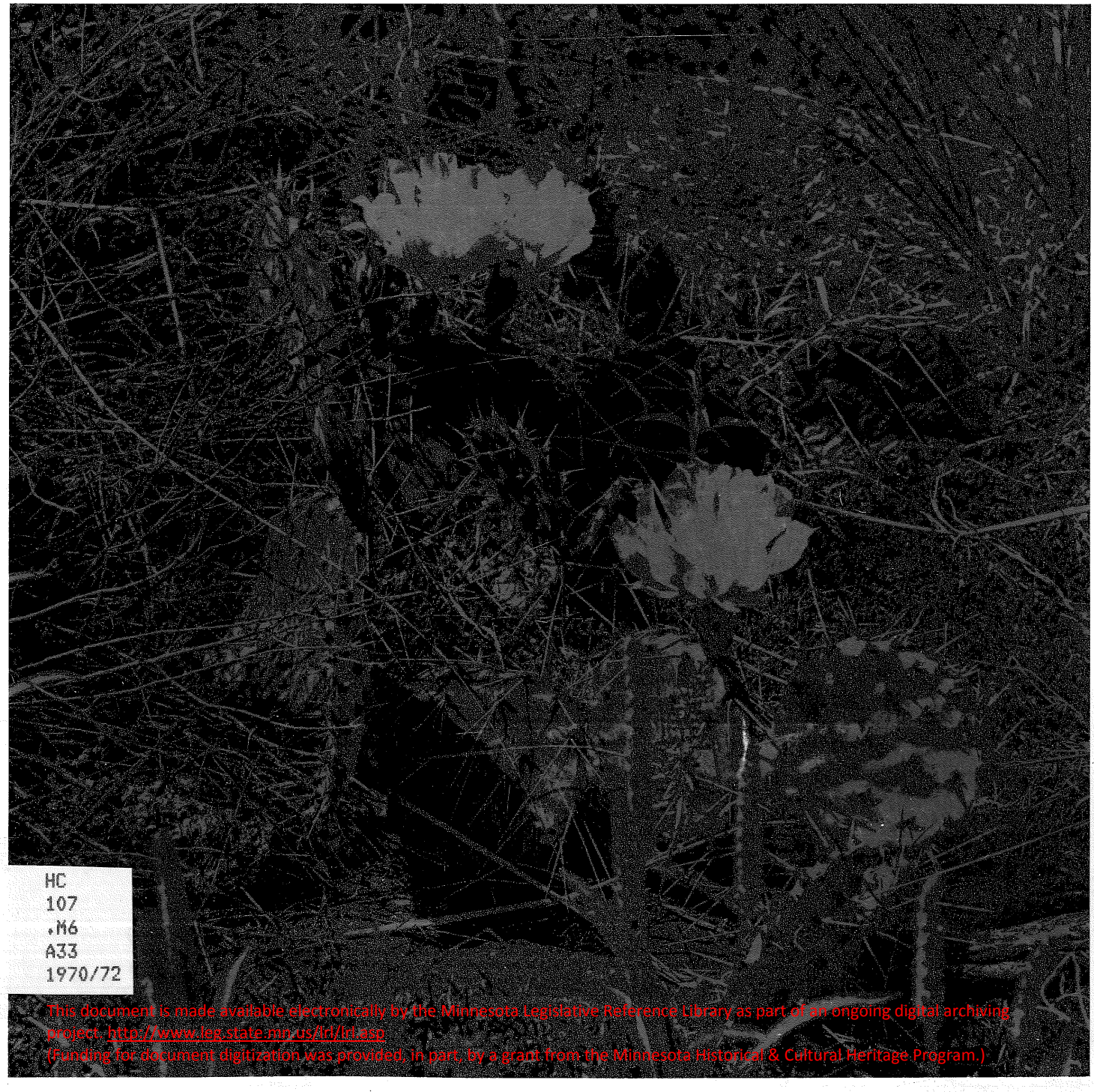
Biennial Report

July 1, 1970 / June 30, 1972

Minnesota Department of Natural Resources



MINNESOTA DEPARTMENT OF NATURAL RESOURCES

COMMISSIONER OF NATURAL RESOURCES - Robert L. Herbst

DEPUTY COMMISSIONER - Clarence B. Buckman

ASSISTANT COMMISSIONER (Administration) - Joseph N. Alexander

ASSISTANT COMMISSIONER (Planning) - Archie D. Chelseth

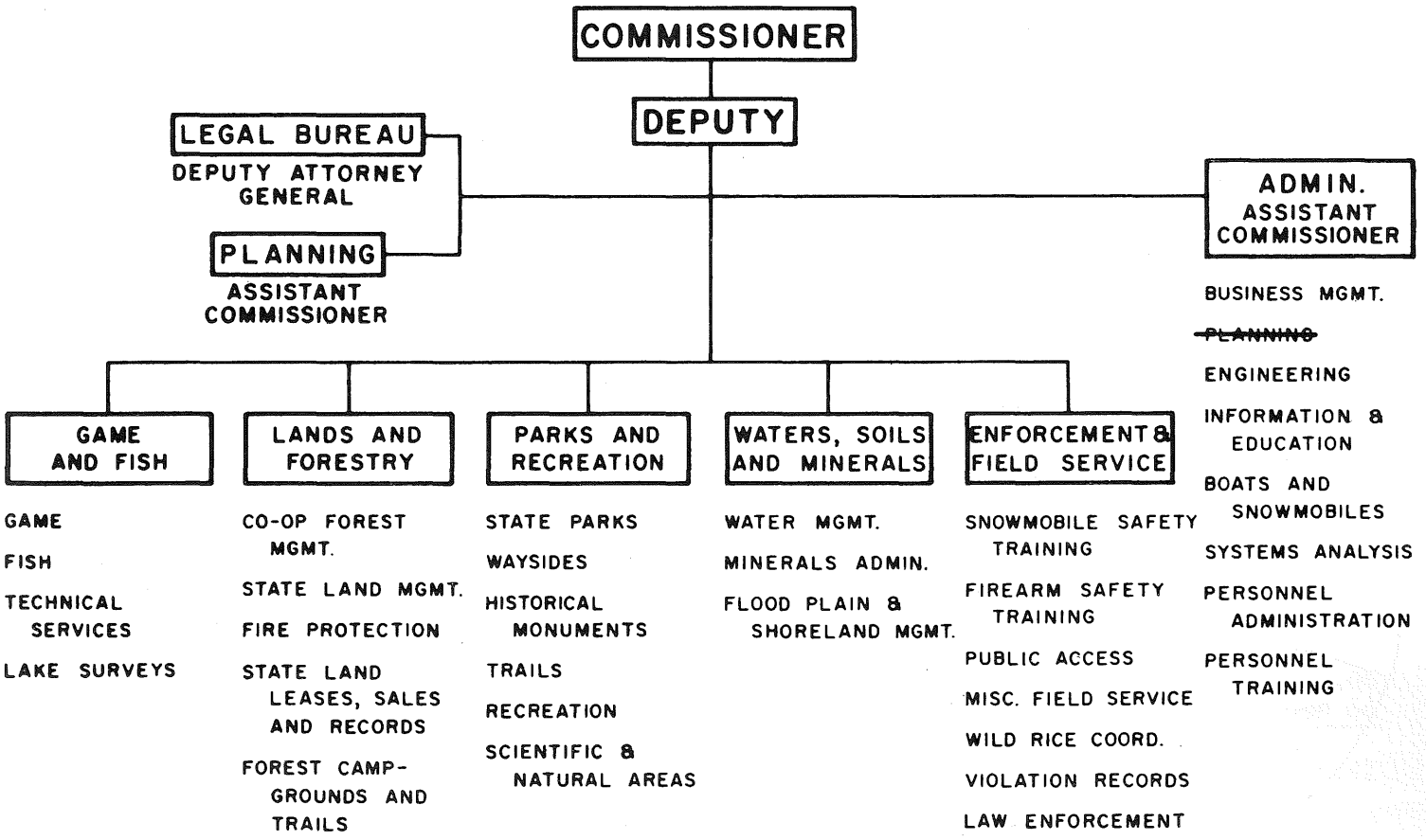
ENFORCEMENT & FIELD SERVICE - Donald Fultz, Chief Natural Resource Officer

DIVISION OF GAME & FISH - Milo Casey, Director

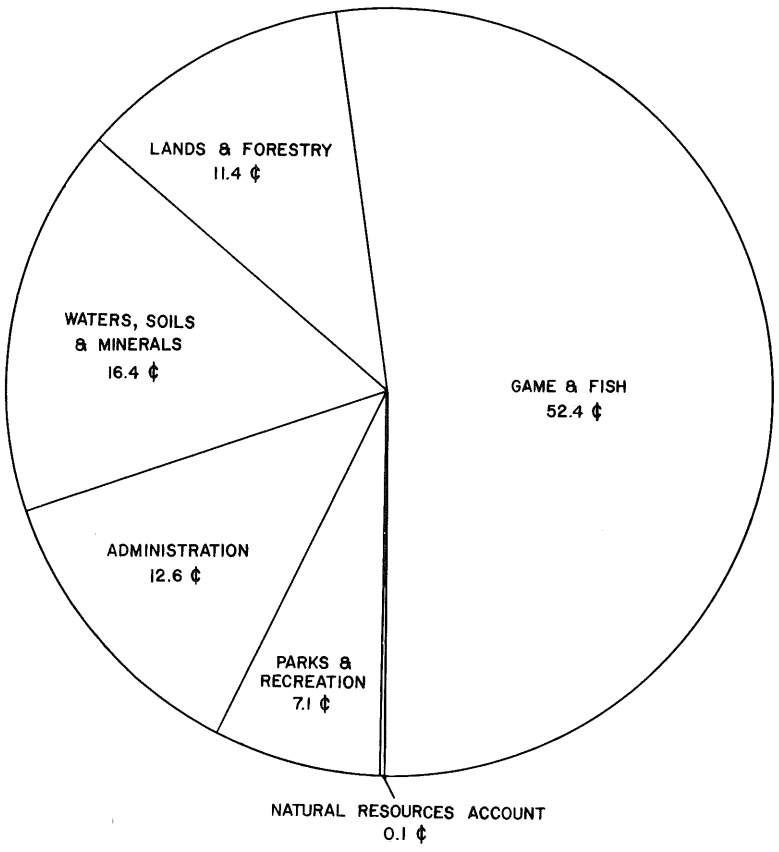
DIVISION OF LANDS & FORESTRY - William Aultfather, Director

