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LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES
1988 BIENNIAL REPORT TO THE LEGISLATURE
NOVEMBER 15, 1988

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(March/April 1988 Encounters Magazine)

Legislative Commission on Minnesota Resources

ROOM 85 / STATE OFFICE BUILDING

• ST. PAUL, MINNESOTA 55155

• (612) 296-2406

JOHN R. VELIN
Director



November 15, 1988

Members of the Legislature:

The "1988 Report to the Legislature" is submitted as required under MS 86.11, Subdivision 5. This Report is a fulfillment of part of the Legislative Commission on Minnesota Resources (LCMR)'s responsibility to "provide the background necessary to evaluate programs proposed to preserve, develop and maintain the natural resources of this state." (MS 86.02). The Commission will continue to monitor and evaluate programs funded from the Minnesota Resources Fund and other programs as directed by the Legislature.

The Commission requested the advice of a wide range of organizations and individuals, including the appropriate standing committees, as to which resource issues present the most pressing problems to the state. After an Issues Seminar and over nineteen days of hearings this summer, the Commission has recommended appropriations from the Minnesota Resources Fund for the 1989 Legislature.

Sincerely,

A handwritten signature in cursive script that reads "Clarence M. Purfeerst".

Senator Clarence M. Purfeerst,
Chairman, LCMR

LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES

Present Members

November 1988

Representative Douglas W. Carlson Sandstone
Representative Virgil J. Johnson Caledonia
Representative Phyllis Kahn Minneapolis
Representative Henry J. Kalis Walters
Representative Willard Munger Duluth
Representative Kenneth Nelson Minneapolis
Representative Jerome Peterson Princeton

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Senator William Luther Brooklyn Park
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Senator Clarence M. Purfeerst Faribault
Senator Earl Renneke LeSueur

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Senator Clarence M. Purfeerst, Chairman
Representative Willard Munger, Vice Chairman
Senator Earl Renneke, Secretary

EXECUTIVE COMMITTEE

Senator Clarence M. Purfeerst, Chairman
Representative Willard Munger, Vice Chairman
Senator Earl Renneke, Secretary
Representative Douglas Carlson
Representative Kenneth Nelson
Senator Gene Merriam

ROLE OF THE COMMISSION

The role of the Legislative Commission on Minnesota Resources (LCMR), is to implement the purpose of Minnesota Statutes, Chapter 86,02:

. . . to provide the Legislature with the background necessary to evaluate programs proposed to preserve, develop and maintain the natural resources of this state.

Thus, the Commission is an advisory, oversight and monitoring body for the Legislature. The LCMR acts as an information base for the Legislature regarding various resource programs. The Commission also has a role, implicit from the types of programs with which it is involved, to make inquiries and instigate action designed to examine potential innovative and/or accelerative approaches to State programs. The latter function has evolved from the basic orientation of the LCMR, expressed through its members, toward involvement with programs designed to meet future needs or to correct past program mistakes or shortfalls. The Commission focuses upon relatively new ideas and emerging natural resource issues, which are not otherwise to be considered as part of the regular budgets of State agencies.

Staff employed through LCMR recommended appropriations are temporary. Staff are in the unclassified civil service and their positions last only so long as the appropriation is available. It is the usual practice to make the appropriation available for no more than one biennium at a time. Thus, all the programs in any biennium are new and short term. In certain instances, the LCMR recommends renewed funding of a program depending upon how long it may take to accomplish the desired objectives.

The Commission is composed of fourteen Legislators: seven Senators appointed by the senate Committee on Committees and seven Representatives appointed by the Speaker of the House. Vacancies which may occur do not affect the authority of the Commission. Members serve until a successor is appointed.

FUNDING SOURCES

The Commission performs a substantial part of its advisory role by recommending that certain programs be supported with appropriations. It recommends that those appropriations be provided from the Minnesota Resources Fund which is supported by: 1) one mill per cigarette pursuant to MS Ch. 297.13; 2) anticipated federal reimbursements earned through expenditure of state money on eligible activities; 3) anticipated cancellations from past appropriations. That amount is estimated to total approximately \$17.3 million for Fiscal Years 1990-91.

RELATIONSHIP WITH OTHER COMMITTEES

The LCMR maintains an effective liaison relationship with the appropriate standing committees of the Legislature. This is accomplished in two ways. First, the membership of the Commission traditionally includes the Chair and/or key members of the Senate Finance and House Appropriations Committees, the Senate and House Committees on Environment and Natural Resources. In addition, the other members of the LCMR are also key members or chair one or more standing committees. Thus, the standing committees are informed of the actions and recommendations of the Commission through the direct participation of their Chair and members in the LCMR activities. Secondly, the staff of the LCMR maintains communication with the staff of those standing committees. Informal contacts by telephone and in person complement the periodic formal communications. Frequently, one or more of the staff from the standing committees are invited to participate in discussions between the LCMR staff and the various organizations, agencies and persons interested in the Commission. The staff of the Finance, Appropriations and the Senate and House Committees on Natural Resources receive all the material and communications prepared by the LCMR staff at the same time as the LCMR members.

COMMISSION OPERATIONS

The Commission holds meetings as required in order to complete its responsibility to develop advice for the Legislature regarding various resource issues. When the LCMR or one of its subcommittees holds a meeting, the liaison officers from the various agencies and departments, as well as the general public, are informed as far in advance as feasible. The meetings are held at the State Capitol or on the site of programs which have received Minnesota Resources Fund appropriations, or which require on-site review for development of LCMR background information. The Commission or subcommittee Chair frequently request State agency officials to appear and present testimony and appropriate data regarding the subject matter at hand. The Commission also uses written correspondence with various agencies of the State and Federal Government. After receiving testimony, correspondence and by conducting its own intensive discussions, the Commission develops recommendations to the appropriate persons, agencies and Legislative committees. Essentially, there are three alternative recommendations available to the Commission regarding the various programs under review. The Commission may recommend that a particular program receive Minnesota Resources Fund support. A second alternative might be to conclude that a particular program is appropriate and effective and to recommend that the program should therefore be financed through the regular budget of the appropriate agencies. The third alternative is for the Commission to review its own evaluation of a given program and recommend that the program be no longer conducted by the State.

THE LCMR PROCESS

During the summer of 1987 the members spent 19 days visiting resource related sites and programs across the state. The purpose was to observe the results of past programs and to collect firsthand information on the nature of a wide variety of resource management problems. The LCMR

customarily notifies local legislators of pending LCMR visits. In several cases, local Senators or Representatives joined the LCMR for part of the local tours and briefings. The experience and knowledge gained by these visits were very beneficial.

In January of 1988 an Issues Response letter was widely distributed to individuals, organizations, agencies, local units of government, and legislators, requesting advice and information on priority natural resource issues facing the State. The responses were sorted into issue areas corresponding to similar subjects and published to facilitate review.

In late May, the Commission held its Issues Seminar at Itasca State Park. It heard from professionals in the areas of water, fisheries, wildlife, forestry, recreation and minerals. Then with the assistance of a facilitator, the Commission established its priority issue areas for recommending funding.

During June, the Commission requested and received proposals from a number of agencies and organizations. Below is listed the priority issue areas in descending order, the total number of proposals received and the number recommended for funding.

<u>ISSUE AREA</u>	<u>PROPOSALS</u>		<u>RECOMMENDED FOR FUNDING</u>	
Water	72	\$19,349,287	23	\$5,768,000
Recreation	29	18,098,620	10	1,554,000
Fisheries	9	1,746,548	3	610,000
Wildlife	10	6,282,170	6	774,000
Minerals	13	2,817,059	6	1,340,000
Forestry	23	2,888,030	7	656,000
General	45	10,959,530	22	4,878,000
LCMR Administration		690,000		690,000
Contingent Account		<u>1,000,000</u>		<u>1,000,000</u>
TOTAL	201	\$62,141,244	77	\$17,270,000

LCMR RECOMMENDED FUNDING

LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES 1989 RECOMMENDATIONS
(by Issue Area)

