land to agricultural use is of greatest concern. The introduction of two new conservation programs, Reinvest In Minnesota (RIM) and Conservation Reserve Program (CRP), should discourage the conversion of forest and wildlife land to other uses. Both programs provide technical assistance and financial incentives to agricultural landowners for establishing permanent vegetative cover on highly erodible croplands. These programs also contain disincentives to convert woodlands and wetlands for agricultural use.

SCATTERED, INTERMINGLED OWNERSHIP

The scattered, intermingled pattern of forest land, particularly among state, county, federal, and private ownerships, makes forest management a difficult task in much of Minnesota. Legal, political, and administrative constraints currently limit land exchange activity. Optimal land ownership patterns are subject to substantial variation depending on which resources are being considered. A more scattered ownership pattern would better meet management objectives for wildlife, minerals, and other resources. However, forest management would be more efficient and economical if scattered lands were combined into larger, more contiguous management units. To more quickly achieve a consolidated ownership pattern, the Division of Forestry will redirect its land

exchange program from small land exchanges with private landowners to larger exchanges with counties, the federal government, and other major landowners. Also, selling surplus lands and acquiring new lands would speed the attainment of a more consolidated land ownership pattern.

More efficient use of existing forest lands is sometimes hindered by inherent conflicts between the management strategies for Minnesota's various resources. These conflicts stem from philosophical differences between resource preservation and resource use, both of which are legislatively and administratively mandated to state agencies, and public mandates to manage public lands for numerous and sometimes conflicting uses. The Division is currently using its area planning process to resolve land use and ownership issues.

UNDEDICATED STATE LANDS

The status and management potential of the approximately 1.6 million acres of undedicated state lands needs clarification. Currently the Division of Forestry manages most of these lands. The Forest Management Act of 1982 established a multiple-use management policy for these lands. The Division's area plans have proposed that undedicated lands suited for long-term forest management be assigned state forest status.

STRATEGY

Facilitate consolidation and exchange of lands on a case-by-case basis, when necessary to meet management goals.

Continue to administer an extensive and largely intermixed land base through federal, state, and local governments. The state will administer its forest lands under the multiple-use, sustained-yield policy established by the Forest Resource Management Act of 1982.

Public forest land management agencies will follow a policy of retaining the existing land base in public ownership.

Private forest landowners will continue to make decisions on forest land use, retention, and ownership based on their personal or corporate goals.

SELECTED ACCOMPLISHMENTS F.Y. 1984-86

DEPARTMENT OF NATURAL RESOURCES

Division of Forestry

- * Administers 3,100 leases and special use permits annually.
- * Initiated or reviewed 89 land adjustment proposals involving more than 80,000 acres of DNR-administered lands.
- * Reviewed 10 land sale requests involving about 8,000 acres.
- * Acquired, optioned, or accepted as gifts 2,300 acres of land suited for forestry purposes.
- * Developed criteria for designating and managing state forest lands.
- * Developed criteria for designation and protection of ecologically significant peatlands.
- * Developing ten-year management plans for each of the Division's administrative areas. These plans include land adjustment priorities for state forest lands and provide for complementary forest land uses. To date, three plans are complete or near completion, and four additional plans are in progress.

All Divisions

- * Currently participating in the DNR's land Exchange Task Force to identify ways to accelerate land exchange activity. These divisions also work with the Division of Forestry in its planning efforts.

Division of Fish and Wildlife

- * Entered cooperative management agreements with the Division of Forestry consistent with the Wildlife/Forestry Coordination Policy and the Forestry/Wildlife Guidelines to Habitat Management.

OTHER AGENCIES

Minnesota Department of Agriculture

- * Implementing the 1984 State Agricultural Land Preservation Program in seven pilot counties. This program will affect forest lands; Aitkin County was selected because of current forest land conversion problems.

Soil and Water Conservation Board (SWCB)

- * Developing rules for Soil Loss Limits ordinances to be enacted by local units of government. This will include activities relating to forest management.
- * Encouraging closer interactions between SWCD's and appropriate public and private entities involved in forest management. Three SWCD's in northeast Minnesota are developing technical staff capabilities in forestry. Several other SWCD's are considering similar actions.

Minnesota Association of Soil and Water Conservation Districts

- * Publishing the "Minnesota Tree Handbook" which will be a valuable tool in promoting tree planting and regional management.

U.S. Forest Service - Chippewa National Forest

- * Working with the DNR's regions and with affected counties to look at the best long-range land ownership pattern. The Chippewa Forest Plan contains good land adjustment objectives which provide for close coordination with the State of Minnesota and counties in planning their land ownership adjustments.
- * Currently involved in three large exchanges (1000 + acre) with the State of Minnesota. These exchanges should be completed in F.Y. 1988.
- * The U.S. Forest Service and the State of Minnesota are jointly developing a step-by-step process for approving exchanges between the two parties. A memorandum of understanding for conducting joint appraisals, rather than the present separate appraisals by each agency, is part of this effort.



OUTDOOR RECREATION MANAGEMENT

Issue

New outdoor recreation program initiatives and effective implementation of existing outdoor recreation policies on lands administered by the DNR, Division of Forestry will be needed to meet increasing demands for outdoor recreation opportunities from these lands.

Goal

To fulfill the outdoor recreation potential of Minnesota forest lands by providing developed recreational areas and opportunities for dispersed recreational activities.