DIVISION OF PARKS & RECREATION - U. W. Hella, Director

DIVISION OF WATERS, SOILS & MINERALS - Eugene R. Gere, Director



WHERE YOUR NATURAL RESOURCES DOLLAR COMES FROM

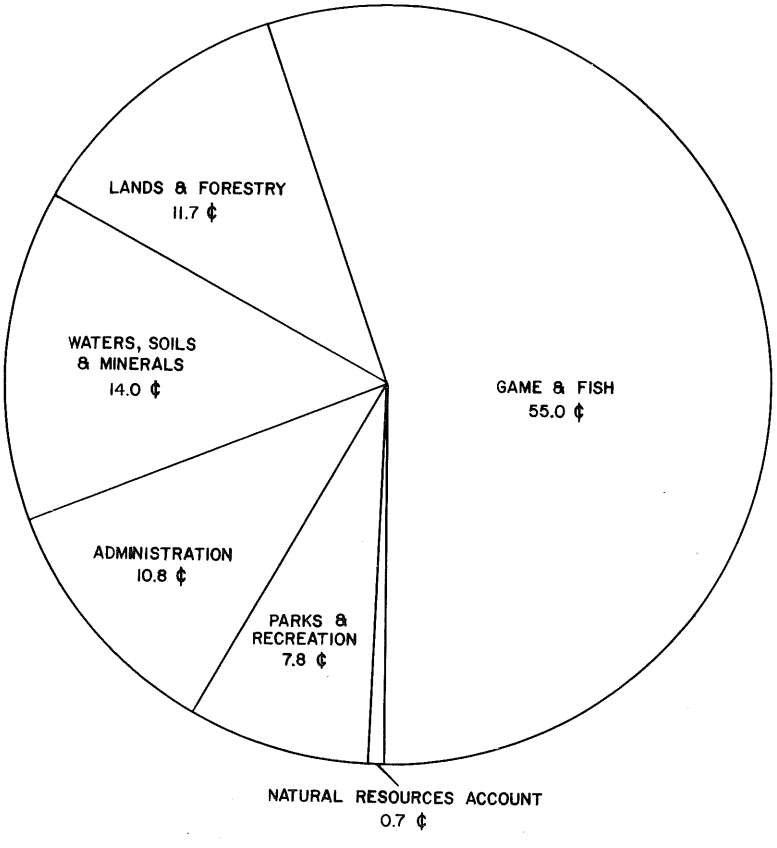


RECEIPTS JULY 1, 1969 - JUNE 30, 1970

INCOME BY DIVISION

Administration	$ 2,025,020.29*
Waters, Soils & Minerals	2,650,390.08
Lands & Forestry	1,843,975.18
Game & Fish	8,452,132.74
Parks & Recreation	1,137,655.65
Natural Resources	1,894.49
Total	$16,111,068.43

*Includes Land & Water Cons. - Fed. Aid $ 960,483.55



RECEIPTS JULY 1, 1970 - JUNE 30, 1971

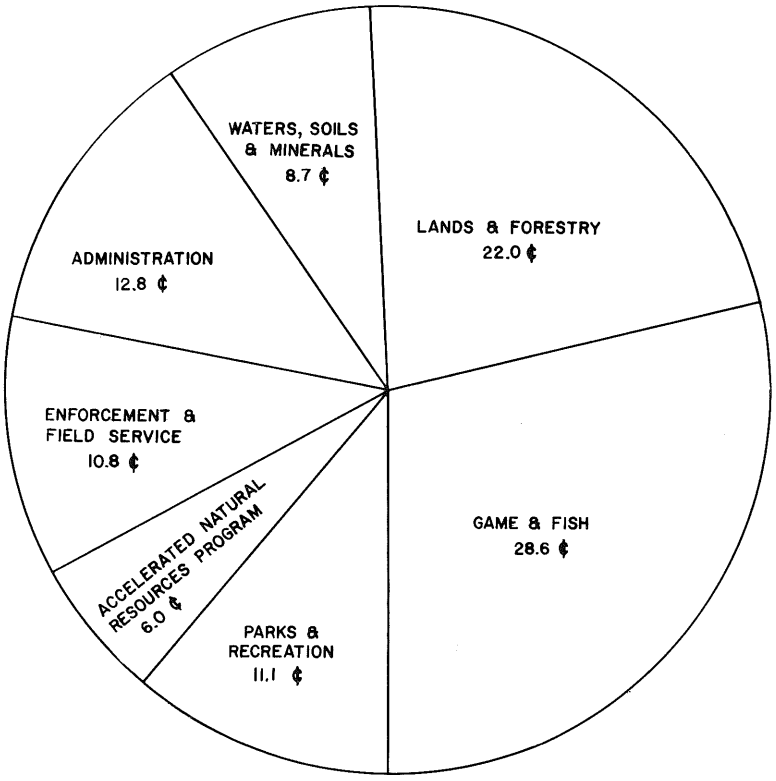
INCOME BY DIVISION

Administration	$ 1,976,105.32**
Waters, Soils & Minerals	2,564,692.61
Lands & Forestry	2,143,796.91
Game & Fish	10,073,396.95
Parks & Recreation	1,436,059.09
Natural Resources	135,076.91
Total	$18,329,127.79

**Includes Land & Water Cons. - Fed. Aid $ 369,954.86

WHERE YOUR NATURAL RESOURCES DOLLAR IS SPENT

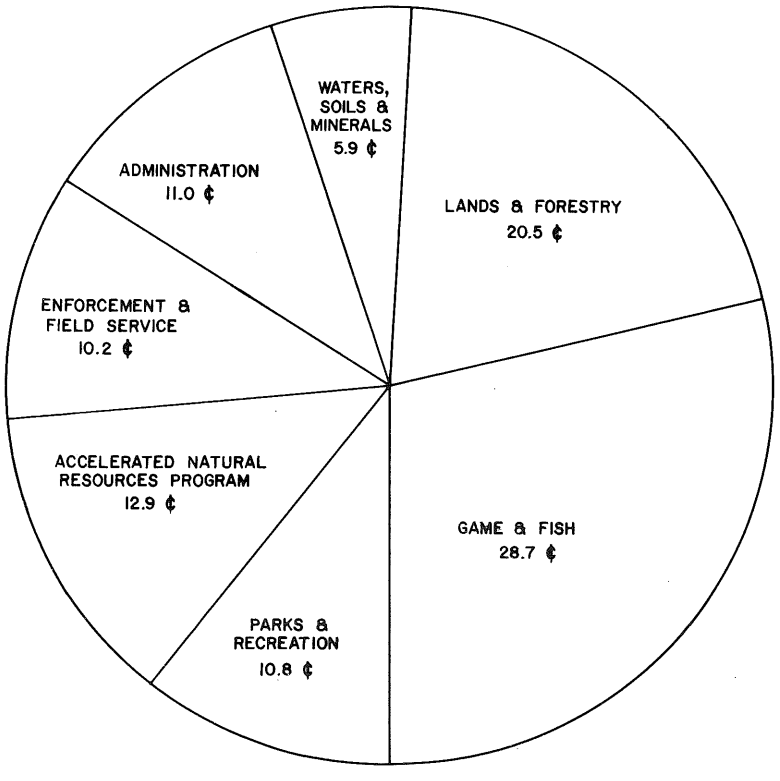
EXPENDITURES JULY 1, 1969 - JUNE 30, 1970



EXPENDITURES BY DIVISION

Administration	$ 2,613,898.93
Waters, Soils & Minerals	1,790,307.99
Lands & Forestry	4,505,304.96
Game & Fish	5,866,470.31
Parks & Recreation	2,285,384.48
Accelerated Nat. Res. Pro.	1,231,757.94
Enforcement & Field Service	2,215,734.84
Total	$20,508,859.45

EXPENDITURES JULY 1, 1970 - JUNE 30, 1971



EXPENDITURES BY DIVISION

Administration	$ 2,409,375.79
Waters, Soils & Minerals	1,289,635.67
Lands & Forestry	4,507,930.69
Game & Fish	6,308,256.53
Parks & Recreation	2,374,990.07
Accelerated Nat. Res. Pro.	2,838,666.06
Enforcement & Field Service	2,244,559.66
Total	$21,973,414.47

ADMINISTRATIVE DIVISION

In addition to the five operational Divisions in the Department, five service bureaus function under the Administrative Division: Business Management, Engineering, Information and Education, Planning and a Legal Bureau that is staff function to the Commissioner's Office. These services are indispensable to the departmental operation.

Bureau of Business Management

This Bureau provides administrative services to the Divisions and is responsible for the development of good business management throughout the Department. The bureau is organized into two sections: Finance -- responsible for the operation of the Department's accounting system, budget control, internal audits, game and fish license sales and accounting, and all other licenses and permits and preparation of payrolls; and Office Services -- responsible for the operation of a department-wide inventory control system, mail and messenger services, motor pool dispatching and related office services.

The imprest cash bank account system, established at Brainerd in the previous biennium, has been expanded to two additional Regional Headquarters; namely, Bemidji and Grand Rapids. The system provides for prompt payment of bills to local vendors. Invoices are paid by bank checks for utility bills, fuel for heating buildings, merchandise for sale at state parks, contract payments up to $100, and up to $50 for non-contract items. This has eliminated the processing of state warrants in the Central Office and payments to vendors have averaged ten days from the date of purchase. Because of prompt payments, we are now beginning to receive purchase discounts from vendors. To date 12,567 checks were issued--average of checks amounting to $50.

The Department of Natural Resources was one of six major departments selected to prepare a program budget for the coming biennium. Considerable time was spent by the Bureau in the development of a program format, which includes four major programs and 64 activities. Activity descriptions were prepared in the field by regional managers and reviewed in the Central Office by the activity managers. The program, in its final form, showed an estimated need of 63 million dollars for the biennium to carry out the work required for the various activities.

Personnel

The Personnel Unit is staffed to the Assistant Commissioner and is responsible for personnel policies, records and training, and labor relations.

Bureau of Engineering

The past biennium has seen the Bureau of Engineering staff of 46 office and field personnel pull together into a more diversified and capable team than at any previous time in the Bureau's 14 year history.

The diversification and capabilities are strongly indicated by projects such as a planning study of the Upper St. Croix River Valley and the planning, design and construction of the Hayes Lake Dam near Roseau.

The St. Croix Study encompasses 115,000 acres of land including two State Forests, one State Park and one proposed State Park. With the professional input from a Department planning team and the development of a new computer analysis technique, the Bureau guided the creation of the largest Department-wide program to date for state land and resource management and development. This project which will be completed in 1973 is indicative of the reorganization effort being established by the DNR to better manage state resources and improve services to the public.