Total Appropriation		17,270,000
LCMR Administration		690,000
Issue area WATER		5,760,000
Groundwater Quality Assessment Procedure	BSD	90,000
County-Level Ground Water Data Mgmt.	UoM	80,000
Ground Water Sensitivity	DNR	724,000
Pilot County Ground Water Mapping	MSU	348,000
Abandoned Well and Monitoring Well Technologies	NDR	200,000
Redesign Ambient Ground Water Monitoring Program	PCA	196,000
Chemical Transport in Groundwater	UoM	300,000
Program Design for Ground Water Research	UoM	10,000
Pesticide Breakdown Products Survey	MDH	330,000
Pesticide Use Survey	AG	90,000
Minnesota River Basin Water Quality Monitoring	PCA	700,000
Wetland Plant Communities	UoM	90,000
PCBs and Mercury in St. Louis and Mississippi Rivers	PCA	500,000
Biological Manipulation of Wastewater Treatment Ponds	PCA	140,000
Land Use Impacts on Lake Superior	UoM	240,000
Program Design for Lake Superior Studies	UoM	50,000
River Bank & Meander Management	DNR	200,000
Lake Aeration Techniques and Hydrologic Forecasting	DNR	820,000
Hydrologic Model Applications	SPA	110,000
Water Filter for Iron Removal	UoM	20,000
Aquatic Invertebrate Database Development	SMH	60,000
Water Education for Minnesota	SMH	300,000
North Central Minnesota Water Quality Education	SMH	150,000
Issue area RECREATION		1,554,000
Statewide Public Recreation Map	DNR	570,000
Camper Survey	DNR	30,000
North Shore Barbers Study	DNR	100,000
Brighton Beach Breakwater	DNR	Balance-1987
Trail Right-of-Way Protection	DNR	150,000
Trails Planning and Management	DNR	120,000
Ridgeline Hiking Trail	DNR	150,000
Heritage Trails	MBS	100,000
American Youth Hostel Pilot Program	DNR	200,000
Mississippi River Interpretive Center Planning	DNR	60,000
Issue area FISHERIES		610,000
Urban Fishing Program	DNR	350,000
Sonar Measurements of Fish	UoM	60,000
Aquaculture Development and Education	UoM	200,000
Issue area WILDLIFE		774,000
North American Waterfowl Plan Coordination	DNR	200,000
Local Volunteer Coordination	DNR	50,000
County Biological Survey	DNR	150,000
Purple Loonestrife Research	DNR	200,000
Swan Lake Area Wildlife Project	DNR	Balance-1987
Contaminants in Minnesota Wildlife	PCA	174,000
Issue area MINERALS		1,340,000
Acquisition of Private Exploration Data	DNR	150,000
Aeromagnetic Survey	UoM	630,000
Biogeochemical Prospecting	UoM	150,000
St. Louis County Tract Index	DNR	80,000
Research in Taconite Refinement	UoM	200,000
Evaluation of Peat in Poultry Waste Treatment	UoM	130,000
Issue area FORESTRY		656,000
Simulation of Future Forestry Economy	UoM	100,000
Development of Forest Soil Interpretations	DNR	50,000
Lignin-Based Engineering Plastics	UoM	100,000
Impacts of Forest Road Systems	DNR	170,000
High Floatation Tire Research	UoM	40,000
Oak Wilt Research	UoM	80,000
Urban Forestry	DNF	100,000
Issue area GENERAL		4,878,000
Accelerated Soil Survey	UoM	1,200,000
Statewide Land Use Update	SPA	450,000
Accelerated Land Exchange	DNR	200,000
Heirloom Seeds	MBS	40,000
Urban Gardening Program	UoM	90,000
Alternative Dispute Resolution	DNR	120,000
Biological Control of Pests	AG	500,000
Health Risk Assessment Modeling for Composting	PCA	80,000
Dioxin From Incinerator Emissions	PCA	290,000
Medical Waste Incinerator Evaluation	PCA	250,000
Household Batteries Recycling and Disposal	PCA	90,000
Municipal Solid Waste Materials Recovery	PCA	400,000
Peat for Containment of Municipal Incinerator Ash	UoM	150,000
Test Emissions From Densified-RDF	UoM	150,000
Ash as Soil Amendment	PCA	100,000
Implement Plan for Archaeological Resources	MBS	100,000
Historical Database	MBS	100,000
County & Local Historical Outreach	MBS	80,000
Preservation of Historic Shipwrecks	MBS	74,000
State History Center Exhibit Planning	MBS	200,000
Indoor Air Quality Assessment Protocol	MBS	100,000
Community Lead Abatement Project	MBS	100,000
Contingent Account		1,000,000

LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES 1989 RECOMMENDATIONS
(in bill order)

Subd. 1 Total Appropriation	17,270,000
Subd. 2 LCMR Administration	690,000
Subd. 3 Department of Natural Resources	4,190,000
(a) Acquisition of Private Exploration Data	150,000
(b) St. Louis County Tract Index	80,000
(c) Ground Water Sensitivity	724,000
(d) River Bank & Meander Management	200,000
(e) Development of Forest Soil Interpretations	50,000
(f) Urban Forestry	100,000
(g) Impacts of Forest Road Systems	170,000
(h) Statewide Public Recreation Map	50,000
(i) Camper Survey	30,000
(j) American Youth Hostel Pilot Program	200,000
(k) Trails Planning and Management	120,000
(l) Trail Right-of-Way Protection	150,000
(m) Ridgeline Hiking Trail	150,000
(n) North Shore Barbers Study	100,000
(o) Brighton Beach Breakwater	Balance-1987
(p) Mississippi River Interpretive Center Planning	60,000
(q) Urban Fishing Program	350,000
(r) North American Waterfowl Plan Coordination	200,000
(s) Swan Lake Area Wildlife Project	Balance-1987
(t) County Biological Survey	150,000
(u) Purple Loonestrife Research	200,000
(v) Local Volunteer Coordination	50,000
(w) Accelerated Land Exchange	200,000
(x) Alternative Dispute Resolution	120,000
Subd. 4 Pollution Control Agency	2,932,000
(a) Redesign Ambient Ground Water Monitoring Program	190,000
(b) Minnesota River Basin Water Quality Monitoring	700,000
(c) PCBs and Mercury in St. Louis and Mississippi Rivers	500,000
(d) Biological Manipulation of Wastewater Treatment Ponds	140,000
(e) Municipal Solid Waste Materials Recovery	400,000
(f) Medical Waste Incinerator Evaluation	250,000
(g) Dioxin From Incinerator Emissions	290,000
(h) Household Batteries Recycling and Disposal	90,000
(i) Ash as Soil Amendment	100,000
(j) Health Risk Assessment Modeling for Composting	80,000
(k) Contaminants in Minnesota Wildlife	174,000
Subd. 5 State Planning Agency	560,000
(a) Statewide Land Use Update	450,000
(b) Hydrologic Model Applications	110,000
Subd. 6 Department of Health	738,000
(a) Pesticide Breakdown Products Survey	330,000
(b) Abandoned Well and Monitoring Well Technologies	200,000
(c) Indoor Air Quality Assessment Protocol	100,000
(d) Community Lead Abatement Project	100,000
Subd. 7 Department of Agriculture	590,000
(a) Pesticide Use Survey	90,000
(b) Biological Control of Pests	500,000
Subd. 8 Minnesota Historical Society	694,000
(a) State History Center Exhibit Planning	200,000
(b) County & Local Historical Outreach	80,000
(c) Historical Database	100,000
(d) Heritage Trails	100,000
(e) Heirloom Seeds	40,000
(f) Preservation of Historic Shipwrecks	74,000
(g) Implement Plan for Archaeological Resources	100,000
Subd. 9 Science Museum of Minnesota	510,000
(a) Water Education for Minnesota	300,000
(b) North Central Minnesota Water Quality Education	150,000
(c) Aquatic Invertebrate Database Development	60,000
Subd. 10 University of Minnesota	4,928,000
(a) Aeromagnetic Survey	630,000
(b) Biogeochemical Prospecting	150,000
(c) Research in Taconite Refinement	200,000
(d) Program Design for Ground Water Research	10,000
(e) Program Design for Lake Superior Studies	50,000
(f) Land Use Impacts on Lake Superior	240,000
(g) County-Level Ground Water Data Mgmt.	80,000
(h) Chemical Transport in Groundwater	300,000
(i) Lake Aeration Techniques and Hydrologic Forecasting	820,000
(j) Wetland Plant Communities	90,000
(k) Water Filter for Iron Removal	20,000
(l) Simulation of Future Forestry Economy	100,000
(m) Oak Wilt Research	80,000
(n) Lignin-Based Engineering Plastics	100,000
(o) High Floatation Tire Research	40,000
(p) Aquaculture Development and Education	200,000
(q) Sonar Measurements of Fish	60,000
(r) Accelerated Soil Survey	1,200,000
(s) Test Emissions From Densified-RDF	150,000
(t) Peat for Containment of Municipal Incinerator Ash	150,000
(u) Evaluation of Peat in Poultry Waste Treatment	130,000
(v) Urban Gardening Program	90,000
Subd. 11 State University Board	430,000
(a) Groundwater Quality Assessment Procedure	90,000
(b) Pilot County Ground Water Mapping	340,000
Subd. 12 Contingent Account	1,000,000

The process of reviewing and taking testimony on the proposals involved twenty days of meetings. A summary of the proposals being recommended by issue area and by agency involved is listed on the previous page. The following letter to the Governor; the Chair of Senate Finance; and the Chair of House Appropriations recommends that certain programs submitted to the Commission be considered in the Governor's budget recommendations.

October 13, 1988

Governor Rudy Perpich

Senator Gene Merriam, Chair, Senate Finance

Representative Glen Anderson, Chair, House Appropriations

The Legislative Commission on Minnesota Resources received over 200 proposals for funding this summer. The total requested was over \$62 million. The LCMR decided to recommend appropriations for 77 programs with the \$18.5 million available in the Minnesota Resources Fund.

REGULAR AGENCY BUDGETS

Following are two lists of projects which the LCMR heard and decided to refer to the regular budget process. Please bear in mind the LCMR recommends very few programs for inclusion in the regular budgets. Each proposal as originally received is included in the same order as discussed. The appropriate dollar amount is, of course, a decision for each of you.

Listed first are programs initiated by LCMR and found to be successful to the point they should be included in the regular budgets of the agencies. A comment follows each which explains the LCMR experience.

Listed second are programs where LCMR has no experience but which appeared to be more suited to regular budget operations. In short, they did not meet the criteria of LCMR members to qualify for funding from the Minnesota Resources Fund.

REGULAR BUDGET - LCMR - EXPERIENCE

WATER

- Yellow Medicine River Revegetation/Access Develop. -- The Commission initiated the Stream Bank, Lake Shore and Roadside erosion control program in 1975 and 1977 by providing \$300,000 and \$500,000 respectively. Since then the program has been funded by the regular budget and it is our understanding the Board of Water and Soil Resources is requesting a change level to being the program to an annual \$500,000 funding.

- DNR - Mississippi River System Management -- The Commission is currently providing \$265,000 for this effort which has proven to be beneficial.

- BWSR - Comprehensive Local Water Planning -- The Commission is currently providing \$882,000 for this effort which involves 52 counties. The enthusiasm and progress demonstrated by the current program should support this request by the Board of Water and Soil Resources in the regular budget.

- West Central Water Management Planning and Douglas County Comprehensive Water Management Planning -- Proposals would be accommodated within the above project.

RECREATION

- DNR - Division of Parks and Recreation Planning -- The Commission provided over \$2.2 million for park planning as part of the Outdoor Recreation Act from 1975-1983. At the conclusion of that phase of activity it was our understanding that the one position converted to the regular budget would maintain the individual park planning updates

at the appropriate level. The remainder of this request represents initiatives with only limited LCMR experience.

- DNR - Land & Water Conservation Grant Program Admin.- This is a long-term program. Commission experience has been positive.