Update

THE DIVISION OF FORESTRY'S ROLE

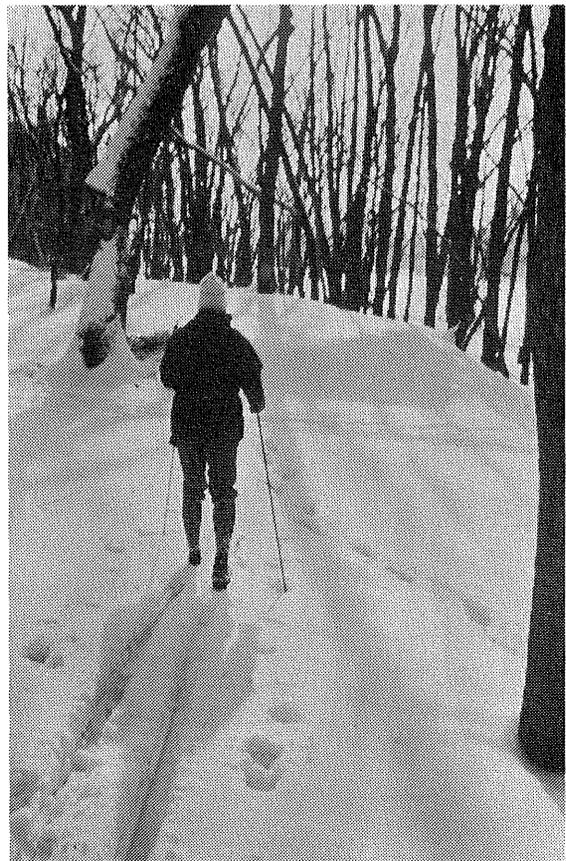
The DNR, Division of Forestry manages over one-fourth of the state's forest land. These lands have considerable impact on the tourism industry as a supplier of outdoor recreation opportunities. Lands administered by the Division and their associated waters are used for diverse recreational activities, 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 on state forest lands.

The Division is re-examining its role in providing outdoor recreational opportunities and is working to reduce duplication of effort and conflicts with the private sector and other public agencies. Division of Forestry lands and associated waters provide dispersed recreation opportunities that are not available on many other types of public and private land. Future efforts will focus on dispersed recreation and promoting opportunities by providing users with detailed maps and by developing a stronger information and education program.

FUNDING

Appropriations for operating and maintaining existing Division of Forestry recreational facilities have, in the past, been small. Active promotion of available recreational opportunities on Division-administered lands and development of interpretive education programs in state forests also has been limited by budget constraints. Limited funding has led to deterioration of many

forest recreation sites, and underutilization of state forest lands and recreation areas. Adequate and stable funding is essential for state lands to provide their share of outdoor recreation opportunities in the future and to help promote tourism in Minnesota.





State forest campgrounds and day use areas provide developed but 'rustic' recreation opportunities.

RULES AND REGULATIONS

Existing rules and regulations regarding outdoor recreation on lands administered by the Division of Forestry need to be revised. Current policies limit Division employees' authority to enforce recreation regulations outside of designated campgrounds and day use areas. This lack of authority can have a negative impact on the attitudes of both public users and Division personnel, especially where intensive recreational use is occurring. Other areas which need to be addressed include safety and liability concerns, conflicting uses, and resource degradation problems.

LIABILITY CONCERNS

Low maintenance recreation areas create a special legal liability problem for natural resource managers. To limit liability, the Division may need to develop maintenance levels and standards for all developed recreation areas, and close underutilized recreation facilities. The Division will, along with other recreation providers, seek legislation limiting the state's liability while protecting users of the state's recreation areas.

STRATEGY

Provide increased opportunities for forest related outdoor recreation through increased emphasis on the Division of Forestry's outdoor recreation management program and increased efforts to develop interdisciplinary programs, projects, and planning with other DNR divisions, other agencies, and the private sector.

The Division of Forestry will retain overall responsibility for administration of outdoor recreational opportunities on state forest lands while working with other units of government, other DNR divisions, and private and industrial landowners in fulfilling statewide objectives on other lands.

Pursue opportunities for sharing expertise and cooperative funding. Emphasis will be placed on continuing the role of the Division of Forestry in providing dispersed outdoor recreation opportunities.

SELECTED ACCOMPLISHMENTS F.Y. 1984-86

DEPARTMENT OF NATURAL RESOURCES

Division of Forestry

- * Operates and maintains the following recreation facilities on an annual basis:
 - 46 campgrounds
 - 44 day use areas
 - 1,200 miles of trails
 - 142 water accesses
 - 17 canoe and boating route campsites
 - 29 beaches
- * Rehabilitated or expanded 17 campgrounds, two day use areas, and 56 miles of trails.

- * Constructed 26 miles of new trail.
- * Developed recreation plans for several of the Division's administrative areas.
- * Developed a self-guided nature trail at Kruger State Forest recreation area in conjunction with staff from the University of Minnesota Arboretum.
- * Participated in the Edge of the Wilderness Study which outlined opportunities for public/private cooperation in northeastern MN.
- * Added state forest campgrounds to the Office of Tourism's campground guide (will be put on their computer system).
- * Produced a brochure with information on state forest recreation areas (this is updated annually).

Trails and Waterways Unit

- * Worked with the Division of Forestry to include information in the snowmobile and ski guides; the canoe, hike, and backpacking guide; the county access maps and canoe and boating route maps.
- * Participated with the Division of Forestry in developing displays for sports shows.

OTHER AGENCIES

Minnesota Department of Transportation (MnDOT)

- * Currently posts information and hand out material for the DNR in MnDOT information centers and display space at information kiosks. The information



centers are located at seven rest areas, while the kiosks are located at 14 rest areas.

Iron Range Resources Rehabilitation Board (IRRRB)

- * The IRRRB is actively involved in increasing recreation and tourism in northeastern Minnesota through their Trails Program, the Mineland Reclamation Division's projects, Ironworld USA, Giants Ridge Recreational Area, and the Hill Annex Mine Tour Program.
- * Provided grants and loans to resort operators for projects that will improve recreational opportunities in northeastern Minnesota.