Hayes Lake Dam at the construction end of the Bureau of Engineering spectrum is another project that has been in various stages of planning for several years. Sponsored by the Division of Parks & Recreation the dam will create an impoundment of approximately 187 acres, which will become the core for the total development of Hayes Lake State Park.

This project has had input from all Department Divisions which includes Water Resource Management, Sport Fishery and Habitat potential and Wildlife Habitat development. Provided with this background resource data, Bureau of Engineering then provided engineering expertise to complete the design and construction phases of this project. The $477,183.00 contracted cost of the Hayes Lake Dam makes this project the largest single construction project completed by the Bureau of Engineering.

In addition to these two specific projects, the Bureau completed 75 contract construction projects totaling $1,928,482.00.

In total, the Bureau of Engineering completed 960 projects, 259 Engineering; 135 Architectural, 82 Landscape Architectural; 269 Surveys and plats and 215 Graphics.

Bureau of Information and Education

Environmental Education -- Great progress was recorded during the biennium in development and implementation of a kindergarten through 12th Grade Environmental Education Curriculum in Minnesota schools, first mandated by the Legislature in 1969.

The environmental education consultant for the Bureau of Information and other staff members helped to implement an experimental curriculum in 12 pilot school districts during 1971. Working jointly with the Department of Education, the Bureau monitored the project and conducted several unique teacher-student workshops during the year, with more than 200 teachers trained. An evaluation conference was held in May, 1971 to determine the success of the project and allow teachers to make appropriate recommendations for modificaiton and revisions.

The Bureau of Information and Education also was instrumental in setting up an Advisory Task Force comprised of representatives from statewide environmental and conservation-oriented groups. This task force, established in 1970, evolved into an ad hoc environmental planning group in 1971, eventually leading to formation of the Governor's Environmental Education Council (comprised of citizens from all parts of the state and all walks of life) on which the Bureau is represented by its consultant. One of the primary purposes of the Council was to develop a State Plan for environmental education.

The Legislature late in 1971 appropriated to the DNR $125,000 for the biennium. These funds have been used to rewrite and publish the pilot materials based on teacher evaluation, and to develop mini-units to be integrated with previously developed materials.

Currently, more than 100 Minnesota school districts are involved in learning about the new, revised curricular materials and how to implement them. The new materials consist of 30 mini-units of instruction for grades kindergarten through six; single concept films and film-strips to supplement them; and a teacher-training package. Additional materials are currently under development, as is a "status and needs survey" of secondary grades.

A status and needs survey of school districts conducted by the Minnesota Environmental Education Council (MEEC) showed that 83 per cent of Minnesota districts wanted and needed environmental education programs--but only 21 per cent had budgeted funds for such programs in 1972. It also showed that 90 per cent of the districts wanted and needed better materials.

More than 3,500 Minnesota teachers have now been in-serviced on the new environmental education mini-units and by the end of the 1973 spring school team, 1,000 additional teachers will have taken the course and received materials for their schools. More than 120,000 youngsters will be learning from the new materials be the spring of 1973.

News Service--The Bureau of I & E reached radio and television stations, newspapers and magazines throughout the state via a wealth of interesting and informative news and photo releases and features. During the biennium, a total of 100 Weekly Newsletters containing more than 700 stories related to DNR activities and programs reached all media. Additionally, 200 special releases, many complemented by photographs, were sent to the news media.

Official Department Magazine-- As of January 1, 1971, in accordance with the Department's name change, The Conservation Volunteer became the Minnesota Volunteer. The mailing list was expanded from 50,000 to 65,000 copies as directed by the 1969 Legislature which mandated that 10,000 copies go to Minnesota public and parochial schools, and an additional 5,000 to the general public. Despite this generous increase, a backlog grew steadily through the waning months of 1971 and by the end of the year, more than 2,000 new names crowded the waiting list. Public response to the circulation increase, from school systems and citizens alike, was most appreciative and rewarding. Correspondence relating to the Volunteer alone averaged 600 pieces per month.

Audio-Visual Service--The addition of an audio-visual specialist to the Bureau of I & E staff has provided the means to beef up production of motion pictures, film-strips and slide series. I & E produced two films in 1972--a five-minute film for the environmental education program, and a seven-minute film based on Dick Dorer's poem "The Old Rail Fence." Four new slide sets were produced, bringing the total to 15 sets; and a 20-minute slide presentation on DNR was nearing completion. More than 40 filmstrips on natural resources topics were in circulation to the public on a loan basis during the biennium.

Film Loan Library--Three new films have been added to the DNR's Film Loan Library, which now lists 90 different titles. More than 2,300 films are loaned out annually, with more than 4,200 total showings to an estimated combined audience of more than 180,000 persons. The films are booked solid throughout the year to schools, sportsmen's clubs, environmental, church, social and civic groups, and other organizations.

Electronics Media Service--In August, 1971 the Bureau of I & E initiated an "Electronics Media Service" providing spot news and vital information around the clock to any radio station on the state phoning in to the answering equipment. More than 275 tapes (ranging from 30 seconds to 2 minutes)were prepared and placed in service during the biennium. An average of 13 radio stations per day have recorded and broadcast the tapes to the public. Numerous tapes were used by as many as 38 stations a day throughout Minnesota.

The radio effort was augmented in 1972 with the launching of "The North Star Story", a five-minute interview-type program prepared weekly and initially mailed to all 86 radio stations throughtout the state. A total of 62 radio stations have subscribed to the series and broadcast the program every week, covering the entire state.

Outdoor Safety--The Snowmobile Act signed by the Governor in June, 1971 made significant changes in laws governing registration and use of snowmobiles in Minnesota. The license fee was raised from $8 to $12; $2.00 for duplicate instead of $1.00; dealers fee raised to $37.50 from $25; no person under age of 18 may register a snowmobile; several changes made in law relating to operation of snowmobiles.

A boating safety promotion was launched in 1971 with more than 20,000 Minnesota residents responsing to the Bureau's "safety test". A safety decal was issued to those who passed the test.

A series of boat and water and snowmobile safety cartoons was devised and sent to newspapers throughout the state. In addition, the Bureau's outdoor safety specialist appeared on live television and radio programs and before numerous organizations to explain the DNR's outdoor safety campaign and its programs.

State Fair Exhibit--Bureau personnel again supervised the State Fair exhibits. Two new wildlife pools were constructed adjacent to the Natural Resources Building and met with tremendous public acceptance. The DNR's exhibits have always been one of the top Fair attractions, drawing more than 800,000 visitors throughout the exposition.

Photo Service--The Bureau also provided a comprehensive Photo Service for the Department. Its staff photographer took hundreds of photographs, many of which were aerial shots used as evidence in court-room litigations or to provide dramatic proof of the success of many DNR projects and activities. The Bureau also helped the various DNR divisions to produce brochures dealing with such matters as shoreland management, new trail systems and wildlife habitat improvement programs, snowmobile trail guides, and snowmobile and boat and water safety booklets containing laws, rules and regulations pertaining to those activities.

Bureau of Planning

State Comprehensive Outdoor Recreation Planning

A major study of Minnesota's outdoor recreation system, authorized by the 1969 legislature, was in progress through 1970, culminating in a report published in July 1971. The study, called "Project 80," included an inventory of areas of outstanding scenic, historic, or natural value; a classification of state-administered outdoor recreation areas; an analysis of existing and proposed state areas as to best use and ranking relative to other sites; and other information to guide future development of the state-administered outdoor recreation system.

A Land and Water Conservation Fund project for Outdoor Recreation Planning in Minnesota was approved on July 30, 1971, by the Bureau of Outdoor Recreation. The purpose of the project was to update the state's Outdoor Recreation Plan, which is required by the Bureau for participation in the LAWCON program.

Work on the new plan, to be submitted to BOR in 1974, began by outlining the material to be included, developing a work schedule, and assigning responsibilities.

Because of its magnitude, the inventory of recreation areas and facilities was undertaken first, commencing in the fall of 1971. Gathering the information on all federal, state, county, municipal and private areas continued through June 30,1972. Detailed records on more than 8100 recreation areas will be obtained. This information is being computerized and will be used to make a comparison with the demand for facilities, to determine what the requirements for additional facilities will be in the future.

Meanwhile, work on various sections of the plan has been underway. Drafts of the Introduction and State Characteristics chapters have been completed. Major portions of the chapters dealing with demand for outdoor recreation, and requirements for facilities have also been completed, including the delineation of the responsibilities of the various levels of goverments and the private sector in providing outdoor recreation opportunities. Discussion of certain problems which require special consideration has also been undertaken.

Work on a comprehensive state plan for the protection and development of recreation rivers is well underway, and this will be incorporated into the state outdoor recreation plan.

An advisory committee to assist DNR in formulating policy and actions for meeting outdoor recreation needs was formed and will meet quarterly. The committee is composed of representatives of governmental agencies, the academic community, interested organizations, and private citizens.

Environmental Review

Environmental review and coordination of its associated activity has greatly accelerated in the past biennium due to the widespread public concern for the environment and the resulting enactment of the National Environment Policy Act.

The ramifications of environmental review within the Department of Natural Resources were not felt until mid year of 1971. From that time the Bureau has played an ever increasing role to coordinate departmental review, and assist in the drafting of policy guidelines used in reviewing projects of a similar repetitious nature (i.e., highways, transmission systems, pipelines).

Environmental review has expanded from the commonly associated environmental impact statements or negative environmental declaration. Our Department considers the following type of projects worthy of a departmental review:

1) Highways (State and County State Aid)
2) Airport Expansion
3) Electrical Transmission Systems
4) Pipelines
5) Minnesota Pollution Control Agency permit applications
6) Corps of Engineers projects and application for permits

7) Soil Conservation Service Watershed Plans
8) R C & D Projects

To assist in the coordination of review and preparation of a consolidated Departmental reply; the Assistant Commissioner of Planning utilizes a Planning and Environmental Review Team comprised of high echelon, decision-making representatives from each Division. From here, either final department decisions are made as upon highly complex matters, department advice is forwarded to the Commissioner's office for the absolute final decision.

Special Projects

In addition to the major responsibilities of comprehensive planning for outdoor recreation and water resources, environmental review and federal grants-in-aid, the Bureau is assigned various special projects. Because of their comprehensive nature, i.e., involving several divisions, or in some cases other agencies, these have been the responsibility of the Bureau.

Some of these special projects and a brief description of each is given below:

(1) St. Croix River (Upper) - To coordinate efforts to complete a resource management plan that will satisfy the federal Scenic Riverway Program and provide supplemental state programs for the adjacent public lands.