FISHERIES

- DNR - Fishing Piers -- The Commission is involved in funding overall policy and guidelines for the public access and fishing pier programs. Fishing pier programs are presently funded from the CORE money but presently only 10 fishing piers are provided statewide from this funding source.

WILDLIFE

- DNR - Continue Forest/Wildlife Habitat Intensification -- In 1987 the Commission funded this program to build a wildlife component into the forest planning process to increase the wildlife production from forest management. This program has been successful. Members feel this should now be built into the regular DNR budget.

FORESTRY

- DNR - County Forest Management/Minnesota Conservation Corps -- In the 1987 biennium the Commission funded at \$300,000 a matching grant program to counties. This program expanded the DNR Youth Conservation Corps program from state lands to county lands. This program has proven very successful and can now be transferred to the regular budget.

GENERAL

- DNR - Marketing DNR Services -- The present program is successfully focusing on the Department of Natural Resources relationship to individual citizens and ways to improve citizen satisfaction through changes in DNR policies and employee actions. The new proposal relates this effort to vital business government users of DNR services. The Commission felt this could best be handled in the regular budget.

REGULAR BUDGET - NO PRIOR COMMISSION FUNDING

Six proposals were presented that the Commission felt had merit but should be part of the originating agencies' regular budgets. These projects are:

WATER

PCA - Salvage Yard Contamination Study -- Investigate and assess the environmental threat that salvage yards pose to water resources through monitoring at selected sites in the state.

DNR - Water Demand Management -- Develop water conservation plans on a pilot basis for, and in cooperation with, two or three communities and provide the educational support materials needed to implement the plans at the community level.

PCA - Self Help Training Documents to Small Communities -- Provide written educational guidance documents to assist small communities in the construction of new and additions to existing wastewater treatment facilities.

RECREATION

DNR/University of Minnesota - Continuing Education for Natural Resource Managers -- University of Minnesota and DNR pilot project for developing, implementing and evaluating an interdisciplinary training program to expose planners and managers with outdoor recreation responsibilities to new concepts, models and technology that apply to outdoor recreation management and recreation's changing role in Minnesota.

FORESTRY

DNR - Forest Hydrology -- Develop forest hydrology expertise within DNR Region II to support forest land managers in evaluating and minimizing adverse watershed impacts of timber harvest practices.

CAPITAL BUDGETS

Some projects of an intensive capital nature are also referred to you. The LCMR did not include them because they do not represent any particular innovation. Also, several different sources provide money for park and forest recreation facilities. One funding source may be more appropriate, versus the current situation with a variety of sources contributing to what is essentially one program for each type of facility.

RECREATION

- DNR - State Park Development-Rehabilitation
- DNR - State Forest Recreation Development and Rehabilitation
 - Deep Portage-Heritage Center
 - Roseville's Central Park Interpretive Center - Local Park
 - Burton Park Expansion - Local Park
 - Simon's Ravine-South St. Paul - Local Park

Please note the last four projects are typically handled under the local park and recreation grants program administered by the Department of Trade and Economic Development.

Sincerely,



Senator Clarence M. Purfeerst,
Chairman, LCMR

Once the set of programs submitted by the LCMR to the Legislature is finally adopted in appropriation laws, the Commission implements its responsibility to closely monitor the programs in order to insure that the correct problems are addressed, in a manner consistent with the intention of

the Legislature. The appropriation laws require the LCMR to review for approval a detailed work program submitted by the agencies which describes the proposed implementation of the program, before the actual implementation can begin. Thus, the LCMR has an opportunity to supervise closely the program once it is approved by the Legislature. The Commission also reviews, on a regular basis, semi-annual status reports submitted on each of the programs. In those cases where a program appears to be straying from Legislative intent or suffering from lack of direction or initiative, the Commission calls upon the State agency involved to rectify the problem.

The process described has enabled the Commission to change its focus and direct its resources where most appropriate.

HIGHLIGHTS OF CURRENT COMMISSION PROGRAMS

WATER The Commission is funding 15 projects. Seven programs relate to local water management and land management practices related to water quality.

- Pilot Comprehensive Local Water Planning and Support for Soil and Water Management
- Handbook on Best Management Practices
- Groundwater Quality Impacts From Agriculture
- Lake Runoff Management Evaluation
- Mercury Toxicity
- Simple Water Assay

Four projects are developing or evaluating models impacting water management activities.

- Nonpoint Source Pollution Model
- Garvin Brook Monitoring
- Groundwater Management
- Water Allocation and Conservation

One project is for basic research on water's ability for transport of pollutants, sediments and the impact of ice on flooding.

- Engineering Solutions to Water Problems

Two projects attempt to develop methods for the removal of contaminants from soil and groundwater.

- Dioxins in Bleached Kraft Pulp Wood in Soils
- Gas Permeable Membrane Water Treatment

One project is designed to determine the optimum selection, sizing and operation of lake aeration equipment to limit liability and minimize local costs.

- Optimize Winter Lake Aeration

SOIL AND LAND USE The Commission is funding 5 projects in the area of soil and land use.

- Accelerated Soil Survey

One project is designed to give more alternatives to garbage disposal.

- Compost Co-Compost Research.

The Commission has one program to work toward increasing the productivity of the public land base.

- Accelerated Land Exchange

The Commission is funding 2 programs researching new types of forestry.

- Biomass Cash Crop Nursery Establishment
- Undrained Peatlands for Short Rotation Forestry

AGRICULTURE The Commission is funding 2 projects in the area of agriculture.

- Biological Control of Pests
- Ash as a Lime Fertilizer Source

MINERALS The Commission is funding 3 projects in the area of minerals. Two projects continue mapping of Minnesota's mineral resources.

- Aeromagnetic Surveying Program in Minnesota
- Glacial Drift Geochemistry for Strategic Minerals

One project studies the potential for development of a specialized clay mining industry.

- Industrial Minerals: Clay Project

FORESTRY The Commission is funding 3 projects of the area of forestry. Two of the projects are developing better methods of predicting forest growth.

- Future Timber Supply Scheduling Techniques
- Regeneration Growth Inventory

One project is continuing an ongoing program to increase forest productivity.

- Biotechnology Applications in Forestry

RECREATION Two projects relate to development.

- Lake Superior Ridgeline Hiking Trail
- Brighton Beach Breakwater

One Project relates to coordination and development.

- Mississippi River Management

One project relates to the development of a marketing plan for all DNR facilities.

- Marketing Department Services

FISH AND WILDLIFE The Commission is funding 6 projects in the area of Fish and Wildlife. Three relate to planning and prioritization.

- Comprehensive Fish and Wildlife Plan
- County Biological Survey
- Forest Wildlife Habitat Intensification

Two projects fund basic research.

- Gamefish Growth Enhancement
- Evaluation of Mosquito Control Activities

One project relates to development and acquisition.

- Swan Lake Wildlife Project

GENERAL The Commission is funding 10 projects under this category. Six of these projects are to the Historical Society.

- Historical Data Base
- Environmental Oral History
- Geographic Resource Marking
- Heritage Trails
- Indian History Grants in Aid
- Farm Economy Record

One project expands the Youth Conservation Corps work to counties through a matching grant program.

- Conservation Corps

One program accelerates investigation into the development of high value commercial products from peat.

- Non Energy Peat Development

One program tests new processing techniques for ash from incinerated sewage.

- Sludge Ash Pilot Project

One program establishes a weed control program and plan.

- Purple Loosestrife Control

LCMR OVERSITE ACTIVITIES

1. Bonding: To the commissioner of natural resources to acquire critical habitat and to acquire and better public outdoor recreational lands and capital improvements.
2. Comparison report on metropolitan county parks and state parks.
3. Controlling acid deposition.
4. Nongame wildlife program.

CUMULATIVE LIST OF LCMR FUNDED PROGRAMS

1963-1987 & Proposed 1989

RECREATION	1963	1965	1967	1969	1971	1973	1975	1977	1979	1981	1983	1985	1987	1989	TOTAL
State Park Acquisition	1,857,609	1,264,445	1,000,000	2,500,000	2,000,000	1,705,000	2,850,000								13,177,054
State Park Development	1,531,000	1,249,450	890,000	1,825,000	1,750,000	1,965,500	1,536,000	1,433,250	6,889,000	1,400,000	2,609,000	326,600			23,412,800
State Forest Campground Dev.	100,000										800,000	400,000			1,300,000
River Studies/Planning		50,000			100,000	100,000	300,000	455,000	455,000	316,000	325,000				2,101,000
State Park Planning		75,000			10,000		387,500	579,592	600,000	500,000	220,000				2,372,092
Local & Regional Park Grants		1,000,000	1,976,000	6,500,000	9,769,500	8,840,000	8,500,000	8,000,000	8,000,000	5,000,400	3,500,000	1,760,000			62,845,900
Local & Regional Planning Grants					14,700	60,000		90,000							164,700
Tourism Promotional Material and Programs		50,000	50,000	50,000	50,000	50,200									250,200
Economic Impacts of Tourism Dev.			50,000												50,000
Vegetative Mgt. Research in State Parks			30,960	60,000	25,000										115,960
Landscape Arboretum Acquisition			30,000												30,000
Cedar Creek Acquisition			103,000	45,650											148,650
State Trail Acquisition			65,000			570,000	800,000								1,435,000
Resort Reservation & Facility Identification System				30,000	23,000										53,000
Project 80 Report				50,000	50,000										100,000
Planning of State Zoo				500,000											500,000
Mississippi River Metro Corridor & St. Croix River Studies					35,000										35,000
Voyageurs Natl. Pk. Seminar, Peripheral Plan, Advisory Comm.						120,000	35,000								155,000
Planning & Dev. of Bike Trails					30,000										30,000
Lower St. Croix River Acquisition						310,000									310,000
Interpretive Services Program DNR						134,800									134,800
Lower St. Croix Mgt. Plan						40,000									40,000
Rivers Acquisition							325,000								325,000
Scientific & Natural Areas Acq.							100,000								100,000
Upper St. Croix Project							93,900	750,000							843,900
Outdoor Rec. Act Implementation							70,000	85,000	65,000	74,000					294,000
Statewide Comprehensive Outdoor Recreation Plan								330,000	50,000						380,000
Public Access Acq. & Dev.									500,000	1,000,000	1,480,000	555,000			3,535,000
Great River Road Grant									400,000						400,000
Rainy River Navigation										88,000					88,000
Upper Mississippi Plan															0
Implementation Grant										160,000					160,000
Parks Info. System											150,000				150,000
Marketing Department Services													270,000		270,000
Ridgeline Trail													380,000		380,000
Mississippi River Mgmt													271,000		271,000
Brighton Beach Breakwater													470,000		470,000
LAWCON Administration													80,000		80,000
Statewide Public Recreation Map														570,000	570,000
Camper Survey														30,000	30,000
North Shore Harbors Study														100,000	100,000
Trail Right-of-Way Protection														150,000	150,000
Trails Planning and Management														128,000	128,000
Ridgeline Hiking Trail														156,000	156,000
Heritage Trails														100,000	100,000
American Youth Hostel Pilot Program														260,000	260,000
Mississippi River Interpretive Ctr Planning														60,000	60,000
TOTAL	3,488,609	3,688,895	4,194,960	11,560,650	13,857,200	13,895,500	14,997,400	11,722,842	16,959,000	8,546,400	9,004,000	3,041,600	1,471,000	1,554,000	118,062,056