Minnesota Department of Energy and Economic Development - Office of Tourism

- * Distributes several maps for the Minnesota DNR concerning state parks and other recreational facilities under DNR management.
- * Meets with the DNR monthly to discuss promoting state/private cooperation in outdoor recreation.

U.S. Forest Service - Chippewa National Forest

- * Worked cooperatively in the planning of a portion of the Taconite Trail.

University of Minnesota - College of Forestry

- * Initiated a cooperative study in 1984 to test an innovative method of providing public input to the allocation of state forest lands to alternative land use combinations. A report was submitted to the DNR Division of Forestry in June, 1985.
- * Researchers in the Department of Forest Resources studied user satisfaction and preference in river recreation.
- * Participated in Division of Forestry planning efforts.
- * An ongoing program will assist the Division of Forestry in its efforts to deal with recreational use of the state forest lands. The College of Forestry, together with the University's Office of Special Programs, sponsored a short course on developing cross-country ski trail which was attended by several DNR employees.

University of Minnesota - Agricultural Experiment Station

- * Contributed to the Division of Forestry Outdoor Recreation Management through the following research projects:
 - Analysis of Recreation Impacts in the Minnesota Outdoor Recreation System.
 - The Decision Process in the Choosing, Allocating, and Sharing of Outdoor Recreation Resources.

INTEGRATION OF TIMBER AND FISH AND WILDLIFE MANAGEMENT

Issue
<p>Improved integration of timber, fish, and wildlife management goals could provide additional habitat for game and non-game species as well as increased timber production.</p>

Goal
<p>To improve and maintain forest-related habitat for game and non-game fish and wildlife species.</p>

Update

Minnesota's forests and associated waters provide habitat for hundreds of species of fish and wildlife as well as abundant opportunities for fishing, hunting, trapping, and wildlife observation. The DNR's Division of Fish and Wildlife has primary responsibility for managing the state's fish and wildlife resources. The Division of Forestry strives to integrate wildlife habitat improvement, endangered species protection, and provision of fish and wildlife-oriented recreation opportunities into the multiple-use management applied to lands under its jurisdiction.

FORESTRY/WILDLIFE COORDINATION

In an effort to improve integration of interagency management practices, a Forestry/Wildlife Coordination Policy was developed by the Commissioner of Natural Resources in 1980. As directed in this policy, Forestry/Wildlife Guidelines to Habitat Management for the entire state have been written and approved.

The major approach toward improving forest wildlife habitat described in the guidelines involves modification of forest management practices. The guidelines also indicate that, wherever possible, wildlife management objectives should be achieved through forestry practices. Integrated planning between wildlife and forestry managers on wildlife management areas could reduce management expenditures by using more commercial timber harvests to achieve wildlife management objectives.

AGE AND COVER TYPE DIVERSITY

A major concern of the Forestry and Fish and Wildlife divisions is to maintain a diversity of cover types and timber age-classes that

will provide habitat for most wildlife species, but especially for deer and ruffed grouse (the principal forest game species in Minnesota). Deer populations could be increased by more intensive harvesting of overmature hardwoods, especially aspen. Grouse would also benefit from more intensive aspen management. The Reinvest in Minnesota Resource Act of 1986 (RIM) will specifically address this concern through an aspen recycling effort. Through this effort, over-mature, non-merchantable stands of aspen will be harvested to allow natural regeneration of the stands to young and vigorous aspen primarily for wildlife habitat purposes.

NON-GAME WILDLIFE

Increasing public interest in non-game species has placed greater demands on natural resource agencies to assess the ecological impacts of timber and forest game projects and to manage for ecological diversity rather than concentrating management on a few species. To ensure sound forest resource management, there is a need to compile and make available basic information on the distribution, status, and habitat requirements of fish, wildlife and plants in the state.

In response to this need, the Division of Forestry 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.

FOREST ROADS

Fish and wildlife management are constrained in some areas of the state by inadequate forest road access. In other areas, the quality of fish and wildlife related recreation is reduced by the presence of too many roads. Transportation planning should be based on management needs of all resources.

PUBLIC AWARENESS

Sixty percent of the licensed big and small-game hunters hunt on state lands and are dependent on public lands for use and enjoyment. Most sportsmen, however, are not aware of efforts made by forest resource managers regarding wildlife management.

STRATEGY

Increase integration of fish and wildlife management principles into forest and land management activities on all ownerships.

Improve cooperation among wildlife, fisheries, and forestry personnel through more interdisciplinary training and interaction.

Increase fish and wildlife habitat retention and wildlife management on private and county forest lands by encouraging joint evaluations and planning by appropriate natural resource and land management agency personnel.

Protect water resources and critical habitat areas.

SELECTED ACCOMPLISHMENTS F.Y. 1984-86

DEPARTMENT OF NATURAL RESOURCES

Division of Forestry

- * Developed the Forestry/Wildlife Guidelines to Habitat Management for the entire state in cooperation with the Section of Wildlife. The Section of Wildlife and the Division are now implementing these revised guidelines in all of their regions. These guidelines are implemented through nearly 3,000 silvicultural treatments annually.
- * The Division of Forestry and the Section of Wildlife have conducted 11 joint meetings to facilitate communications and to develop complementary goals.
- * Conducted an annual interdisciplinary training session for foresters and fish and wildlife managers.
- * Provided Cooperative Stand Assessment (Phase II) forest resource inventory information to the Division of Fish and Wildlife for 850,000 acres of Fish and Wildlife-administered lands.