(2) Minnesota Power and Light Recreation Plan - to assist a private corporation in devising protection and public recreational development on a large land and water area under their ownership.

(3) National Wild and Scenic Rivers Program - provides liaison between state and federal Bureau of Outdoor Recreation on studies, proposals, etc.

(4) Voyageurs National Park - assist Minnesota Resources Commission and State Planning Agency in providing land classifications and other information.

(5) Minnesota Experimental City - provide liaison with the MXC authority and department on environmental review.

(6) Federal Legislative Review - review and distribute appropriate federal legislative matter.

(7) State Planning - manintain liaison with the State Planning Agency on studies and plans and provide comments on certain responses to the federal agencies on federal matters.

(8) Operational Planning and Review - provide planning assistance to operating divisions and review project proposals such as public access, park and forest land acquisition, etc.

(9) Recreation User Survey - was conducted at 49 state parks to obtain geographic use patterns, data on visitors, activities and attitudes on existing recreational facilities.

(10) River Basin Commissions - participated in work groups as Minnesota's representative for recreation planning on the Souris Red Rainy River Basins Commission, Great Lakes Basin Commission, Missouri Basin Inter-Agency Committee and Upper Mississippi River Comprehensive Basin Study Coordinating Committee.

Land & Water Conservation Fund

State Agencies

Projects Submitted and/or Approved - 87 totalling $ 1,820,300

Acquisition - 27 totalling $ 455,800
Development - 60 " 1,364,500

Reimbursements Received - $ 501,400

Acquisition - $ 333,100
Development - $ 168,300

Local Units

Projects Submitted and/or Approved - 82 totalling $ 2,764,300

Acquisition - 32 totalling $ 1,350,300
Development - 50 " 1,414,000

Reimbursements Received - $ 728,700

Acquisition - $ 331,600
Development - $ 397,100

Legal

Legal matters of the Department are handled by a Deputy Attorney General and his assistants appointed by the State Attorney General. Among the services provided during the biennium were the following:

Litigation in District Court, 100 cases, of which 84 were closed and remainder pending at end of biennium; other Federal, Supreme, District and Municipal Court matters totaled 32 cases, with ten closed.

Land acquisition for Game & Fish, Lands & Forestry, Parks and Recreation- 406 tracts acquired (303 for game and fish wetlands, spawning areas, access to lakes); 87 for Parks & Recreation; 16 for Lands & Forestry.

The Legal Bureau also collected 44 of 73 delinquent timber accounts ($5,413.99); completed 20 of 38 land exchanges; closed 29 of 30 legislative claims; approved as to form and execution 3,929 documents for DNR Divisions.

There are presently a total of 323 mineral leases in effect covering 89,673 acres. Rents and royalties received under these leases during the biennium amounted to $4,873,908. The Legal Bureau furnished legal assistance in connection with these leases and related assignments and other agreements, as well as approving them as to form and execution.

Other water and water managment activities which required legal assistance included matters relating to dam construction, operation, transfer, repair, and grants in aid; lake water levels; drainage of lands; obstruction of public waters; appropriation of water for municipal, agricultural and industrial purposes; utility crossing of public waters; aquifer gas storage; and other miscellaneous matters.

The Legal Bureau staff is providing legal service in connection with the following: Land transfer matters relating to Voyageurs National Park; assistance to and appearances before legislative and other interim study commissions and committees ranging from the Constitutional Revision Commission to the Senate Natural Resources Subcommittee on Severed Minerals; assistance to DNR and other agencies in the preparation of pamphlets containing the laws administered by the agency, such as the Game and Fish handbook of laws; and the snowmobile, and watercraft laws and regulations.

The staff also provided legal service to the State Soil and Water Conservation Commission, the Water Resources Board, the Land Exchange Commission, the Land Exchange Review Board, and the State Executive Council.

License Center

The License Center has updated its methods during the past biennium by acquiring four new keypunch machines that may also be used as verifiers so that the operators of these machines may be more productive and versatile in the system.

A microfieche system has been installed as an aid in the retrieval of license information by numeric or alphabetical sequence. This has reduced the space needed for cumbersome books of record and provides our information clerks with facilities to do other work at their location when they are not searching records.

Six full time positions were reallocated to other bureaus within the Department and unlimited intermittent clerical positions were provided for peak periods of boat and snowmobile license renewal.

Approximately 160,000 new snowmobiles, 222,600 boats, and 50,293 canoes, sailboats and kayaks were licensed during the biennium.

People may also purchase all individual hunting, and fishing licenses and park permits at the License Center.

ENFORCEMENT AND FIELD SERVICE

During the biennium, Conservation Officers of the Division of Enforcement and Field Service effected 13,273 arrests, resulting in fines of $272,402. In addition, 303 juveniles were apprehended.

During the biennium, a public auction was held at which 1,000 confiscated furs were sold for $7,978, and 380 items of confiscated hunting and fishing equipment sold for $11,650.

Safety Training

The Safety Training Section initiated a new record keeping system which will keep supervisors better advised on progress of the programs. Classes were sponsored by sportsmen's clubs, youth organizations, schools, police and fire departments, park and recreation departments, civic clubs and veterans organizations, and interested individuals. Supplies were distributed by Conservation Officers who also were active in teaching classes on wildlife and snowmobile laws. The coordinated efforts of members of the Enforcement Division and citizen volunteer instructors resulted in training 51,363 youths in Firearms Safety and 58,878 in Snowmobile Safety.

Four Safety Training Specialists held 89 instructor training sessions, revised the snowmobile student and instructor manuals, developed training aids and spoke to clubs on firearms and snowmobile safety. They also assisted with the distribution of training materials and the field administration of the training programs.

Additional slide projectors were purchased so that each Conservation Officer has one, complete with a slide set, available for instructor use.

Public Access

Policing and maintenance of public access sites is a most critical segment of the access program. We have made much progress in this respect at a minimal cost. Complaints in regard to public access sites have been rare indeed the last two years.

Future goals will be to acquire public access sites to all lakes where there is a definite need. Priority lists have been established in each county for acquisition of public access sites to lakes for fishermen and hunters. This is an on-going program and Conservation Officers are always on the lookout for land that would be available for purchase for access sites. Quality development and maintenance will be stressed.

Listed below is a report on the activities and costs for the biennium:

1971-1972

94 Contracts for development awarded

Allotment 10	$52,791.00
Allotment 38	$48,333.00
TOTAL	$101,124.00

300 Maintenance contracts awarded
428 Lakes maintained by individual contracts
89 Lakes maintained by contracts with 9 counties

Amount Spent - Private Contracts	$27,882.00
Amount Spent - County Contracts	$ 8,134.00
Emergency Repairs of State Accesses	$10,766.00

10 Tracts proposed and approved for acquisition at present
8 Tracts under option for purchase
22 Tracts purchased - Cost $19,511.00

Public Access Sites

Total Public Access Sites.....1,629

1. Department of Natural Resources..... 892
   a. Enforcement and Field Service.... 640
   b. Game and Fish..... 56
   c. Lands and Forestry..... 179
   d. Parks and Recreation..... 17
2. Other Public Agencies..... 737
   a. Minnesota Highway Department..... 60
   b. U. S. Forestry Service..... 147
   c. U. S. Corps of Engineers..... 8
   d. U. S. Fish & Wildlife Service.... 20
   e. County..... 298
   f. Township..... 113
   g. Village..... 59
   h. Other..... 32

GAME AND FISH

Section of Fisheries

The task of maintaining quality angling and attending to other fishing related interests on Minnesota's 2.6 million acres of fishing waters requires a large and well-distributed field force. To satisfy the demands of 1.8 million anglers, the Section of Fisheries must produce and distribute several hundred million fish and operate a large-scale rough-fish control and habitat protection and improvement program. The Division of Game and Fish currently has in operation:

17	Walleye Spawning Stations
9	Muskellunge Spawning Stations
15	Sucker Spawning Stations
14	Walleye Hatcheries - 12 of which also hatch sucker eggs for musky food production, and two also hatch musky eggs.
2	Musky Hatcheries
5	Trout Hatching and Rearing Stations
190	Walleye Rearing Ponds
140	Controlled Northern Pike Spawning Areas
150	Fish Trapping and Rescue Sites (predominatly for northern pike production)
15	Musky Rearing Ponds

Rough fish removal is extended to 350 lakes through location and supervision of contract fishermen, and State crew removal activities including seining, hoop netting, and operation of permanent trapping sites.

Bass and panfish are assisted through posting and protecting strategic spawning areas and some fingerling stocking. These species are the primary beneficiaies of the rough-fish control efforts. Bass fingerling stocking is also done on a small scale.

To be apprised of the current status of fish populations in order to program the fish stocking and other management effort, checks of natural reproduction are made on about 180 lakes, and comprehensive biological surveys conducted on about 250 others.

As a contribution to the public education in natural resources affairs, fisheries displays are exhibited annually in 36 county fairs or other public expositions, including the State Fair.

Research is carried on as an intergral part of the fishery program. It provides basic information on fish and their habits, develops new methods and techniques for meeting fishery problems and evaluates the effectiveness of management practices.

Fish Stocking

Each year, fish from the State hatcheries, rearing ponds, and rescue sites are stocked in some 1,300 public fishing lakes where facilities for natural reproduction of certain species are lacking, or where current local conditions have been unfavorable. About 175 of these are trout lakes which are stocked each year, in addition to about 290 trout streams.

A total of 365,852,000 fish were stocked in the two-year period. While most of these fish were produced in State rearing facilities, there was some augmentation from Federal hatcheries--most significant the annual contribution of 225,000 lake trout yearlings for stocking in Lake Superior.

Listed below are the numbers of fish by species and sizes:

Fish Stocking 1970-1971

Species	Adults	Yearlings	Fingerlings	Fry
Bluegill	25,571	18,479	162,600	
Catfish			240,800	
Crappies	114,135	331,500		
Largemouth Bass	2,637	15,812	1,020,200	21,000
Smallmouth Bass			46,130	
Muskellunge		25,430	1,050	40,000
Northern Pike	68,516	493,528	5,459,100	2,644,000
Sunfish	140,632	127,210		
Walleyes	11,104	107,730	9,051,000	341,780,000
Rainbow Trout	125	147,087	681,440	19,600
Brown Trout	170	340,468	29,920	
Brook Trout	183	151,781	752,860	
Lake Trout		737,163	439,636	
Coho Salmon		330,625	92,790	
Splake	153		3,843	
Suckers		350	9,120	
Bullheads	132,915	22,800		
Yellow Perch	9,611	1,210		
Totals --	505,752	2,851,173	17,990,489	344,504,600

Rough Fish Removal

Rough-fish control effort extended to approximately 350 lakes each year of the biennium and included seining, hoop netting, operation of 60 to 70 trapping sites, and the temporary installation of 30 to 35 shut-offs. The latter are intended to deny access of rough fish to spawning areas and lesser infected waters. Total production from these efforts amounted to approximately 15 million pounds of fish in the two years. Most of these were carp and bullheads, but many other undesirable species were included. About 68 per cent of the tonnage was taken by commercial fishermen operating under contract to the State.