SOIL and WATER	1963	1965	1967	1969	1971	1973	1975	1977	1979	1981	1983	1985	1987	1989	TOTAL
Red River Basin Study	70,000	70,000	35,000												175,000
Hydrologic Research	150,000	150,000	150,000	150,000	150,000	150,000									900,000
Watershed Improvements	150,000														150,000
Aquatic Nuisance Control															0
Water Resources Planning			60,500	50,000				657,674	288,000	262,000			1,025,000		2,343,174
Limnological Research			50,000	75,000	50,000	35,000									210,000
Groundwater/Irrigation Studies															0
Eagle Lake Pollution Control															0
Dam Inventory/Assessment/Repair															0
Chisago Lakes Study					10,000										10,000
Abandoned Well Program						10,600	11,000							200,000	221,600
Lake Shore Dev. Trends		87,400	50,600							238,000		100,000			476,000
Weather Gauge Program							15,000								15,000
Mississippi River Study							50,000								50,000
Erosion Control Grants							300,000	501,000							801,000
S.E. MN Groundwater Contamination													150,000		150,000
Lake Improvement Grants								1,385,626	1,286,300			70,000			2,741,926
Water Use Data System									82,000	67,000	137,200				286,200
Red River Floodwater															0
Retention Grants									1,062,800	768,000					1,830,800
River Mile Index									137,400						137,400
Well Log Data Base									204,500						204,500
County Ditch Study										35,000					35,000
Lake Classification Study										110,900					110,900
Groundwater Mgt.											300,000		600,000		900,000
Soil/Watershed Acidification											186,000	160,000			346,000
Groundwater Analysis Near Dumps											145,000				145,000
Survey Organics in Monitor Wells											100,000				100,000
Survey Organics in Community															0
Water Supplies											130,000				130,000
Computer Analysis of															0
Contaminant Spreading											180,000	200,000		300,000	680,000
Research on River & Lake Mgt.											140,000	190,000	700,000		1,030,000
Water Allocation & Mgt.												1,285,000	400,000		1,685,000
Groundwater Investigations & Data Automation												800,000			800,000
Effects of Copper Sulfate															0
Treatments												75,000			75,000
Lanesboro Watershed Mgt. Tech.												255,000			255,000
Age, Residence Times & Recharge Rates of Groundwater													100,000		100,000
Dev. Biological Approaches to Lake Restoration													140,000		140,000
Groundwater Monitoring Techniques													100,000		100,000
Leaking Underground Storage Tanks													165,000		165,000
Household Hazardous Waste Collection Pilot Project															0
Organic Chemicals Survey												150,000			150,000
Evaluation of Soil & Water Conservation Programs												365,000			365,000
Handbooks of Best Mgmt Practices												45,000			45,000
Nonpoint Source Pollution Model													60,000		60,000
Lake Runoff Mgmt Evaluation													80,000		80,000
Optimize Winter Lake Aeration													393,000		393,000
Mercury Toxicity													98,000	338,000	436,000
Gas Permeable Membrane													300,000		300,000
Water Treatment															0
Dioxins in Bleached Kraft Pulp													175,000		175,000
Groundwater Quality Impacts from Agriculture													300,000		300,000
Simple Water Assay													311,000		311,000
													50,000		50,000

FORESTRY	1963	1965	1967	1969	1971	1973	1975	1977	1979	1981	1983	1985	1987	1989	TOTAL
Memorial Hardwood Forest Acq.	300,000	350,000	200,000	350,000	350,000	400,000	350,000								2,300,000
Forest Road Development	300,000	325,000	150,000	100,000	100,000	114,000									1,089,000
Tree Nursery Production	200,000														200,000
Tree Planting on State Lands	300,000	215,000	100,000	100,000	100,000										815,000
Aerial Photography	100,000		25,000		25,000										150,000
Memorial Hardwood Forest Study		25,000													25,000
Nursery-Refrigeration							75,000								75,000
Private Forest Mgt/Grants									502,000	563,000					1,065,000
Fire Management Analysis									162,400	170,000	195,000				527,400
Forest Planning/Info. System										710,000	689,000	375,000			1,774,000
Forest Inventory										734,000	450,000				1,184,000
Forest Soils Specialization										132,000					132,000
Biotechnology Applications												250,000	160,000		410,000
Product Dev. Assessment												150,000			150,000
Future Timber Supply Scheduling													146,000		146,000
Regeneration Growth Inventory													50,000		50,000
Undrained Peatlands for Short Rotation Forestry														116,000	0
Simulation of Future Forestry Economy															116,000
Development of Forest Soil Interpretations														100,000	100,000
Lignin-Based Engineering Plastics															50,000
Impacts of Forest Road Systems															100,000
High Flootation Tire Research															170,000
Oak Wilt Research															40,000
Urban Forestry															88,000
															100,000
TOTAL	1,200,000	915,000	475,000	550,000	575,000	514,000	425,000	0	664,400	2,309,000	1,334,000	775,000	480,000	656,000	10,872,400

FISH AND WILDLIFE	1963	1965	1967	1969	1971	1973	1975	1977	1979	1981	1983	1985	1987	1989	TOTAL
Wildlife Land Acq.	400,000	400,000	475,000	500,000	500,000		250,000								2,525,000
Wildlife Area Dev.	200,000		150,000	250,000	250,000										850,000
Spawning Area Acq.	150,000	325,000	300,000	50,000	50,000	56,000									931,000
Spawning Area Dev.	100,000		50,000	50,000	75,000	50,000									325,000
Duck Depredation Study			25,000												25,000
Lake of the Woods/Rainy Lake Research				25,000											25,000
Operation Pheasant				200,000	200,000	260,000	75,000								735,000
Deer Yard Acquisition						34,000									34,000
Stream Improvement						50,000									50,000
Artificial Walleye Spawning Reefs						40,000									40,000
Game Lake Mgt/Heron Lake							200,000								200,000
Wildlife Mgt. Area Inventory									58,600	147,000					205,600
Natural Heritage/Scientific and Natural Area Program															0
Wildlife Mgt. Area Planning							142,500	223,300	69,800	175,000	81,000	90,000	175,000	150,000	740,000
Survey of Aquatic Invertebrates											45,000				45,000
Fish & Wildlife Planning												200,000	260,000		460,000
Anaplasmosis Study												100,000			100,000
Forest/Wildlife Habitat Intensification													160,000		160,000
Swan Lake Area Wildlife Project													1,951,000		1,951,000
Evaluation of Mosquito Control Activities on Waterfowl														120,000	0
Gamefish Growth Enhancement													643,000		643,000
Purple Loosestrife													200,000	200,000	400,000
North American Waterfowl Plan Coordination														200,000	200,000
Local Volunteer Coordination														50,000	50,000
Contaminants in Minnesota Wildlife														174,000	174,000
Urban Fishing Program														350,000	350,000
Sonar Measurements of Fish														60,000	60,000
Aquaculture Development and Education														200,000	200,000
TOTAL	850,000	725,000	1,000,000	1,075,000	1,075,000	490,000	667,500	223,300	209,300	322,000	126,000	390,000	3,509,000	1,384,000	12,046,100

HISTORY	1963	1965	1967	1969	1971	1973	1975	1977	1979	1981	1983	1985	1987	1989	TOTAL
Historic Sites Program	80,000	235,704	266,052	287,803	280,000	345,000	695,000								2,189,559
Paleontological Archaeologic Programs		93,500	88,000	88,000	45,600	45,600									0
Fort Snelling Restoration		200,000	265,000	322,000	682,500	1,071,500	1,325,000	250,000							360,700
Grand Mounds Interpretive Ctr.						150,000									4,116,000
Interpretive Center Plan							100,000								150,000
Forest History Interpretive Ctr.							200,000								100,000
Statewide Archaeologic Survey								250,000	150,000	59,200					200,000
Iron Range Interpretive Program				75,000											459,200
Iron Range Interpretive Ctr.						500,000									75,000
Conservation of Historic Collections											100,000	85,000			500,000
Historic Preservation Planning												45,000			0
Environmental Oral History												50,000	45,000		185,000
Historic Site Craft Program												80,000			45,000
Histroic Data Base													100,000	100,000	80,000
Geographic Resource Marking															200,000
Heritage Trails													45,000		45,000
Indian History Grants in Aid													70,000		45,000
Farm Economy Record													45,000		45,000
Heirloom Seeds														40,000	40,000
Implement Plan for Archaeological Resources														100,000	100,000
County/Local Historical Outreach														80,000	80,000
Preservation of Historic Shipwrecks														74,000	74,000
State History Center Exhibit Planning														200,000	200,000
TOTAL	80,000	529,204	619,052	772,803	1,008,100	2,112,100	2,320,000	500,000	150,000	59,200	100,000	260,000	350,000	594,000	9,454,459