Section of Wildlife

- * Developed the Forestry/Wildlife Guidelines to Habitat Management for the entire state in cooperation with the Division of Forestry. The Section of Wildlife and the Division are now implementing these revised guidelines in all of their regions. These guidelines are implemented through nearly 3,000 silvicultural treatments annually.
- * Worked closely with forestry personnel in completing the Timber Management Planning Information System (TMPIS) in several areas of the state.
- * Established a Forestry/Wildlife liaison position to participate in Division of Forestry planning efforts to provide increased interdisciplinary interactions.
- * Began developing computer programs that use the Division of Forestry's CSA (Phase II inventory) data to more efficiently provide information on forest wildlife habitat.
- * Maintained ongoing Natural Heritage, Non-game Wildlife, and Scientific and Natural Areas (SNA) programs. These programs provide information to area wildlife managers for their use in reviewing forest projects as provided in the Forestry/Wildlife Coordination Policy.

Section of Fisheries

- * Developing a slide/tape series describing what the section does. When completed, this could be used for interdisciplinary training of public and private foresters.

OTHER AGENCIES

Iron Range Resources Rehabilitation Board (IRRRB)

- * The Mineland Reclamation Division, in cooperation with DNR Fisheries Section, has been actively involved in reclaiming abandoned mined lands for fish and wildlife. In a program that started in 1984, accesses are constructed into many abandoned mine pits. These pits are then stocked with rainbow and lake trout.
- * The IRRRB is also starting a cooperative project with the DNR Wildlife Section to create and establish habitat for selected wildlife species. Current activities are focused on sharp tailed grouse habitat.

U.S. Forest Service - Chippewa National Forest

- * Worked closely with DNR representatives in developing "Wildlife Habitat Associations - A Data Base" which has proved useful as a reference in managing wildlife habitat.



- * Continued long-term research on bears which generate information relevant to managing forest habitats for bears. In particular, the importance of food supplies to the growth, productivity, and survival of bears in northeastern Minnesota has been documented.
- * Continued in-house and cooperative research to provide new information on the natural history of wolves and their prey.

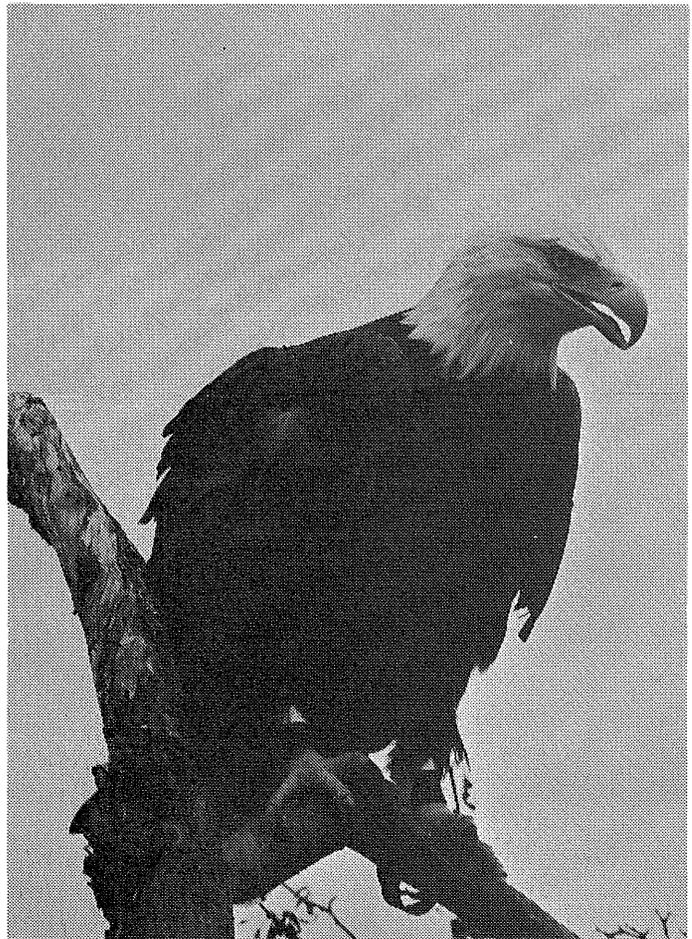
University of Minnesota - Extension Service

- * Initiated a Minnesota volunteer woodland and wildlife advisor program that provides intensive forest and wildlife training to woodland owners who are expected to encourage and assist other woodland owners in proper woodland and wildlife management.
- * Began demonstrating the planting of trees and shrubs at Lambertson Experiment Station to show integration of forest and wildlife uses on a small tract.
- * Conducted annual conferences and field days for woodland owners to provide information on forest and wildlife management.

- * Established about 73 miles of hunter/walking trails on the national forest land. An estimated 30 to 40 additional miles will be needed by the year 2000.
- * Completed the Chippewa National Forest plan which contains standards and guidelines that recognize special management needs for threatened and sensitive species of wildlife and plants. The need to provide habitat for 150 pairs of breeding eagles is mentioned in the plan, as well as placement or development of deer yards, nest boxes, loafing islands, and impoundments.

U.S. Forest Service - North Central Forest Experiment Station

- * Published the results of a study on the occurrence and habitat distribution of vertebrates associated with wildlife impoundments on the Chippewa National Forest. The results of the study were generalized to the Lake States and incorporated with other management recommendations for impoundments in workshop proceedings.
- * Continued research on the effects of stand age, forest type, and vegetation structure on small mammal and breeding bird communities to provide guidance in managing the aspen habitat type.
- * Participated with the DNR and Itasca County to develop a demonstration project that applies state-of-the-art management information to meet multiple-use goals of timber, water, and wildlife.