Listed below are the amounts of fish removed in each fiscal year by pounds and species.

Species	1970-71	1971-72
Carp	3,225,712	2,184,087
Bullheads	2,585,141	2,494,491
Buffalofish	804,633	1,060,993
Sheepshead	298,779	282,315
Suckers	213,065	175,426
Perch	117,548	31,547
White Bass	29,500	62,980
Dogfish	29,672	9,036
Mullets	2,400	--
Coho Salmon	1,962	165
Quillback	1,800	--
Turtles	--	40
Fathead Minnows	40	500
Bowfin	--	240
Green-cross Sunfish	--	503
Garfish	100	3
Goldeyes	--	--
Redhorse	198	686
Madtom	--	--
Totals --	7,310,550	6,303,012

Licensed Commercial Fishing

Commercial fisheries operate under provisions of the Statutes on the international boundary waters, Lake Superior, and the inter-state waters of Lake St. Croix and the Mississippi River. These operations are closely supervised and regulated by the Department, to allow utilization of commercially valuable food fish at a level compatible with sport fishing interests.

Listed below are the catch in pounds by species and the approximate value of the catch to the fishermen in the different waters where commercial fisheries operate.

Lake Superior

	1970		1971	
Species	Pounds	Value	Pounds	Value
Herring	185,133	$18,510.00	170,704	$17,070.00
Ciscoes	38,921	4,671.00	59,987	7,198.00
Smelt	1,038,397	31,152.00	1,741,442	52,243.00
Menominees	948	95.00	2,079	208.00
Burbot	104		344	
Suckers	19,441	194.00	8,531	85.00
*Lake Trout	19,584	12,730.00	21,240	13,806.00
*Whitefish	3,994	1,997.00	3,766	1,883.00
Totals --	1,306,522	$69,349.00	2,008,093	$92,493.00

* Taken during assessment netting operations under special permit and sold on the market.

Minnesota - Wisconsin Boundary Waters

Species	1970 Pounds	1970 Value	1971 Pounds	1971 Value
Carp	259,605	$7,788.14	211,093	$6,332.79
Buffalofish	69,504	10,425.60	72,684	7,268.40
Sheepshead	33,996	1,699.78	29,208	2,336.64
Catfish	31,736	9,520.95	21,509	6,452.70
Bullheads	5,054	505.45	2,558	255.75
Suckers	431	8.62	619	18.59
Quillback	796	15.92	508	15.24
Mooneyes & Goldeyes	151		114	
Garfish	4,086	122.58	1,000	20.00
Bowfin	1,657	33.14	138	
Totals --	407,016	$30,120.18	339,431	$22,700.11

Lake of the Woods

Species	1970 Pounds	1970 Value	1971 Pounds	1971 Value
Yellow Pike	100,785	$43,337.55	129,435	$54,362.70
Saugers	16,956	3,391.20	16,638	3,327.60
Northern Pike	57,692	5,769.20	63,413	6,975.43
*Tullibees	688,758	23,826.95	619,197	21,667.46
Whitefish	32	12.48	106	33.92
Perch	12,143	1,457.16	5,619	674.28
*Burbot	264,350	8,541.38	221,883	7,247.93
Suckers	110,507	2,146.44	89,467	1,789.34
Bullheads	352	42.24	302	18.12
Quillback	8		8	
Goldeyes	2		2	
Redhorse				
Totals --	1,251,585	$88,524.60	1,146,070	$96,096.78

*Includes 1,317 pounds of tullibees and 129,329 pounds of burbot taken in 1970 and 888 pounds of tullibees and 103,595 pounds of burbot taken in 1971 under permit netting.

Rainy Lake

Species	1970 Pounds	1970 Value	1971 Pounds	1971 Value
Yellow Pike	3,913	$1,760.85	9,670	$5,028.40
Sauger	10	1.50		
Northern Pike	3,131	469.65	4,040	484.80
Tullibees	5,644	197.54	2,301	80.54
Whitefish	17,546	4,912.88	5,742	1,435.50
Perch	40	4.00	3	.45
Burbot	4,718	165.13	3,076	107.66
Suckers	7,342		6,454	129.08
Bullheads				
Quillback				
Goldeyes				
Redhorse	1,218			
Totals --	43,562	$7,511.55	31,286	$7,266.43

Namakan Lake

Species	1970 Pounds	1970 Value	1971 Pounds	1971 Value
Yellow Pike				
Saugers				
Northern Pike				
Tullibees	1,465	$43.95	2,225	$77.88
Whitefish	5,199	1,611.69	6,435	1,930.50
Perch				
Burbot	330	11.55	1,520	53.20
Suckers	695	13.90	2,715	54.30
Bullheads				
Quillback				
Goldeyes				
Redhorse				
Totals --	7,689	$1,681.09	12,895	$2,115.88

Habitat Improvement

Much of the fish management program involves modification of the physical character of lake basins and streams to improve conditions and raise the carrying capacity for game fish. Among the features of the program are the following operations:

Stream Improvement:

This work was performed on trout streams to prevent bank erosion and siltation, improve water depth and temperature, provide more cover, and improve spawning facilities. It involved acquisition of easements from landowners for public fishing and access of State construction crews, fencing of banks against grazing, tree planting and installation of a variety of channel devices, to control flow and provide cover. Listed below are the streams which received attention in this biennium.

Project Name	County	Length of Stream(Feet) Benefited
Trout Run Creek	Fillmore	79,200
Gribben Creek	Fillmore	22,120
N. Branch Creek	Fillmore	21,120
S. Branch Creek	Fillmore	18,480
Camp Creek	Fillmore	2,640
Duschee Creek	Fillmore	46,992
Hay Creek	Goodhue	18,480
Beaver Creek	Winona & Wabasha	23,760
Rush Creek	Winona	10,560
Bee Creek	Houston	7,920
Badger Creek	Houston	30,624
E. Beaver Creek	Houston	20,064
So. Fork Crooked Creek	Houston	2,640
Kabekona River	Hubbard	9,090
Blackhoof River	Carlton	18,645
Knife River	St. Louis	311,520
French River	St. Louis	18,480
Lester River	St. Louis	23,760
Sucker River	St. Louis	21,120
Hockamin Creek	Lake	10,650
Little Isabella River	Lake	2,500
Sawmill Creek	Lake	3,200
W. Branch Split Rock	Lake	6,300
Stewart River	Lake	1,440
Cutface Creek	Cook	2,300
Cascade River	Cook	11,500
Fall River	Cook	200
Gauthier Creek	Cook	850
Indian Camp Creek	Cook	1,040
Kadunce Creek	Cook	2,435
Six Mile Creek	Cook	7,920
15 Streams in Pine County	Pine	112 Miles
46 Streams	11 Counties	1,348,910 feet (256 miles)

Lake Rehabilitation:

Certain waters which contain overpopulations of undesirable species have been treated with fish toxicants for the total removal of all fish, and then restocked for a productive fish population structure. In waters dominated by rough fish, this procedure is followed by natural regeneration of the beds of rooted aquatic vegetation and clearing of the water.

In waters managed for stream trout, chemical rehabilitation is necessary initially and must be repeated on about a ten-year frequency to maintain trout fishing. Listed below are the waters treated during the biennium:

Project	County	Size in Acres
Townline Lake	Aitkin	33
Little Long Lake	Becker	11
Rebecca Lake	Hennepin	254
Cliff Lake	Lake	46
Divide Lake	Lake	59
Hogback Lake	Lake	41
Found Lake	Lake	60
Carrot Lake	Cook	28
North Shady Lake	Cook	35
Clear & Mud Lakes	Meeker	560
Bass Lake	Otter Tail	26
12 Lakes	7 Counties	1,153 acres

Northern Pike Spawning Area Construction:

In locations where intensive lakeside residential development has destroyed natural spawning areas for northern pike, reproduction has been assured with the construction of controlled spawning areas. These are low areas in upland water courses constructed with a dyke and control structure which permits retention of run-off water. Introduced brood stock spawn in the flooded areas and the water elevation is maintained until the progeny are large enough to migrate.

Eight of these controlled spawning areas were constructed during the biennium at the following locations:

Projects	County	Size in Acres
Turtle Lake	Becker	3
Big Stone Lake	Big Stone	3
Pine Mountain Lake	Cass	60
Webb Lake	Cass	70
South Center Lake	Chisago	5
Whiskey Creek	Crow Wing	50
Windigo Lake	Itasca	3
Howard Lake	Wright	16
8 Areas	7 Counties	210 acres

Miscellaneous Projects:

Other projects completed during the reporting period were the construction of artificial walleye spawning beds on three lakes where the lack of proper spawning bottom limits walleye reproduction to unsatisfactory levels. Fish barriers were constructed on four lakes to prevent the immigration of undesirable species, and one permanent fish trap was constructed to enhance control of carp on another important fishing lake chain.

Land Acquisition:

A total of 39 tracts of land comprising 492.4 acres, were purchased for fish management purposes as follows:

* Trout Stream Improvement -- 21 tracts -- easements acquired for access of fishermen and State fisheries crews and protection against bad land use.
* Northern Pike Spawning Areas -- 12 Tracts
* Fish Trapping Sites -- Two Tracts
* Fish Barrier Sites -- One Tract
* Access Site -- One Tract
* Building Site -- One Tract
* Dam Site -- One Tract

Capital Improvements:

* A new headquarters building was constructed at Hutchinson to serve as the Regional and Area Fisheries headquarters and a net-construction center and warehouse for the statewide fisheries activities.

* The old fisheries office building at Hutchinson was moved to Montrose and improved to serve as an area headquarters there.

* A surplus Forestry building was moved to the Bemidji rearing pond property and improved to function as garage, shop and storage facility for the Bemidji Area Fisheries Headquarters.

* A new walleye hatchery with a capacity for 200,000,000 eggs was constructed on the Pike River at Tower to serve walleye lakes of the northeastern counties.