ENERGY	1963	1965	1967	1969	1971	1973	1975	1977	1979	1981	1983	1985	1987	1989	TOTAL
Energy Extraction/Solid Waste						90,000									90,000
Alternative Energy Grants								550,000							550,000
Peat Inventory								250,000	193,000						443,000
Solar Tech. Assistance									193,200						193,200
Timber & Wood Residue									105,200						105,200
Hydropower Dev & Coordination									10,000	228,000	100,000				338,000
Ice Airconditioning									85,000						85,000
Engineering Geology/Twin Cities									100,000						100,000
Underground Space Design									173,400		10,000				183,400
Peat & Biomass Energy										57,000	300,000	350,000	184,000		891,000
Wind Energy Monitoring										44,000					44,000
Bagley District Heating										355,000					355,000
Industrial Cogeneration Potential										77,000					0
Combustion Turbine Capacity										85,000					77,000
Energy Impact Analysis										75,000					85,000
Solar Performance Monitoring										146,000					75,000
S.W. State College															146,000
Environmental Program					50,000	50,000									0
Assess/Alt. Energy Business											179,000				100,000
Groundwater Heat/Public Bldgs.												100,000			179,000
TOTAL	0	0	0	0	50,000	140,000	0	800,000	859,800	1,067,000	589,000	450,000	184,000	0	4,139,800

GENERAL PROGRAMS	1963	1965	1967	1969	1971	1973	1975	1977	1979	1981	1983	1985	1987	1989	TOTAL
LOMR Administration	150,000	100,000	125,000	100,000	150,000	150,000	299,750	360,000	449,800	414,000	462,500	595,100	500,000	690,000	4,546,150
Admin/Cig. Tax Collections (Dept. of Tax)	55,000	51,000	59,069												165,069
Federal Reim. Acct/Contingency	50,000		250,000	725,000		1,000,000	1,000,000	1,000,000	2,000,000	350,000	1,132,000	920,000	1,000,000	1,000,000	10,427,800
Purchase of Equipment		100,000													100,000
Iron Range Municipalities Planning Study		16,100													16,100
Public Land Evaluation			50,000							476,000	400,000				926,000
Bemidji State Envir. Ctr. Science Museum					14,278										14,278
					7,496										7,496
Environmental Library, Mpls.						100,000									100,000
MN Envir. Education Council						100,000									100,000
MN Bicentennial Committee						200,000									200,000
Environmental Review Program						37,500									37,500
DNR Long Range Plan								331,000	347,600	276,000					954,600
Land Record System								80,000		249,000	50,000				379,000
Nat Res Data Systems DNR										303,000	600,000				903,000
Volunteer Mgt. Intensification											195,000	175,000			370,000
Accelerated Land Exchange/Mgt												435,000	250,000	200,000	885,000
Compost/co-compost Research												100,000	175,000		275,000
Municipal Solid Waste Incinerator Evaluation												250,000			250,000
Biological Control of Pests													490,000	500,000	990,000
Ash as Lime or Fertilizer													70,000	100,000	170,000
Conservation Corps													300,000		300,000
Non-Energy Peat Development													100,000		100,000
Sludge Ash Pilot Project													200,000		200,000
Urban Gardening Program														90,000	90,000
Alternative Dispute Resolution														120,000	120,000
Health Risk Assessment Modeling For Composting														80,000	80,000
Dioxin From Incinerator Emissions														296,000	296,000
Medical Waste Incinerator Evaluation														250,000	250,000
Household Batteries Recycling and Disposal														90,000	90,000
Municipal Solid Waste Materials Recovery														400,000	400,000
Peat for Containment of Municipal Incinerator Ash														150,000	150,000
Test Emissions From Densified-RDF														150,000	150,000
Indoor Air Quality Assessment Protocol														100,000	100,000
Community Lead Abatement Project														100,000	100,000
TOTAL	255,000	267,100	484,069	825,000	171,774	1,587,500	1,299,750	1,771,000	2,797,400	2,068,000	2,840,300	2,475,100	3,085,000	4,324,000	24,250,993

Summary/Issue Area	1963	1965	1967	1969	1971	1973	1975	1977	1979	1981	1983	1985	1987	1989	TOTAL
Natural Resource Information	100,000	1,265,000	1,060,000	950,000	798,000	1,565,000	268,000	1,790,000	2,345,400	2,339,000	2,000,000	1,900,000	1,400,000	1,650,000	19,430,400
Soil and Water	370,000	220,000	382,900	325,600	210,000	195,600	376,000	2,544,300	3,061,000	1,400,900	1,318,200	4,200,000	4,642,000	5,768,000	25,094,500
Recreation	3,488,609	3,688,895	4,194,960	11,560,650	13,857,200	13,895,500	14,997,400	11,722,842	16,959,000	8,546,400	9,084,000	3,041,600	1,391,000	1,554,000	117,982,056
Forestry	1,200,000	915,000	475,000	550,000	575,000	514,000	425,000	0	664,400	2,309,000	1,334,000	775,000	480,000	656,000	10,872,400
Fish and Wildlife	850,000	725,000	1,000,000	1,075,000	1,075,000	490,000	667,500	223,300	209,300	322,000	126,000	390,000	3,309,000	1,384,000	11,046,100
History	80,000	529,204	619,052	772,003	1,008,100	2,112,100	2,320,000	500,000	150,000	59,200	100,000	260,000	350,000	594,000	9,454,459
Energy					50,000	140,000	0	800,000	859,800	1,067,000	589,000	450,000	184,000		4,139,800
Minerals	200,000	150,000	140,000	160,000	232,000	100,000	920,000	2,867,000	1,130,900	1,606,000	1,491,000	2,490,000	1,400,000	1,340,000	14,226,900
General	255,000	267,100	484,069	825,000	171,774	1,587,500	1,299,750	1,771,000	2,797,400	2,068,000	2,840,300	2,475,100	3,085,000	4,324,000	24,250,993
TOTAL	6,543,609	7,760,199	8,355,981	16,219,053	17,977,074	20,599,700	21,273,650	22,218,442	28,177,200	19,797,500	18,882,500	15,981,700	16,241,000	17,270,000	237,297,600

A Quiet Force for Minnesota Natural Resources

by Thomas
Baerwald

Another May day begins in Minnesota. ▲ In Pennington County, farmer Ray Olson consults his home computer one last time to determine the proper levels of fertilizer to apply to the fields he will work that day. ▲ In Isanti County, Department of Natural Resources forester Wayne Damerow notes the absence of dew on the ground. As a result, he deploys a crew to a high risk area in which forest fires might break

out, and he changes surveillance flight routes for the day. ▲ In St. Louis County, mineral explorer Bill Ulland consults detailed maps of the magnetic variations in buried bedrock before he collects more rocks for laboratory analysis to determine if they contain gold or other minerals. ▲ In Nicollet County, volunteer conservationist Mark Lynch places artificial nest baskets over open water to permit more mallards to breed at Swan Lake. ▲ In Hennepin County, fisherman Frank Schneider launches his boat into Lake Minnetonka so that he can stalk some of that lake's walleyes. ▲ In Wright County, teacher Charlie Gross watches his students board a bus for a visit to Fort Snelling State Park, while in Ramsey County, Mary Jo Skaggs

Minnesota DNR



prepares her class for a field trip to see *Seasons* at the Science Museum. ▲ The participants in these activities are unaware of their connection, but they are linked by one thread—all are benefitting directly from projects sponsored by the Legislative Commission on Minnesota Resources. ▲ Minnesota is a state known for high public interest in governmental activities, but the Legislative Commission on Minnesota Resources (LCMR) is one of its least known agencies. Low visibility hardly reflects its accomplishments, however. Few govern-

mental units anywhere in the nation rival LCMR's effectiveness at clarifying issues, analyzing long-term trends, gathering information, and fostering coordination between public agencies and private organizations with respect to natural resources. Over the 25 years of its existence, LCMR has authorized more than \$220 million in expenditures on more than 400 projects, some of which are highlighted on these pages.

LCMR's roots can be traced to 1961, when Governor Elmer Andersen appointed the Minnesota Natural Resources Council, which was chaired by Senator Henry McKnight of Wayzata. That group was impressed with the abundance of Minnesota natural resources, but it felt the state was drawing too heavily on its natural capital. Among the 180 specific proposals it offered to improve management of natural resources was a call for the creation of an advisory council to make policy recommendations for the state on the development, use, and management of Minnesota's resources.

When the 1963 legislature considered this recommendation, it also noted the growing environmental consciousness of the population, the call by the federal Outdoor Recreation and Resources Review Commission for each state to "prepare a long-range plan for the development of outdoor recreational opportunities," and the creation in other states of dedicated funds for enhancement of recreational resources. As a bill to levy a one-cent-per-pack tax on cigarettes for such a fund worked its way through the Minnesota senate and house, legislative leaders and Governor Karl Rolvaag realized that the more than \$3 million that would be generated each year required a responsible body to oversee its distribution.