University of Minnesota - Agricultural
Experiment Station

- * Conducted research in the area of long-term effects of timber management and game management on forest ecosystems and non-game species including:
 - Forest Management Studies for Northern Minnesota Forests.
 - Ecosystem Management to Benefit Forest Wildlife.
 - Control and Use of Fire in Land Management.
 - Vegetational Interactions, Sodium Ecology, and Physiological Variables of Deer and Moose.



University of Minnesota - College of Forestry

- * Combined the College of Forestry curriculums and the Fisheries and Wildlife Management program into one collegiate unit in July, 1983.
- * Began offering several courses which provide an interdisciplinary approach to natural resources management.
- * Department of Fisheries and Wildlife has initiated several wildlife research efforts since 1983 including:
 - Forest Wildlife Relations.
 - Deer Census and Vegetation Impacts.
 - Report on Ruffed Grouse on Winter Food Measurements.
 - Trumpeter Swan Feeding Ecology and Growth Energetics During the First Five Weeks of Life.
 - Bald Eagle Toxicity Problems at Lac Qui Parle.

FOREST ROAD SYSTEM

Issue

Protection, management, and use of forest resources is constrained by an inadequate, deteriorating state forest road system.

Goal

To develop and maintain a forest road system that provides access for the protection, management, and use of Minnesota's forest resources.

Update

FOREST ROAD FUNDING

Funding for maintenance, reconstruction, and construction of the State Forest Road system continues to be a major concern. This concern has been temporarily alleviated by Boundary Waters Canoe Area funding and the Resource 2000 Bonding program of 1981 and 1983. The Resource 2000 funds are being distributed to help in all areas of the state, but all of these funds will be entirely committed to projects by July 1986. The BWCA funds are due to run out in 1991. A stable dedicated source of funds is still needed to ensure adequate forest access for timber management, fish and wildlife management, and recreational activities. Legislation to obtain gas tax funding was introduced in the 1985 legislative session but did not surface in the 1986 session. Increasing stumpage or timber taxes to cover road costs is a controversial action in this time of high competition for timber markets. Recent forest industry expansion has been predicated on the premise of accessible and low cost timber.

FOREST ROAD PROGRAM CHANGES

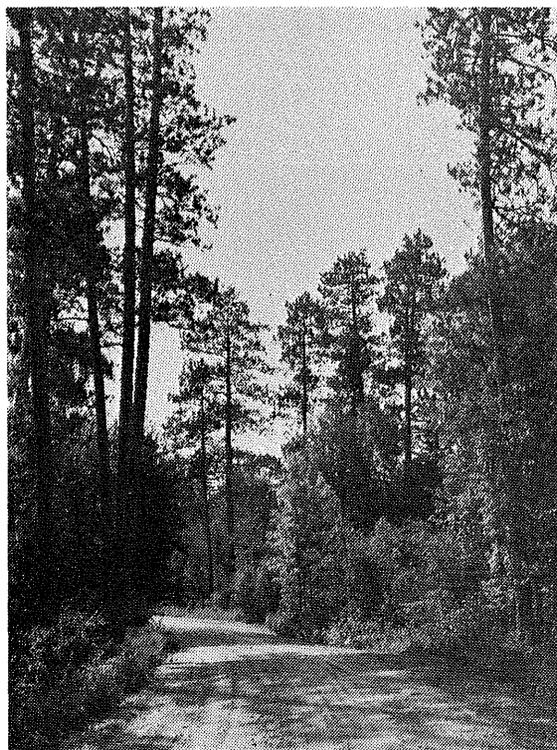
The Division of Forestry hired a forest road specialist in 1985. Implementation of the 1982 State Forest Road Plan had been delayed until the specialist was hired.

The specialist is providing direction for forest road activities and oversees the transportation planning component of the Division's planning efforts.

FOREST ROAD USE AND OWNERSHIP

Clarification of forest road responsibilities among the various owners remains a major concern. Examination of the existing road

system has shown that the state uses many miles of forest roads under other ownership to access state lands and other owners use state roads to access their lands. Efforts to establish cooperative forest road agreements or exchange ownerships have met with mixed success because of limited funds and fears of limited access. These efforts need priority attention in the years ahead.



FOREST ROADS AND RECREATION

Although the forest road network was primarily developed for timber management, the majority of actual use is recreational. In addition to the roads identified in the 1982 Forest Road Inventory, there are many old logging spurs which are now used as recreational roads. These need to be cataloged and managed. Active management of the road system may result in policies which limit public access depending on road conditions and budget constraints.

FOREST ROADS AND WILDLIFE

Fish and wildlife management is constrained by inadequate forest road access in some parts of Minnesota. Recently, questions have been raised about the effects of forest roads and related recreational activities on the habitat of a few fish and wildlife species. A specific example is the discussion surrounding road densities and timber wolves.

STRATEGY

Design, develop, and administer a forest road system that increases management, protection, and utilization of forest resources on all ownerships.

Construct and maintain cost-effective forest roads to meet appropriate safety and transportation needs, and also to comply with accepted multiple-use management principles.

Coordinate road development activities on all ownerships to reduce duplication and unnecessary road development.

Promote cooperative transportation planning, funding, construction, and maintenance programs, involving all major road users, agencies, and landowners.

SELECTED ACCOMPLISHMENTS F.Y. 1984-86

DEPARTMENT OF NATURAL RESOURCES

Division of Forestry

STATE FOREST ROAD PROGRAM F.Y. 1984-86

New Road Construction.....miles	20.7
Road Reconstruction.....miles	236.7
Road Maintenance.....miles	7808
Bridge Repair/Replacement.....number	18

* Began developing a forest road manual to address the recommendations of the 1982 Forest Road Plan. Two sections of this manual have been completed.

* Completed the comprehensive transportation component for three of the Division of Forestry's Area plans with one in progress and three more scheduled to begin this year.