* A new area headquarters was constructed at Grand Marais in conjunction with the Section of Game and Division of Forestry.

* Three large State-owned, drainable walleye rearing ponds were reconstructed to eliminate certain design faults and deterioration that have affected production through the many years of operation. These were the 21-acre pond at Big Stone Lake, Big Stone County; the 40-acre Cove Bay Pond at Lake Mille Lacs; and the 27-acre Blair Pond in Douglas County.

Surveys:

Stream surveys to determine the status of standing fish populations and existing stream conditions were completed during the reporting period on 36 trout streams which total 305 miles.

Lake surveys were completed on 386 lakes. These surveys provide the fish manager with up-to-date information on the physical, chemical, and biological conditions in the fishing lakes and reveal the current status of the fish stocks. Continuous survey effort is necessary in each of the management areas to provide the information necessary for proper distribution of the management effort.

Fisheries Research

During the biennium, the fisheries research program covered a wide range of studies designed to support the fish management program. Approximately 90 per cent of the research program is financed in part by Federal funding. There were included two studies on basic problems associated with pond rearing of walleyes, 10 studies involving the warm-water species, and eight studies dealing with trout and salmon. In addition, three studies performed by the University of Minnesota under contract were administered. Eleven reports covering research findings were published and four reports are now in preparation.

Information from completed and ongoing research included:

* Gudielines and materials for recommendations for controlling filamentous algae in walleye rearing ponds.

* An evaluation of the walleye fingerling stocking in northeastern Minnesota lakes.

* A creel census on Lake of the Woods, which gave the first quantitative estimate of the anglers' walleye catch. It was found to be about three times that of the commercial fishery.

* A publication for public distribution which provides information on the rearing of suckers for bait purposes.

* An improvement in walleye egg fertilizing techniques which substantially improves the success in walleye hatching stations.

* An evaluation of winter fishing pressure on lake trout which indicated a need for reducing the catch.

* Data which revealed differences among our three species of bullheads in movement and vulnerability to trapping, which will lead to more efficient and effective control of bullhead populations.

* A demonstration of the increase in walleye populations which could be achieved through control of sucker populations in certain lakes.

* The development of a biological water filter, which will permit a high degree of water re-use in trout rearing. This will allow greater utilization of available water supplies.

* Development of methods for selection of trout brood stock for hatchery use, which will permit the upgrading of trout produced for stocking.

Research Reports Published:

Dobie, John, 1972. Rearing suckers for bait in Minnesota. Section of Fisheries Investigational Report No. 256.

Johnson, Fritz H., 1971. Survival of stocked walleye fingerlings in northern Minnesota lakes, as estimated from the age-composition of experimental gill net catches. Section of Fisheries Investigational Report No. 314.

Johnson, Fritz H., 1971. Numerical abundance, sex ratios, and size-age composition of the walleye spawning run at Little Cut Foot Sioux Lake, Minnesota 1942-1969 with data on fecundity and incidence of Lymphocystis. Section of Fisheries Investigational Report No. 315.

Johnson, Fritz H. and John G. Hale, 1970. Inter-relationships between walleye and smallmouth bass in northeastern Minnesota lakes. Section of Fisheries Investigational Report No. 309.

Johnson, Fritz and Merle Johnson, 1971. Characteristics of the 1957-58 and 1939 sport fishery of Lake Winnibigoshish and connecting water, with special emphasis on the walleye population and catch. Section of Fisheries Investigational Report No. 312.

Johnson, Merle W., 1971. Angling pressure on five Minnesota lake trout lakes. Section of Fisheries Investigational Report No. 318.

Maloney, John E., 1971. Experimental control of Neascus in Pleasant Lake, Crow Wing County. Section of Fisheries Investigational Report No. 316.

Olson, Donald E., 1971. Improved methods of artificial fertilization of walleye eggs. Section of Fisheries Investigational Report No. 310.

Schupp, Dennis, 1972. The walleye fishery of Leech Lake, Minnesota. Section of Fisheries Investigational Report No. 317.

Miscellaneous Reports

Report on Lake of the Woods Fishery for: The Lake of the Woods and Rainy Lake Commission Report to the 1971 Legislature.

Using Winterkill to Advantage by W. J. Scidmore in: A symposium on the Management of Midwestern Winterkill Lakes, Special Publication, North-Central Division of the American Fisheries Society, 1971.

Investigations Completed -- Reports in Preparation

Dobie, John -- Experimental Pond Studies

Hassinger, R., J. G. Hale, D. W. Woods -- Steelhead of the Minnesota North Shore of Lake Superior

Newburg, Huon -- Handbook for Direct-Current Electrofishing

Schupp, Dennis -- The Sport Fishery of Lake of the Woods

Forest-Game Management

Deer hunting quality and opportunity continued to decline during this biennium. Unusually heavy snowfall nearly every winter since 1965 and a maturing forest within the primary deer range resulted in a closure of the firearms deer season in 1971. Action was initiated during this biennium to improve hunting conditions for the 1972 season.

The 1971 state legislature provided the Department of Natural Resources with the authority to limit hunters and set up a more flexible season which will increase recreational opportunity and improve hunting quality.

A new firearms deer season was announced for 1972 that allowed the hunter to design his own hunt. He could choose any three consecutive days from November 1-15 or any five consecutive days from November 16-30. This framework was designed to spread out hunting pressure, reduce the harvest rate, improve hunting quality and give hunters a choice of hunting dates and weather conditions.

Game managers in northern Minnesota worked with foresters in the development of a game habitat management plan. The goal of this plan is to aid the Division of Game and Fish in the planning of forest-game wildlife projects on all lands within a forest district, optimize the benefits of commercial timber sales for game habitat, plan projects specifically designed to improve wildlife habitat, protect critical wildlife areas and to utilize nonproductive forest lands for wildlife management.

On May 28, 1971, Governor Anderson signed into law a bill granting authority to the Department of Natural Resources to hold a moose hunt in Minnesota in either 1971 or 1972. This hunt was held during the fall of 1971 and 400 party permits of four hunters per party (1600 hunters) were issued. These hunters were allowed to take one moose per party. The moose hunting season was a four week split season which was open October 2-17 and December 4-19, 1971. Licensed hunters were allowed to hunt for as long as required, within this framework, to take an animal.

During this first moose hunting season since 1922 the 400 parties harvested 374 moose. Males made up 65.8 percent of the harvest and adult bulls made up 63.6 percent.

Hunters assisted by collecting blood samples and other body tissues. These biological samples have been evaluated to determine moose physiology, reproduction, parasitology, disease, food habits and age structure of the harvest.

Wildlife Land Acquisition and Management

Acquisition and development of wildlife lands under the "Save Minnesota's Wildlife Lands" program continued to progress. A total of 242 tracts of wildlife lands, including wetlands, comprising 23,460.71 acres, was acquired including eight easements. The total cost of this acquisition was

1,529,518.40. The acquired tracts were located on 123 wildlife management areas in 48 counties.

Development included the construction of 39 waterfowl structures that impounded 4,267 acres of water. Projects important to farmland wildlife such as pheasants included the planting and maintenance of winter cover plantings, Well over 150 plantings comprising 280,000 trees and shrubs were established. In addition over 10,000 rods (62 miles) of fencing and over 4,000 wildlife management areas and informational signs were set up to delineate wildlife area boundaries.

Waterfowl hunting on these wildlife lands, as well as elsewhere in the state, was generally good during the biennium. Duck stamp sales in 1970 totaled 173,877 and the statewide take of ducks was 1,450,000. In 1971 duck stamp sales rose to 179,244 and the statewide harvest was 1,440,000 waterfowl. Minnesota remains near the top of all 50 states in the number of waterfowlers afield and in hunter success.

Cooperative Assistance

The Private Land Development Program has been widely accepted and requests for cost-sharing funds for wildlife practices exceeded available funds. During the biennium 674 projects were completed and $125,227.61 was paid to private landowners as our share of the cost. Projects completed included 26 legume-grass plantings, 113 food plots, 25 waterfowl structures that impounded over 650 acres, 150 dugouts and 365 tree and shrub plantings.

The brochure "For Landowners and Wildlife" was revised and reprinted during the biennium.

Wildlife Habitat Improvement projects were initiated through Future Farmer of America Chapters (FFA) and 4-H Clubs. Section of Game personnel participated in the FFA Leadership Camp, 4-H Conservation Camp and local chapter and club meetings.

Annual conservation field days were initiated during this biennium to recognize 4-H club members who have done outstanding work on their wildlife habitat improvement projects. These field days were held at the Madelia Research Center and Management Area, Lac qui Parle Wildlife Management Area, Whitewater Wildlife Management Area and the Talcot Lake Wildife Management Area.

A Minnesota "Acres For Wildlife" program was developed and put into operation late in the biennium. A program brochure plus three "What Can I Do" pamplets.

Pheasant Chick Program

A total of 103,648 day-old pheasant chicks were hatched at the Carlos Avery Game Farm and distributed to cooperating sportsmens clubs, FFA Chapters and 4-H Clubs. These birds were reared as club projects and released into the wild. In addition, more than 4,000 surplus adult breeders were released in selected locations.

Waterfowl Lake Designation

Hearings were held concerning six lakes and these lakes were designated for wildlife management. The lakes are Perch, Cottonwood and Eagle in Blue Earth County; Buffalo in Waseca County; Rice in Faribault County; and Swan Lake in Nicollet County. These lakes are presently drawn down to improve habitat for waterfowl and furbearers and will be returned to normal water levels in the near future.

Hearings were held on Geneva Lake in Freeborn County and Heron Lake in Jackson County, but these have not been designated.

Cooperation with Agricultural Agencies

Close cooperation was maintained with the Agricultural Stabilization and Conservation Service (ASCS) of the U.S. Department of Agriculture. Section of Game personnel served as members of the advisory group which develops cost-sharing practices beneficial to wildlife under this farm program. Recommendations were made regarding land use measures under the Set-Aside acres and Water Bank Programs.

Technical assistance was provided in the area of wildlife and recreation by section personnel at state and county meetings of the Minnesota Association of Soil and Water Conservation Districts.

One man from the Section of Game has been assigned full time to give direction to Resource Conservation Development projects in west-central Minnesota under programs authorized by the U.S. Department of Agriculture.

State Fair

A new pond was constructed at the state fairgrounds in 1971. Many hours were spent by section personnel developing the south portion of the pond as a waterfowl marsh. In addition, informational displays were set up and live animals exhibited. These displays were very popular during the State Fair.

Wildlife Research

Big Game

During the biennium work was accomplished on eight research and three census survey projects by the Big Game Unit.