As a result, the Omnibus Natural Resources and Recreation Act of 1963 was passed with provisions to create the Minnesota Outdoor Recreation Resources Commission. This commission was to consist of seven senators and seven representatives

The Magnetic Pull of Minnesota Minerals

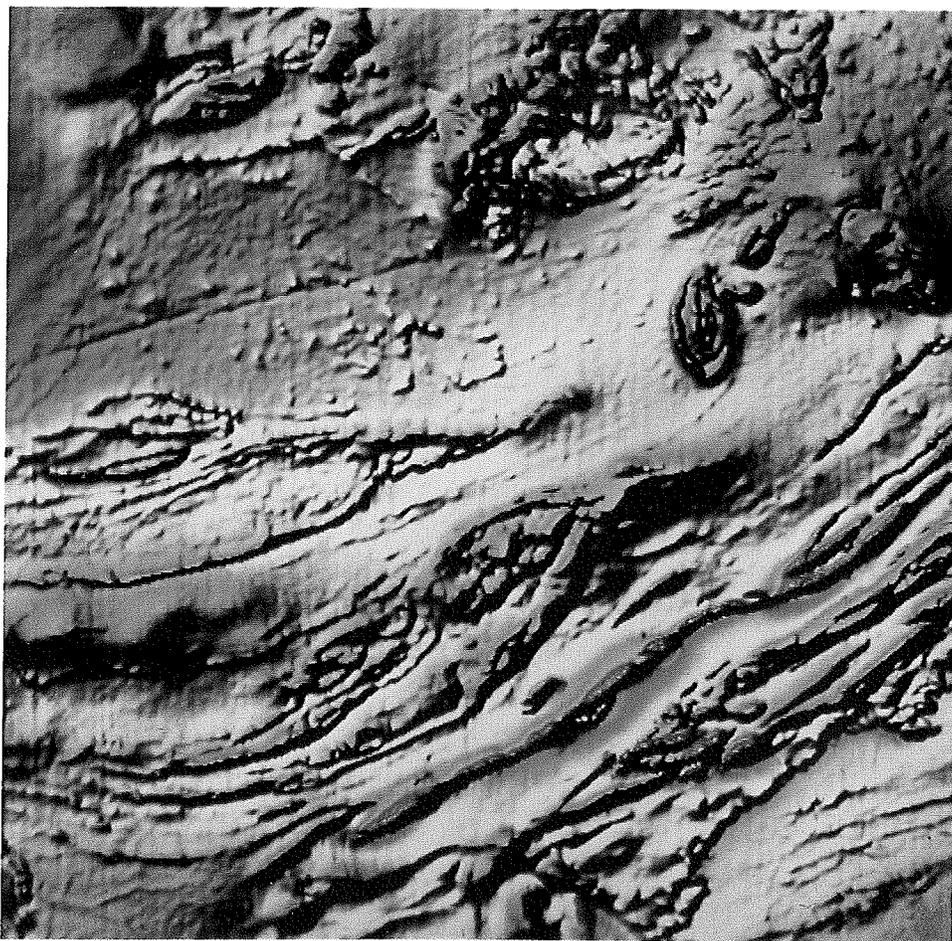
To determine what rocks lie beneath Minnesota, geologists traditionally have relied on surface observations, natural outcrops, roadcuts, and cores taken when drilling wells. In 1978, however, an LCMR-sponsored symposium recommended that the Minnesota Geological Survey (MGS) start flying over the state with airplanes carrying sensitive instruments to record fine variations in the magnetic attraction of underlying rocks. With additional LCMR funding, MGS began its aeromagnetic mapping project the following year. More than one-half of the state now has been mapped, and the program has been so successful that private companies are conducting aeromagnetic surveys in other parts of the state. MGS geologist Val Chandler expects the statewide survey to be complete in the early 1990s.

The data gathered as part of the aeromagnetic mapping project already is changing maps of the state's bedrock, and this new information is providing a basis for expanded exploration of new areas for valuable minerals like gold, silver, copper, platinum, and titanium. The land for which mineral exploration leases have been issued by the state Department of Natural Resources has increased from 10,500 acres in 1980 to 900,000 acres in 1986, according to Marty Vadis, assistant director of DNR's minerals division. Along with

expanded sampling of test cores and ground-based surveying of gravitational levels, the aeromagnetic survey is providing new insights into structures beneath the glacially deposited material that covers much of the state. Vadis concluded that the aeromagnetic maps have provided a sounder basis for exploration in locales that previously would have been "a simple crapsheet."

Because geologic formations beneath large parts of northern Minnesota are similar to formations that have yielded profitable ores in central Canada, many geologists feel that it is only a matter of time before significant new discoveries are announced in Minnesota. Companies currently holding exploration leases are not required to disclose the results of their explorations immediately, but Vadis felt that findings have been positive enough to encourage continued expansion in the number of leases. Through the aeromagnetic mapping project and other projects it has funded, such as the creation of a "library" of geologic cores in Hibbing, LCMR has ensured that any future "gold rushes" or developments to extract other minerals in Minnesota will take place more rapidly than they otherwise would have.

Minnesota Geological Survey and PIC



A section of a relief map of bedrock geology based on the aeromagnetic survey of the Lake Mille Lacs area.

New Techniques for Smokey the Bear

For decades, foresters fought fires with intuition and experience. In 1979, however, LCMR began a series of grants to enable the Department of Natural Resources to undertake detailed analyses of the most effective ways to fight fires in each of the 17 forestry areas of the state. Such analyses were critical, stated DNR forestry official George Meadows, because the fire danger, types of fires, and most effective ways to control them varied in different parts of Minnesota.

The DNR area studies found some surprising patterns. All fires in each area over a ten-year period were mapped and charted with respect to their time and causes. In some areas, such as Isanti and Chisago counties north of the Twin Cities, where many new homes have been built in wooded areas, many fires were found to have started late in spring afternoons, when landowners lost control of rubbish fires after they returned from work. In other locales, fires sprang up along roadsides between 3 and 4 p.m., when children walking home from school were playing with matches. By identifying areas with more active fire histories, greater attention could be focused in fire-spotting efforts, and because 99 percent of the state's wildfires were started by people in one way or another, more effective promotion of fire-prevention methods could be circulated among residents.

The LCMR-sponsored fire management analyses also improved the ways in which the DNR could identify and control fires. Rangers traditionally spotted fires from towers. This procedure was found to be relatively inefficient, however, and many areas could never be seen. As a result, the DNR has stepped up its use of aircraft, with spotters flying across areas on flight paths that may be changed in response to weather conditions and other factors. Aircraft now are used more frequently to fight fires, too. Helicopters often carry the initial

attack, transporting fire fighters and dropping water onto fires before the flames become too hot and cover too much area. Greater awareness of which areas are most prone to fires has also helped DNR officials decide when to deploy crews to remote areas so they can respond rapidly when fires break out.

Because of these analyses, Meadows stated, the DNR has reduced the number of fires in many areas, and it has been able to spot and control fires more efficiently and economically than it had previously. The analyses have also helped bring fire protection agencies at the local, state, and federal levels together, so that more personnel are available to rapidly answer calls, thereby preventing the loss of timber and buildings that are set within the forests.

Minnesota DNR



Rapid deployment of fire fighters is crucial in control of wildfires.

What do you feel are the most important Minnesota resource issues?

To Friends of Minnesota's Natural Resources:

We are requesting your candid opinions concerning the issues and needs of Minnesota's natural resources. The Legislative Commission on Minnesota Resources will consider your ideas as it makes recommendations to the legislature for 1989 program funding.

For 25 years, LCMR has recommended appropriations to state agencies in the general areas of fisheries, wildlife, recreation, forestry, minerals, soil, and water. These short-term programs have improved

natural resource management through development or acceleration of innovative programs or have acquired land or developed facilities for a broad range of natural resource purposes.

This request starts our biennial prioritization process. After careful consideration of the responses, LCMR will ask for specific proposals in the areas in which we will focus our attention. Your response should be a statement of which natural resource issues you feel deserve priority attention; it should not be a funding request. Please send us your comments by April 10, 1988. Don't worry about the format or length of your

response.

Thank you for your time and effort in responding to this request. LCMR members have found responses in past years to be thoughtful and useful. As legislators, we value your ideas, because they will help us initiate innovative natural resource programs for Minnesota.

Sincerely yours,

Clarence Purfeerst

Senator Clarence Purfeerst,
Chairman
Legislative Commission on
Minnesota Resources
65 State Office Building
St. Paul, MN 55155

and was charged "to provide the legislature with the background necessary to preserve, develop, and maintain the natural resources of the state."

Although the commission's name has changed twice since its inception, its basic function and means of operation have been consistent throughout the last quarter-century.

LCMR's primary function has been to select projects that make the best use of money in the Minnesota Resources Fund. Since 1969, two cents per pack have been deposited into the fund, generating about \$8 million annually.

Competition for this money has been fierce; during the 1987 session, the commission

The Minnesota Resources Fund is meant to accelerate and improve resource management, not to provide alternative sources of funding.

recommended funding 47 projects with a total of more than \$16.2 million after considering 179 proposals that would have required more than \$61 million.

LCMR's project selection process is not confined to conference rooms at the state capitol. Soon after a legislative session ends, LCMR members begin planning for action that will take place two years later. During the summer, LCMR members spend about 20 days travelling to sites throughout the state to directly observe the results of past projects and to assess unresolved resource management issues. The following January, the commission chairman invites hundreds of individuals, organizations, agencies, and local units of government to share their opinions regarding the status and possibilities for the state's natural resources. In May, the commission gathers for a few days to identify the issues it feels deserve highest priority. Proposals from agencies and organizations are then received, and testimony is heard from representatives of each of these groups. Following ten days or more of

hearings, the commission selects projects that it feels are most worthy of its support and recommends to the legislature as a whole that these projects receive funding.

LCMR-sponsored projects ultimately receive funds through the State Departments Appropriations Bill, but the commission does not support projects that normally would be covered in regular agency operating budgets. LCMR members stressed that the Minnesota Resources Fund is meant to accelerate and improve resource management, not to provide alternative sources of funding for projects that would normally be supported through standard appropriations. Funds therefore are reserved for projects that are not regular responsibilities of state agencies or other organizations, in effect, making LCMR the coordinator of a massive research and development program for the state's land and water. LCMR funds used as "risk capital" to foster innovation have also been "leveraged" to match funds from other governmental agencies and private organizations. Between 1963 and 1983, LCMR-sponsored projects received more than \$138 million in federal and local funding to complement the \$189 million contributed by LCMR.

Further distinguishing the commission has been its insistence that all projects be completed during the two-year biennium during which they are funded, and that all projects result in tangible products. Projects may be continued from one biennium to the next, but each time that funds are requested, project leaders must demonstrate that progress has been made since the last request.