OTHER AGENCIES

State Planning Agency, DNR Office of Planning

* Inputted more than 80% of the forest road system into the Minnesota Land Management Information System (MLMIS). The remaining roads will be added as budgets permit.

U.S. Forest Service - National Forests

* Implemented the Boundary Waters Canoe Area forest road program by upgrading the backbone arterial collector systems.

* Maintained a number of cooperative road agreements with the DNR. The Primitive Road Agreement is presently being updated and efforts continue with the DNR to develop a road construction agreement which would facilitate joint planning and construction of transportation systems in areas of intermingled ownership.

DIVISION OF FORESTRY FUNDING, PLANNING, INFORMATION MANAGEMENT, AND PROGRAM COORDINATION

Issue

Achieving higher levels of products and services through more intensive forest land management is limited by short-term funding of Division of Forestry programs, inadequate long-term written policy direction, inefficient use and organization of forestry data and information systems, and insufficient internal and external program coordination.

Goal

To provide administrative support and management control functions necessary to achieve the goals and direction contained in the Minnesota Forest Resources Plan (MFRP) and the Forest Resource Management Act of 1982.

Update

BUDGET REDUCTIONS

The long-term nature of forest management investments presents special budgeting problems for the Division of Forestry. The Division's biennial budget cycle has, in the past, made it impossible to guarantee that adequate funds will be available to follow through with current program efforts beyond the two-year time frame. During the current period of politically popular government reductions, this problem will be accentuated. The budget for the Division of Forestry, from all sources, decreased an average of \$1.9 million (15% of total budget) per year since F.Y. 1985.

STATEWIDE PLANNING

The Forest Resource Management Act of 1982 requires the Division of Forestry to prepare and periodically update a comprehensive statewide resource management plan. The Division recently completed an update to the 1983 Minnesota Forest Resource Plan (MFRP) which includes an assessment supplement and a new program section. The assessment supplement includes an analysis of socio-economic and forest industry information on a statewide and regional basis. The program section reviews pertinent issues and presents updated goals, objectives, and five-year work plans for each of the Division's programs and subprograms.

AREA PLANNING

The Division is in the process of developing ten year management plans for each of its 19 administrative areas. To date, one plan is complete, two are in review form, and four others are underway. As additional plans are completed, efforts will need to focus on implementation and monitoring. The Division

will continue to coordinate its planning efforts with those of the U.S. Forest Service in its National Forest plans.

ELECTRONIC DATA PROCESSING

In 1982, the Division of Forestry received a grant from the Legislative Commission on Minnesota Resources (LCMR) to hire Management Information System staff and begin a concerted systems development effort. The original concept of the LCMR-funded project was to design and implement an integrated forestry management information system. Substantial progress toward accomplishing that goal has been realized. In sharp contrast to previous years, the Division now depends on its own resources for much of its information processing. The 1986-87 biennium is the last year that LCMR funding can be expected for the Division's MIS activities. To maintain the expertise and services of the MIS staff, the Division will seek a permanent funding source for the entire MIS unit. Special emphasis will continue in coordinating the MIS unit's efforts with other data processing facilities both within and outside of the Division. Goals are to reduce duplication of and increase compatibility with other systems.

INTERNAL TRAINING

The Division will continue to develop a human resources development program to help the Division adapt to a changing workforce and changing clientele needs, to increase awareness of recent advances in forest management technology and to provide opportunities for broadening employees' educational backgrounds. This includes work force planning and staffing, and



organizational career management. The Division needs to strengthen its in-service training and continuing education programs by improving in-house course offerings and taking advantage of offerings from other academic and continuing education organizations. Special consideration needs to be given to the needs of program and staff specialists, and individuals in non-traditional forestry positions.

INTERAGENCY COOPERATION

The success of many of the Division's programs depends upon quality, day-to-day and formal communications with other natural resources agencies and organizations. All major forest landowners, including the Division of Forestry, the U.S. Forest Service, county land management agencies, corporations, and individuals must contribute if the demands for forest resources are to be met.

INFORMATION AND EDUCATION

The Division of Forestry and the forest community must continue developing more efficient and effective methods for distributing information to the public. Improved public understanding of forest resource management and related issues, and greater responsiveness to public demands for information will help generate public support

for forest resource management activities. The Division is refocusing its public affairs program with emphasis on identifying and providing the information that the public wants, providing information about what the Division is doing and why, and coordinating these efforts with the information and education activities of other organizations.

STRATEGY

Develop and maintain a long-term planning, program development, and budgeting process within the DNR, Division of Forestry to improve policy development, program coordination, and management of state-owned forest lands.

Establish monitoring and review procedures to ensure program effectiveness and implementation.

Update Division of Forestry's policy documents and manuals.

Continue efforts to develop a computerized management information system.

Maintain adequate forest resource inventory information.

Expand training and continuing education programs.

Cooperate with forestry research organizations and other agencies in developing improved forest management techniques and practices.