Considerable time was devoted to planning for the 1971 moose season and the 1972 deer season, as well as for field work during both seasons. A new study began during the biennium which entailed the chemical analysis of deer foods at bi-weekly intervals. The bioenergetics study, in combination with blood studies that have been underway for six years, will be used to establish criteria for deer range evaluation and measuring the impact of winter weather on survival of deer. Research was continued to determine the numbers and food habits of coyotes in north-central Minnesota.

Waterfowl

Research personnel continued to analyze the effects of hunting on resident duck populations and the advantages, if any, of protecting local breeders by setting aside scattered small wetlands as refuges.

Upland Game

Research on pheasants indicates that winter losses have severely reduced the number of birds available to hunters. Census and surveys on pheasant populations in the open and closed areas shows that protection provided by closed seasons does not aid the pheasant. "Operation Pheasant" a pilot project to demonstrate techniques and cost benefit ratios of habitat improvement for pheasants continues to show good progress. This project which originally started in six south-central Minnesota townships was expanded to include additional townships in west-central Minnesota.

Research on the sharptail grouse during the past six years has shown that hunters take a small percentage of the total birds and have no significant effect on the brood stock. Experiments with an open and a closed area showed that bird numbers in both areas persisted at about the same level.

Additional stocking efforts with wild turkey were made in southeastern Minnesota. Adult stock of the eastern strain from Missouri is being used and reports indicate that the birds are reproducing and increasing in numbers.

Ruffed grouse habitat and population studies are being carried out in cooperation with the University of Minnesota. These studies indicate that male aspen buds from mature trees are an essential winter nutrient and that deep, soft snow for burrow-roosting is important to winter survival of the grouse.

Section of Technical Services

The Section of Technical Services provides technical assistance, and information needed by the management sections and operating divisions, administrators, and other public agencies in carrying out effective fish, wildlife and other natural resource programs. The work during the biennium was carried out by three operating units: (1) Environmental Control, (2) Environmental Impact Studies, and (3) Surveys and Inventories. These three units were responsible for the following kinds of work:

Environmental Control

* Statewide aquatic nuisance control program.
* Pollution investigations related to fish and wildlife, including kills.
* Ongoing study to determine effect of NSP's Allen S. King power plant on fish and fishing in the St. Croix River.
* Statewide creel census on 80 fish lakes and 36 trout streams each year.
* Chemical analyses for water quality and fertility, and pesticides, mercury and other toxic substances in fish and wildlife specimens.
* Fish and wildlife pathology and biology laboratory operations.

Environmental Impact Studies

(1) Surveys and studies to determine effects of proposed dams, reservoirs, channels, highways and other major developments on fish and wildlife habitat.
(2) Review of fish and wildlife aspects of all environmental impact statements prepared by federal, state and local construction agencies.
(3) Review of applications for permits submitted to the Corps of Engineers, Pollution Control Agency, Environmental Protection Agency and the Division of Waters, Soils and Minerals, to determine effect of proposed work on fish and wildlife habitat.

Surveys and Inventories

(1) Statewide lake sounding and mapping program.
(2) Lake and stream inventories.
(3) Lake and stream survey data processing.

SUMMARY

Following is a summary of the Section's activities and accomplishments during the biennium.

Environmental Control

Aquatic Nuisance Control - This Unit supervises the statewide control

of nuisance aquatic plants, algae, leeches and snails (causing swimmer's itch) through issuance of permits; testing of commercial sprayers; selection, testing and recommendation of suitable chemicals, dosages and methods; and, by providing information to commercial sprayers and the public on the foregoing.

During the biennium, the following aquatic nuisance control work was carried out:

Calendar year 1970 - A total of 499 aquatic nuisance control permits issued on 285 lakes; 730 nuisance conditions covered; and 21 applicators permits issued to commercial sprayers,

Calendar year 1971 - A total of 661 aquatic nuisance control permits issued on 331 lakes; 945 nuisance conditions covered; 27 applicators permits issued to commercial sprayers; and 3 aquatic operators licensed to mechanically remove vegetation.

More than 1,800 leaflets on control of aquatic vegetation were distributed to lakeshore property owners, lake associations, students and other interested individuals.

Forty-five lakes were surveyed during the biennium in connection with aquatic nuisance problems. Recommendations were made to individuals requesting the investigation after surveys. Two toxic algae blooms were investigated. Numerous talks on aquatic nuisance problems were given to lake associations, college student and scout groups. Detailed annual summaries of aquatic nuisance control work carried out during the biennium are included in the appendix.

Pollution Investigations - Approximately 250 pollution reports were processed during the biennium. A report is a telephone call, letter, memorandum or official pollution report. Upon receipt, the complaint is either referred to the local conservation officer or fisheries manager, to the Pollution Control Agency or investigated by unit personnel depending on the problem and location.

Twenty-four pollution complaints were investigated in the field during the biennium.

Numerous talks on various forms of environmental pollution and effects on fish, wildlife and their ecosystems were also given to interested groups.

Fish Kills - Fourteen pollution caused fish kills were investigated during the biennium. Ten fish kills caused by natural means, such as O_2 depletion and Columnaris (bacterial infection in fish), were also investigated.

Special Assignments - Fish were collected and prepared for mercury analysis.

A follow-up study of Little Silver Creek in Carlton County was made, to determine long term effect of accidental spills from oil refinery on trout, food organisms, and habitat.

Game and Fish Division representative functioned on Joint Environmental Education Committee.

St. Croix River Fish Study - A six-year study, to determine the effect of thermal discharges from NSP's Allen S. King power plant on fish and fishing in the St. Croix River was continued during the biennium. Essential field work was terminated on June 30, 1972. A final report, covering creel census and netting two years prior to and four years following plant construction, is in preparation.

Statewide Creel Census - An annual statewide creel census designed to provide an index of fishing pressure and success for principal game fish species in a wide range of lake types and trout streams was begun in April 1971.

The method used is to census fishing for each target species when and where fishing for that species is considered to be best. The census will be repeated in succeeding years and trends in fishing pressure and/or success will be determined. The census technique used was a modification of that described by Daley and Skrypek in 1964.

During the 1971-72 fishing season (May 1, 1971 to February 29, 1972), 80 lakes totalling 194,824 acres and 38 stream sections totalling 40 miles were censused. Nine fishing periods varying in length from two weeks to two months were censused separately.

A total of 12,259 anglers were interviewed. These anglers had fished a total of 23,974 man-hours prior to being contacted. The median catch rate (fish per man-hour) for each target species was: stream trout, 0.60; walleye, 0.33; largemouth bass, 0.27; panfish, about 1.50; and lake trout, 0.09.

Chemistry Laboratory Services - The chemistry laboratory provides direct technical support and analytical services, concerning water quality and fertility and environmental contaminants affecting both fish and wildlife and humans, to all the divisions of the Department of Natural Resources, other agencies and the general public. Liaison regarding chemical services and information is carried on between the Department and other government agencies, the University of Minnesota and private industry.

Most laboratory services during the biennium were devoted to monitoring the quality of fish and wildlife habitats and identifying specific pollutants which may adversely affect fish and wildlife.

Specific determinations provided by the chemistry laboratory during the biennium included:

* Organochlorine pesticide residues in the flesh of fish, birds and mammals.
* Rodenticide and other poisonous residues in fish and wildlife dying of unknown causes.
* Trace residues of mercury, PCB's (polychlorinated biphenyls) and other toxic substances in fish and wildlife.
* Mineral content, proteins, amino acids, iron and other components in fish and wildlife in support of research projects.

* Identification of pollutants causing fish and wildlife kills, enabling State to collect compensation for these losses.
* Nature of effluents from State fish hatcheries, rearing ponds and other DNR facilities, to fulfill legal requirements of state and federal pollution control agencies.
* Water quality and fertility of lakes as a basis for fish and wildlife management planning.
* Hydrocarbon gases present in an underground gas storage area for Division of Waters, Soils and Minerals.
* Sulphate content of snow samples in an area where a nickel-copper smeltery may develop in the future, for the Division of Waters, Soils and Minerals.

During the biennium the following analytical work was carried out in the chemistry laboratory:

* 192 fish (225 tissues) from 14 lakes and streams and 8 wildlife specimens (26 tissues) were analyzed for mercury.
* 4 wildlife specimens were analyzed for "1080" and strychnine, where birds died of unknown causes. Methods were developed for the analysis of Red Squill, Wafarin and other economic poisons.
* Identification and determination of linseed oil and No. 2 fuel oil from three oil spills.
* 566 water samples, collected mostly in conjunction with fish and game lake biological surveys around the state, were analyzed for water quality and fertility (involving 4,707 individual analyses).
* 70 pheasant and woodcock and 43 miscellaneous wild animal samples were analyzed for pesticide residue levels. The presence of PCB's was detected in several dozen fish samples being analyzed for insecticides.
* Seventy ring-necked duck wings were analyzed for 12 metals each (840 separate determinations) as part of a game research study to determine geographic origin of ducks through analysis of minerals in their primary feathers.
* Protein analysis of deer browse samples from different stages of forest succession (305 determinations) as part of a cooperative study with University of Minnesota.
* Formulation of nonionic surfactant mixture for cleaning waterfowl and other aquatic birds caught in oil spills.

Biology Laboratory Services - (Fish and wildlife pathology) - During the biennium, 1,036 specimens of fish, wildlife and associated materials obtained from personnel of Natural Resources and from other Departments of State and Federal government. Samples for analysis were also received from the general public, commercial trout raisers, and bait dealers. Approximately 2,700 procedures and determinations were performed in several areas of microbiology, parasitology, and biochemistry.

It assisted fish and game managers in the diagnosis, prevention and control of wildlife diseases in hatcheries and refuges. Laboratory techniques were developed to help answer specific questions or study problems relating to fish and wildlife management and enforcement.

The acquisition of additional components for the laboratory electrophoresis apparatus, and refinements in methods and techniques have made it possible to study the composition of tissues and the diseases of wildlife in greater depth. Other acquired improvements in laboratory instrumentation during the biennium,

such as microscopy, will together contribute ultimately to a broader base of understanding of the requirements and care of fish and wildlife resources.

The laboratory confers and is a consultant to public health agencies on technical problems of mutual concern in areas of: diseases of fish and game animals transmissible to humans and livestock; botulism; toxic algae; fish kills; pest control measures; pesticide chemical toxemias and secondary food chain poisoning.

Work continues with the Tri-State Committee for obtaining Food and Drug Administration clearance and approval of therapeutic medications and antibiotics for the treatment of hatchery trout and salmon diseases. International exchanges of fish pathology information were made with scientists in Scotland, Ireland, Italy, U.S.S.R., and West Germany.