The projects funded by LCMR over its first 25 years have reflected changing needs, but they have consistently focused on a number of central concerns. The commission's initial emphasis on outdoor recreation has prevailed, with roughly one-quarter of its funds going to local and regional park systems for specific improvements, and another quarter being allocated

Building a Bigger Walleye

Minnesotans know that fish grow fastest in stories told after they've gotten away. With an LCMR grant, however, a team at the University of Minnesota is conducting research to produce faster-growing, larger game fish in Minnesota lakes and streams. Two members of that team, human genetics professor Anthony Faras and genetics professor Perry Hackett, are overseeing technicians who extract growth hormone genes from game fish, clone the genes, and link them with other pieces of DNA to develop "optimum DNA sequences." Animal science professor Kevin Guise and fisheries professor Anne Kapuscinski then oversee development of the most efficient procedures to inject the extra DNA into fertilized fish eggs, and Kapuscinski will monitor the growth rates and other characteristics of these genetically altered fish.

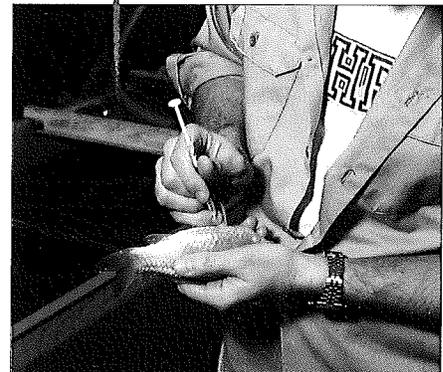
The current research is just the first step in a long process that will be followed before any bioengineered fish are introduced into Minnesota waters. Kapuscinski stressed that lengthy observations will be required to see how increased production of growth hormones in fish affects other characteristics, such as disease resistance and temperature adaptability. Gene transfer technology also will be tied to development of sterilization procedures, because the stocking of sterilized fish would be one important way to control the spread of undesirable characteristics that may develop.

LCMR's involvement in the game fish growth enhancement project has been crucial, according to Kapuscinski. It has permitted rapid implementation of a comprehensive research program that should keep the Minnesotans in the international forefront of a race in which scientists from other nations, including China and France, also are participating. Because this research is peripheral to the central missions of a number of major federal funding sources, submission of piecemeal grants to different agencies likely would have resulted in long delays before all facets of the program could have begun. Funding for related work has

also started to come from the federal Sea Grant program, reflecting the way in which LCMR funds often serve as "seed money" that attracts additional support from other sources.

Research on genetic procedures to enhance game fish growth will proceed slowly in order to ensure that altered species do not have undesirable traits or adverse impacts on the ecology of waters into which they are introduced. Kapuscinski stated that food supplies will have to be adequate in water bodies to support larger fish, and the fish themselves will have to convert food more efficiently. If a fish growing twice as fast and becoming twice as large requires twice as much food, the overall number of fish in a lake likely will decline, a situation that most people would not view favorably. Nonetheless, the prospect of larger walleyes, northerns, and other "keepers" will ensure that many of Minnesota's 1.6 million anglers will be interested in this line of research for years to come.

Jay Maher, Dept. of Fisheries and Wildlife, U of M



A goldfish picked from the brewed stock is injected with carp pituitary extract to induce spawning.

Minnesota DNR



Research at the University of Minnesota may result in faster-growing, larger gamefish, including smallmouth bass.

New and Better Ways onto Minnesota Waters

Avid fisherman Frank Schneider of St. Paul was blunt in his assessment of LCMR. "I'm real proud of those guys," he asserted. "They do one hell of a job." As past president of the Minnesota Sport Fishing Congress and of Muskies Incorporated, Schneider's satisfaction results largely from LCMR's sponsorship of an accelerated program for developing public accesses into Minnesota lakes and streams.

The Department of Natural Resources has acquired land and made improvements at public accesses since 1947, but a limited budget hampered its efforts. In 1979, LCMR contributed \$500,000 to support a pilot project in the Twin Cities metropolitan area. A major part of this project was formation of the Metropolitan Water Access Task Force, which included representatives of the State Planning Agency, Metropolitan Council, and DNR. This group agreed to treat all lakes in the metropolitan area as parks, according to DNR water recreation supervisor Mike Markell, and it set up policies, procedures, design standards, regulations, and methods of operations that governed the acquisition and development of accesses in the Twin Cities area.

The initial success of these efforts resulted in subsequent grants during the next three bienniums to expand the program throughout the state. In 1987, the legislature made public access development a major part of DNR's operating budget by creating the Water

Recreation Account. This account will make available more than \$3 million annually in revenue collected from gas taxes geared to boat use and boat license fees, thereby allowing continuation of land purchase and physical improvements at lakes and rivers in all parts of Minnesota. In the eight years since LCMR began sponsoring accelerated development, Markell estimated, the DNR has developed more than 350 accesses and purchased land at 200 sites. Among the more notable water bodies where any person now may launch boats are Lake Minnetonka, White Bear Lake, and Lake Waconia in the Twin Cities area, Round Lake and Gull Lake near Brainerd, Big Detroit Lake in Becker County, Otter Tail Lake in Otter Tail County, and the St. Louis River at Duluth.

The rapid increase in the number of accesses makes anglers like Frank Schneider and other water enthusiasts happy. Schneider noted that he fished off the shores of lakes like Minnetonka as a child, but as more land was developed on shorelines, places to park and to launch boats became scarcer. Without LCMR's involvement, he argued, "the places where an average guy in the metro area could fish would be much more limited." Coupled with other projects that LCMR has sponsored to help improve fishing in the state, the public access acquisition program caused Schneider to consider the commission "first class."

Minnesota DNR



An LCMR-sponsored public access on North Long Lake in Crow Wing County.

for other recreational projects, including acquisition of land and development of state parks, state forest campgrounds, state trails, and public accesses to lakes. Among the recreational projects that LCMR has supported have been construction of interpretive centers at Split Rock Lighthouse and Fort Snelling and development of state parks along the St. Croix

"LCMR certainly has to rank among the top agencies at the state or federal level at providing information for legislative action."

River. Because of the recreational initiatives it has sponsored, LCMR was cited last year by the President's Commission on Americans Outdoors as an example that other states should follow.

Another important focus of LCMR throughout its first quarter-century has been the collection of information and data to encourage responsible resource management and development. Former Governor Rolvaag suggested that the inventory of Minnesota resources, especially the intensive mapping and surveying of land, land characteristics, and lakes, were LCMR's most important accomplishments. As a result, Rolvaag stated, "LCMR certainly has to rank among the top agencies at the state or federal level at providing information for legislative action."

University of Minnesota geography professor John Borchert, who has been a consultant to the commission and the leader of a number of the projects it has supported, echoed Rolvaag's comments, noting that "the extensive amount of data collected and the better use made of that data by agencies at the direction of LCMR has resulted in a more rational and coordinated approach to resource management in the public sector." Most notable among the data-gathering efforts sponsored by LCMR have been completion

of the topographic mapping of the state, preparation of a series of geologic and mineral maps, acceleration of county soil surveys, two studies of lakeshore development trends, preparation of a state land use map, and development of the state's land management information system.

A third major thrust of LCMR has been the long-term assessment of resource supplies and potentials. Major planning efforts have been sponsored for wildlife management areas, state parks, and the Department of Natural Resources. Support for a copper-nickel study and for a variety of alternate energy-source projects in the late 1970s failed to spur new development when market conditions changed, but information gathered during those projects has been valuable in other areas.

Of more direct and immediate benefit was a series of projects funded by LCMR to assess forest management and development policies. These studies culminated in a 1980 report that assessed the potential for timber development and recommended policy changes that would encourage future timber development. In 1982, the legislature adopted many of those recommendations in the Forest Management Act, and since that time, according to Representative Doug Carlson of Sandstone, a current LCMR member and former chair, at least four major plants have been started or expanded in northeastern Minnesota. Looking back on these projects, Potlatch Corporation public affairs director Archie Chelseth of Cloquet stated, "The Commission has been a catalyst in bringing together the public and private sectors in working to improve both public policy and the actual management of our renewable resources on state land."

The ongoing success of LCMR has been the product of a number of forces. Perhaps most important has been the fact that the 14 members of LCMR have consistently been senior legislators in leadership positions in their own houses and on important standing committees. The commission's

Providing Data for the Computerized Tractor

Minnesota's soils form a wondrously complex mosaic. A 40-acre plot may contain four or five soils, each of which has markedly different colors, textures, fertilities, and drainage characteristics. How well specific crops will grow, whether septic tanks may be buried safely at a specific site, or what property taxes should be assessed on a tract may all depend on the soils at those sites. In 1976, however, detailed soils maps had been prepared for only 22 of Minnesota's 87 counties.

To accelerate soils mapping throughout Minnesota, LCMR made a series of grants that so far have totalled more than \$8 million. These grants paid for one-third of the costs of new soil surveying efforts, resulting in publication of maps for another 21 counties and agreements to undertake surveys in 19 more counties. County governments and the U.S.D.A. contributed equivalent shares to cover the remaining costs. As a result of the accelerated program initiated by LCMR, only nine counties in the state await action on soils surveys, according to Harlan Finney, University of Minnesota extension soil science specialist.

The more rapid mapping of soils throughout Minnesota has only been the first stage in a process under the direction of University of Minnesota soil science professor Richard Rust, who felt that soils surveys are valuable only if they are used. To make the maps and related explanations valuable to as many people as possible, Rust and his colleagues digitized the maps so that they can be used on computers, and

they developed computer programs to aid in the analysis of those maps. As a result, any person with access to a computer can perform sophisticated analyses of the soils on their property, making the best determinations for specific sites.

One of the most sophisticated applications has been the development of fertilizer applicators that vary the amount of fertilizer applied as a tractor passes over a field. Controlled by a computer in the cab, the applicator follows the tractor's progress on the soils map and adjusts the amount of fertilizer applied when the tractor passes into an area with a different soil. By matching the amount of fertilizer to specific soil characteristics, a farmer can save as much as \$15 per acre in costs.