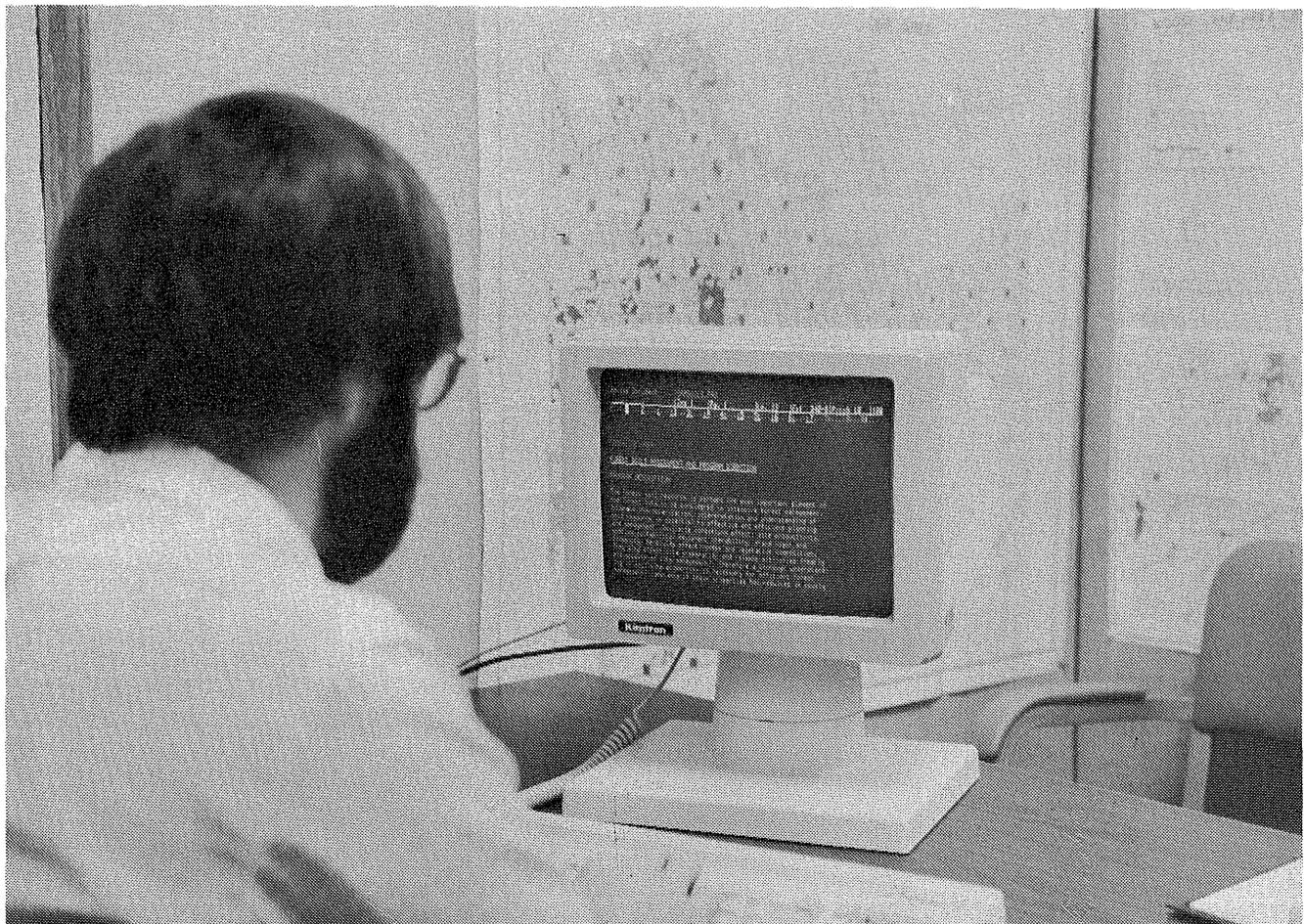
SELECT ACCOMPLISHMENTS F.Y. 1984-86

DEPARTMENT OF NATURAL RESOURCES

Division of Forestry

- * Developed the following computer systems:
 - Forestry Land System
 - Timber Management Planning Information System (TMPIS)
 - Fire Reporting and Analysis System
 - Timber Sales System
 - Nursery Tree Order System
 - Personnel Training and Experience System
 - Mailbox System
- * Purchased commercial software systems for use on the Division's personal computers, including word processing, spreadsheet, and database management software.

- * Purchased a Texas Instruments 990 (TI-990) minicomputer. This computer gives the Division the ability to perform its own database maintenance, manipulation, and systems development work.
- * Purchased and distributed over 40 personal computers throughout the Division's field and St. Paul offices. Most of these microcomputers are equipped to communicate with other computers, including the TI-990 in St. Paul. Four of the major Division-wide systems have been installed in field microcomputers.
- * Purchased a Prime minicomputer. This computer has allowed the Division to begin development of a geographic information system (GIS).
- * Completed the Phase II inventory, now referred to as Cooperative Stand Assessment (CSA), of 8.1 million acres of state and county land. This inventory data is currently being inputted into the Division's GIS.



- * Began updating the Phase I inventory, now referred to as Forest Inventory and Analysis (FIA).
- * Provided training for Division personnel in the use of computers and the application of a variety of software.
- * Developed a Personnel Development Manual which outlines procedures for preparing annual individual training plans and recommended minimum qualifications for Division positions.
- * Provided over 2500 person days of in service training for Division Personnel annually.
- * Developed financial guides for forest management investments.
- * Improved analytical procedures for establishing tax valuation of timber for county auditors.
- * Completed efficiency analysis of the fire program.
- * Completed Timber Value Modeling Project.
- * Completed an update to the 1983 Minnesota Forest Resources Plan (MFRP).
- * Completed a long-range plan for one administrative area, two are in draft review form, and four others are underway.
- * Initiated a process to implement the MFRP which links budgets to targets. This process includes annual accomplishment reports, annual work plans, and annual spending plans.
- * Provided state input into the Chippewa and Superior National Forest Plans, Pine and Lake County plans, and the 1985 Federal Resource Program Assessment.
- * Participated in Lake States Planning Committee activities to promote development of the forest industry in the tri-state region.

All DNR Divisions and Bureaus

- * Have appointed representatives to the Division of Forestry's interdisciplinary planning teams for each of its area planning efforts.