Farmers are not the only Minnesotans who have benefited from the LCMR-sponsored acceleration of the soil surveys and their broader dissemination. Finney noted that local governments have used information on how different crops grow in specific soils to develop more accurate and fairer property assessments, and developers in urban areas have been better able to identify appropriate sites for new construction and sewage disposal. Also of value has been the increased ability of private landowners and government officials to identify problem areas where soil erosion or potential groundwater contamination hazards are most severe.

Soil Teq, Inc.



Computerized soil maps help vary the amount of fertilizer applied to different parts of a field.

Bringing the Swans Back to Swan Lake

For centuries, Swan Lake in western Nicollet County has been known for its waterfowl. Its current name is a derivation of its Dakota Indian name, which Stephen Long wrote in 1823 meant "lake of many large birds." Swan Lake remains the largest prairie pothole marshland in the United States, but its more than 9,400 acres now harbor far fewer wildlife than it did in 1917, when state conservation commissioner Carlos Avery called it "the most important breeding place now left in Minnesota."

Swan Lake's problems were twofold, stated DNR wildlife manager Dennis Simon. Ditches cut into nearby fields in the 1950s and 1960s increased water runoff more rapidly than could be accommodated by the outlet into Nicollet Creek. This imbalance caused the lake level to rise significantly, flooding adjacent lowlands, and changing the ratio of open water to emergent vegetation from 50:50 to roughly 90:10.

During the same decades, most local farmers converted from diversified farms on which livestock were raised into commercial operations that were most economical when corn, soybeans, and other crops were planted on as much land as possible. As a result, Simon noted, little natural cover was left on the edges of the lake, leaving nests exposed to predators and human destruction. In a 1984 study, 135 nests were found on and near Swan Lake, but only eight broods of waterfowl were spotted on the lake that summer.

The destruction of breeding habitat at Swan Lake brought together a number of private groups like the Nicollet Conservation Club and the Minnesota Waterfowl Association to assess the problem and to start implementing solutions. The lake outlet was improved to better regulate water levels, land was pur-

chased and easements were acquired to protect wildlife habitat, incentives were developed to encourage private land management more supportive of wildlife, and direct intervention measures like artificial nest baskets, predator control, and regeneration of native vegetation were introduced. The Minnesota Chapter of the Nature Conservancy joined the effort by loaning more than \$200,000 for the purchase of 184 acres of farmland on the southern margins of the lake.

One of the most promising aspects of the Swan Lake restoration has been its innovative use of labor. Thousands of hours have been donated by local volunteers, and non-violent offenders served considerable time on the project through the state's "Sentencing to Serve" program.

To coordinate the management effort at Swan Lake, LCMR gave almost \$2 million in 1987 to the Department of Natural Resources to proceed on a two-year operational plan in coordination with other groups. One of the most important aspects of LCMR's support, Simon affirmed, is that it has provided a base for leveraging other funds. More than \$40,000 has been donated from local groups, and with groups like Ducks Unlimited becoming more involved in the project, the goal of raising \$1 million from other sources seems attainable.

Complete restoration of the Swan Lake area still is decades away, but the first stages of its turnaround have been "a major victory for outdoor enthusiasts," according to Fred Froehlich, Jr., of the Nicollet Conservation Club. "This project has been really different," stated Froehlich, "and it's been a lot of fun."

Dennis Simon, Minnesota DNR



A volunteer places a nest basket in marshes around Swan Lake.

current chair, Senator Clarence Purfeerst of Faribault, noted that the seven senators currently serving on LCMR include the majority leader and assistant majority leader, chairs of the Finance and Transportation committees, and the two most senior Independent-Republicans. Comparable positions are held by LCMR's house members, including the chair of the Environment and Natural

"LCMR is a commission on which legislative leaders like to serve, because they can make an impact in important areas."

Resources Committee, the chair of the State Departments Division of the Appropriations Committee, and the Independent-Republican with the most years of service. Because of the legislative experience and key positions held by LCMR members, Purfeerst added, LCMR has monitored its projects closely and has been able to recommend adoption of more successful strategies by established governmental units.

What attracts legislative leaders to serve on LCMR? Purfeerst cited the diversity of projects and issues that the commission examines and the opportunities to get to oversee a wide range of governmental activities. Former LCMR member and chair Fred Norton of St. Paul, now a state appeals court judge, stated, "LCMR is an important commission on which legislative leaders like to serve, because they can make an impact in important areas, even though the dollars they control aren't enormous." The process used by LCMR to determine which issues are most important and which projects ought to be funded also is attractive to senior legislators, suggested Norton, who felt that the process of objectively zeroing in on key issues may be one of LCMR's most significant attributes.

Another aspect that was identified by some past and present members as making LCMR successful was the bipartisan way in which it

functioned. Partisan politics have rarely entered into commission deliberations. Carlson noted that the diversity of opinion that members brought to their discussions was one of the commission's greatest strengths, but decisions have never been made on a partisan basis. A sense of common mission is shared by the members, many of whom have served through numerous legislative sessions.

The relative stability of LCMR's membership has also been true of its staff. Only two people have directed the commission's staff during its first quarter-century. F. Robert Edman functioned as a consulting staff director until 1974, when Robert E. Hansen assumed the position of executive director. Hansen will retire this spring after 40 years of public service.

LCMR's activities have affected many aspects of natural resource development, management, and preservation in Minnesota, but its low profile has left many people unaware of its impact. Purfeerst suggested that local governmental officials, many of whom used data gathered in one or more of the projects funded by LCMR or received grants from the Minnesota Resources Fund to improve recreational facilities or encourage economic development, may actually be more aware of LCMR's value that most voters and even some legislators. Norton argued that most people are unaware how effective LCMR has been in obtaining "a lot of bang for the buck," and Rolvaag bluntly stated that perhaps LCMR's greatest shortcoming was that "it never hired a publicist."

But in a state where author Howard Mohr confided that residents frown on brazen boasting about one's own good fortune, LCMR's quiet leadership in rational coordination, collection of information, and establishment of priorities to better manage natural resources is doing exactly what most Minnesotans would want, even if many of them are unaware of its activities.

Thomas Baerwald is director of SMM's Geography Department.

Better Systems for Better Planning

LCMR innovates; it does not operate. When projects it supports demonstrate their utility, its members and staff work to transfer functions into the regular operations of state agencies.

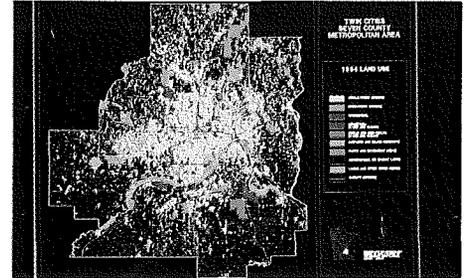
Starting in the late 1960s, the Minnesota Land Management Information System at the University of Minnesota conducted a series of projects sponsored by LCMR, including a landmark study of lakeshore development and the preparation of a map showing the predominant land use of each of the more than 1.4 million 40-acre parcels in the state. By 1977, this computer-based system had proven to be an effective way to store, analyze, and display information about Minnesota, and LCMR helped to transfer the system into a unit now known as the Planning Information Center (PIC) of the State Planning Agency.

To help the center function efficiently as a service center and a clearinghouse for information about Minnesota, LCMR funded the purchase of a new computer and directed funding for projects that helped PIC gather more data and develop more effective ways to interpret that information. Among the most notable of these projects, according to PIC director Al Robinette, were ones to develop a standardized scheme for classifying land uses and covers, to digitize Public Land Survey coordinates (to permit integration of data using township-range locational identifiers), and to develop better methods to

interpret advanced satellite imagery.

LCMR also supported PIC by mandating that other projects make data available for inclusion in the PIC data base. By requiring that projects meet standards of data collection and classification, and by providing funds to transfer data to PIC, LCMR ensured that information is available in the form of both maps and lists. Furthermore, projects can build on one another. As a result, PIC is used regularly by other state agencies, by local governments, and by private groups for information and analysis on a wide range of topics. With LCMR's assistance, PIC has become "one of the finest geographic information systems in North America," in the words of Robert Aangeenbrug, executive director of the Association of American Geographers and former president of the Urban and Regional Information Systems Association.

PIC



A Commission for All "Seasons"

When Mike Day was asked in the early 1980s if SMM would make an Omnitheater movie on Minnesota, he responded, "Never!" As SMM Omnitheater director, Day knew that the museum's production of films depended on their rental to space theaters elsewhere in the world. A film focusing on Minnesota would be popular in St. Paul, but he questioned whether it would "play" in any other theater.

But what if, LCMR executive director Robert Hansen asked, a movie based on a theme with broad appeal was shot in Minnesota, allowing viewers throughout the world to see the state? Day considered that option and concluded that it had strong promise, so the museum applied for and received a \$25,000 planning grant from LCMR to outline the main themes and images that might be included in such a film. By early 1985, the *Seasons* storyboard was generating considerable enthusiasm, and LCMR again served as a catalyst, voting to provide \$187,500 for production in order to match \$137,500 from the Minnesota Office of Tourism and assumption of at least \$500,000 in remaining production costs by SMM.

Production began the following August, and last June, *Seasons* premiered at SMM. Critical acclaim has followed the film to other locales, including San Diego, Detroit, and Richmond, and leases have been signed for its showing in Chicago, Boston, Denver, and Taichung, Taiwan. "Without LCMR's involvement," Day stated, "*Seasons* likely would never have been pro-

duced. By asking, 'what if...', and then gambling with us that the answer was feasible, LCMR helped make the film a reality."

LCMR's and SMM's common interests in improving public understanding of Minnesota resources resulted in the commission's approval of another \$110,000 grant for the museum last summer. SMM used some funds from the grant to sponsor a February 1988 legislative conference that examined the economic impact and prospects for Minnesota resources. The grant also will help expand the "Our Minnesota" exhibit, in order to display the conclusions of recent and current research projects that affect the state. SMM president James Peterson stated, "This is a very important grant for the museum and for the people of Minnesota, as it will provide an accessible and attractive forum for learning about the issues facing the state's natural resources now and in the future."

SMM