OTHER AGENCIES

Minnesota Department of Energy and Economic Development

- * Maintains liaisons with the Division through its Policy Analysis, Energy, Economic Development, and Tourism Divisions.
- * Developed MINTOM, an input-output model, that may be valuable in forecasting benefits from growth in the forest economy.

U.S. Forest Service - North Central Forest Experiment Station

- * Worked closely with the Division of Forestry through the Upper Great Lakes Forestry Planning Committee and assisted in research efforts to improve the information base needed for planning efforts at both the state and regional level.
- * Conducted seminars to present research results on peatlands, acidic deposition effects, and harvesting impacts on water.

University of Minnesota - Extension Service

- * Offered continuing education short courses to DNR and other foresters on such topics as federal income taxes, communications, project analysis, tree and shrub pruning, cross-country ski trail development, and designing field trials and experiments.

University of Minnesota - College of Forestry

- * Increased its number of continuing education workshops and short courses.

Society of American Foresters

- * Encourages participation in forestry continuing education programs by:
 - Recognizing Continuing Forestry Education credits and associated awards directed to foresters and related forest land managers.
 - Conducting regional technical conferences each year.

GLOSSARY

AGRICULTURAL CONSERVATION PROGRAM (ACP): A federal cost-share program. Its purpose is to enhance the environment by establishing forest tree plantations and improving existing timber stands on non-industrial privately owned lands.

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

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

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.

CONSUMER SCALING: The State of Minnesota grants specified permit holders the right to remove wood products from the sale area without a State scale. The actual scaling is performed by the consumer.

COOPERATIVE STAND ASSESSMENT (CSA, PHASE II INVENTORY): A joint state and county management reconnaissance to record the composition and condition of individual forest stands at the time of observation.

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.

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.

FORESTRY INCENTIVES PROGRAM (FIP): A federal cost-share program which assists private landowners in site preparation, planting, and timber stand improvement activities.

FOREST INVENTORY AND ANALYSIS (FIA, PHASE I INVENTORY): A statistically designed, permanent plot based survey to produce information on forest type area, timber volumes, stand conditions and timber use.

GEOGRAPHIC INFORMATION SYSTEM (GIS): A data base manager that locates management activities, inventories, and other data with specific geographic references. Provides data input, management, analysis, and graphic display.

HARVEST RESIDUE: Wood material remaining on a site after harvesting the merchantable timber. Such materials include tops, branches, and leaves of harvested trees, unrecovered merchantable material, whole trees too small to be harvested, wood species which are not marketable, and wood with defects, poor form or decay.

INTEGRATED PEST MANAGEMENT (IPM): A combination of cultural, biological, chemical, and/or mechanical forest management techniques used to achieve economical forest damage control in an environmentally sound manner.

INTENSIVE 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.

LUMP-SUM SCALING: A type of payment for timber. One fixed sum of money is paid for all the timber on a given tract of land. Also known as "sold on appraised volume".

MINNESOTA FOREST INCENTIVES PROGRAM (MFIP): A state cost-share program which provides funds to implement forest management activities on privately-owned land to increase forest productivity and reduce soil erosion.

MINNESOTA FOREST RESOURCE PLAN (MFRP): A long-range plan developed by the Division of Forestry. Its purpose is to describe Minnesota forest resources, to project supplies and demands for forest-related goods and services, and to provide management policies and programs that will benefit all interests and ownerships.

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; MN Laws 1982, Chapter 511).

NATURAL HERITAGE PROGRAM: A unit within the Section of Wildlife, Department of Natural Resources, that compiles data on Minnesota's rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features.

ORIENTED STRAND BOARD (OSB): A particleboard composed of wood strands in layers that are oriented in different directions to increase strength.

PARTICLEBOARD: A generic term for stiff panels of varying thickness manufactured from raw wood particles and adhesives.

PRIMARY FOREST PRODUCTS: Products such as lumber, poles, posts, waferboard, chips, and chipboard which are manufactured by industries which receive and utilize roundwood or chips from roundwood.

PROJECT LEARNING TREE (PLT): A kindergarten through grade twelve supplementary environmental education program for infusion in all basic subject and skill areas.

REINVEST IN MINNESOTA (RIM): A state program designed to protect soil and water quality, and improve fish and wildlife resources and habitat management in Minnesota.

RESOURCE 2000: An accelerated natural resources development program designed to develop outdoor recreational opportunities and fish and wildlife habitat.

ROUNDWOOD: Unprocessed wood in rough, round form including sawlogs, posts, and bolts.

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

SECONDARY FOREST PRODUCTS: Products such as furniture, pallets, boxes, cabinets, millwork, windows and doors, homes which are manufactured by industries which utilize lumber or other materials produced by primary processors.

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.

SOIL UNIT: A classification of soils based on the dominant soil in that unit. Soils are grouped into soil units based on texture, drainage, and color.

SOMACLONAL VARIATION: Varying reactions among somaclones (genetically identical individuals produced from non-reproductive cells) in response to identical stimuli.

STATE FORESTS: Legislatively established units managed by the Division of Forestry on a multiple-use, sustained-yield basis. There are 55 state forests (MN Statutes, Chapter 89).

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.

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; MN Laws 1982, Chapter 511).

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

TIMBER STAND: An aggregation of trees occupying a specific area and sufficiently uniform in species composition, age, and condition to be distinguishable from other growth on adjoining areas.

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

TIMBER TYPE: A classification of forest land based on the species forming the majority of live tree stocking.

UNDEDICATED STATE LAND: State owned land which is not within the boundaries of a specified resource management unit.

WAFERBOARD: A particleboard made from thin flat flakes.

WOOD RESIDUE: Also known as mill residue. The by-products of the wood products industry. Examples are sawdust, shavings, trimmings, and bark.

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