A paper was presented at the 18th Congress of the International Association of Limnology held in Leningrad, U.S.S.R. in August of 1971. The subject dealt with a method of chemotherapy developed here and found useful in treating I.P.N. (Infectious pancreatic necrosis) virus infections of hatchery brook trout.

An invitation was accepted from the United Nations Food and Agriculture Organization in Rome, Italy, to serve as a member on a panel of fish pathologists from other countries appointed to review and discuss the present state of knowledge of infectious pancreatic necrosis. The Symposium On The Major Communicable Fish Diseases and Their Control was held in Amsterdam, Netherlands, in April 1972, preceding the 7th session of the European Inland Fisheries Advisory Commission. A panel of specialists for each of eight fish diseases presented current information and research on the occurrence, cause, diagnosis, transmission, prevention and treatment of the specific fish disease. The symposium and subsequent exchange of information has been of great value in fish disease work in Minnesota.

(General biology) - During the biennium, the laboratory facilities were used by staff from all sections of the Division of Game and Fish for a variety of jobs, including: preparation and reading of fish scales in age and growth studies, processing and analyzing of bottom fauna and plankton samples collected as part of pollution investigations and research projects, and processing fish and wildlife specimens for pesticide and other chemical analyses.

Environmental Impact Studies

The Environmental Impact Studies Unit conducts field investigations and provides review coordination and liaison with other agencies in efforts designed to determine the probable effects of proposed construction and development projects on fish and wildlife resources and associated ecosystems.

The major construction works (channeling, dams, reservoirs, highways, bridges, etc.) of such agencies as the Corps of Engineers, Soil Conservation Service, state and county highway departments and watershed districts have the potential for destroying or radically degrading fish and wildlife habitat.

The purpose of these studies is to determine how and to what extent the developments will affect fish and wildlife resources and to recommend changes and modifications in project plans that will prevent or reduce fish and wildlife losses to a minimum and/or enhance their values.

U. S. Army Corps of Engineers Projects - During the biennium, the following work was carried out on U. S. Army Corps of Engineers projects:

New Ulm Dam and Reservoir (Minnesota River); final report.

North Branch Root River Dam and Reservoir; field investigations and preliminary draft report.

Roseau River Flood Control Project - field investigation, aerial reconnaissance, elector-fishing survey and preliminary report.

Warroad River-Bulldog Creek Flood Control Project; field investigation and report with BSF&W.

Huot Dam and Reservoir (Red Lake River); field investigations, electro-fishing survey, aerial reconnaissance and preliminary report with BSF&W.

Lac Qui Parle-Yellow Medicine Flood Control Project; field investigation and mapping.

Oslo Flood Control Project; field investigation.

South Branch Zumbro River (Rochester) Flood Control Project; field investigations and letter report.

Zumbro River Flood Control Project at Kellogg; field investigations.

Days High Landing Dam (Mississippi R. at Deer River); review of plans and letter reports.

The plans for six smaller Corps projects also were reviewed, meetings attended and letter reports prepared recommending measures for the protection and enhancement of fish and wildlife habitat.

U. S. Soil Conservation Service (P. L. 566) Projects: During the biennium, field reviews and investigations were carried out on the following major Soil Conservation Service projects:

Angus-Oslo Watershed; preliminary field review.

Badger Creek Watershed; preliminary field review.

Burnham Creek Watershed; tri-agency biology review.

Cobb-Florida Watershed; field investigation.

Melgard-Swift Coulee Watershed; preliminary field review.

Middle River Watershed; preliminary field review.

Mounds Creek Watershed; tri-agency biology review.

Rock River Watershed; final report.

Snake River Watershed; preliminary field review.

South Branch Wild Rice River Watershed; preliminary field review.

Thompson Valley Watershed; field investigation (final report in preparation).

Turtle Creek Watershed; tri-agency biology review.

Upper Watonwan Watershed; tri-agency biology review.

Meetings were held with the local sponsors and SCS on three P. L. 566 projects. The purpose was to incorporate fish and wildlife habitat improvement measures into project proposals, and to provide recommendations for maintaining, improving and/or replacing existing habitat which might be affected by project construction. These P. L. 566 projects were: Crooked Creek Watershed; Janesville Village Watershed; and Upper Deer Creek-Lake Hendricks Watershed.

One Pilot Watershed Project was evaluated to determine the impact of federally financed "flood control" on wetland wildlife habitat. This watershed was: Hawk Creek Pilot Watershed - Chippewa, Kandiyohi and Renville Counties. A report on this study was published in the July, 1971 issue of the "Journal of Wildlife Management."

Watershed Districts - Seven watershed district overall plans and project proposals were evaluated during the biennium. These plans were reviewed to determine potential effects of district plans on fish and wildlife resources, and to provide the boards of managers with recommendations to protect and/or improve these resources. The watershed districts involved were: Lac Qui Parle - Yellow Bank Watershed District; Middle Des Moines Watershed District; Minnehaha Creek Watershed District; Okabena-Ocheda Watershed District; Red Lake Watershed District; Riley-Purgatory Creek Watershed District; and Upper Minnesota Watershed District.

County and Judicial Ditch Systems - Proposed County and Judicial ditch systems were evaluated to determine potential effects on fish and wildlife habitat. These ditch systems were:

C. D. 8 - Faribault County; office evaluation.
C. D. 12 - Rice County; office evaluation.
C. D. 62 - Kandiyohi County; field investigation.
C. D. 93 - Nicollet County; field investigation.
J. D. 1 - Kandiyohi and Meeker Counties; field investigation.
J. D. 32 - Yellow Medicine County; office evaluation.
J. D. 36 - Redwood & Brown County; field investigation.

Court hearings were conducted in the case of Nicollet County Ditch 93. These hearings were attended by Technical Services personnel. In this case, it was determined by the court that C. D. 93 was not in the public interest, and should not proceed.

One judicial ditch system was evaluated after construction to determine the effect of drainage on wildlife habitat within the watershed involved. This system was:

J. D. 8 (Ten Mile Creek); Lac Qui Parle and Yellow Medicine Counties.

Highway Program and Plans Review - During the July 1, 1970 - June 30, 1972 biennial period, 406 proposed highway projects were reviewed and investigated for potential game and fish problems. About 16 percent of the projects had fish and wildlife problems associated with them. The approaches to the problems that have been evolving are (1) to choose routes that have the least potential damage and (2) minimize the damage on the routes finally chosen. Water crossings and wooded areas are especially subject to damage by road construction projects.

Some water crossing problems include encroachment on lakes and marshes, creating barriers to fish movement, eliminating fish habitat by straightening channels, and drainage of wetlands with roadside ditches. Fish barriers are eliminated with correct bridge and culvert designs. Losses of fish habitat in rivers and streams are minimized by providing curvilinear channels that are rip-rapped on the outside meanders. Losses of marsh and lake areas are minimized by routing the roads around them, but occasionally these losses have been at least partially replaced by improving the remaining water area. Losses of upland wildlife habitat are best minimized by choosing the least damaging route. Cover plantings are being considered in odd corners along highways.

Other Projects and Assignments Carried Out By Unit

(1) During the biennium, 312 applications for permits, of both public agencies and private developers, sent to the Corps of Engineers, Minnesota Pollution Control Agency and the Division of Waters, Soils and Minerals (DNR), were reviewed for their probable environmental effects and recommendations made.

(2) During the biennium, 37 environmental impact statements of the Corps of Engineers and the Minnesota Highway Department, concerning proposed projects, were critiqued and recommendations for changes made.

(3) Electro-fishing survey of the Mississippi River, Monticello to Elk River.

(4) Review and evaluation of proposed taconite mining construction and water development plans of Pickands-Mather (Hanna) Mining Company near Hibbing, including recommendations for the protection and enhancement of fish and wildlife.

(5) Biological surveys were carried out on 23 game lakes and wetlands.

(6) Numerous other jobs were carried out, involving review of proposed construction and development projects for their effects on fish and wildlife, monitoring selected lakes for water quality and the effects of road salting, collecting fish for mercury and pesticide analysis, biological surveys and special studies.

Surveys and Inventories

Lake sounding and mapping - During the biennium, 304 fish lakes were sounded by a fathometer and 183 fish lake and 90 game lake contour maps were drawn and distributed. Numerous lake contour maps were provided U. S. Geological Survey for incorporation into their topographic quadrangle maps.

Minnesota has over 15,000 lakes each of which are ten acres or more in area. Through June 30, 1972, approximately 6,100 lakes (3,500 fish lakes and 2,600 game lakes) have been sounded and mapped. There are a minimum of 7,500 lakes (not differentiated as to game or fish lakes) yet to be charted including many small, marginal, or remote lakes but also some of the largest lakes in the state.

The lake sounding and mapping crews also collected limnological data useful to fisheries and other natural resource managers as indicators of lake conditions and productivity. Included in these collections were Secchi disk readings for water clarity, water temperatures, and water samples for determination in the laboratory of water quality and fertility.

Lake and Stream Inventories and Data Processing - During the biennium, 15 fish lake, 90 game lake and 76 stream survey reports were completed and distributed.

Nine lists of lakes (10 acres or larger in area) were compiled, printed, and copies made for distribution to natural resources personnel having need for this type of information. Available data such as lake and watershed numbers, total and littoral areas, median and maximum depths, Secchi disk reading, and remarks were recorded. A total of 15,291 lake basins in the state were classified as follows:

Trout	223	
Walleye	494	
Panfish	1,066	
Unclassified (fish)	1,155	
Total fish lakes		2,938
Game (Waterfowl-muskrat)		5,339
Fish and game		73
Marginal (Too shallow for fish and too deep for waterfowl)		2,299
No biological data		2,865
Drained or dry		1,777
Total number of lake basins		15,291

Approximately 50 items each of basic biological, chemical, and physical information were extracted from 1,700 game lake surveys and coded onto IBM data sheets. Completed IBM data sheets were sent to the Data Processing Branch of the Information Systems Division (Administration Department) for key punching to IBM cards. Personnel of the above branch and Administrative Services Division (Department of Natural Resources) were consulted on the game lake survey list printout and coding of game lake survey data for the second and third IBM data sheets.

A computer printout of 21,456 records on fish abundance indices (representing 1,721 fish lake surveys) was done. Missing information was supplied or data corrected on 3,843 of these records.

Several meetings were held regarding computerizing of water related data.

More than a thousand requests for physical, chemical and biological information on lakes and streams by schools, public agencies, companies and individuals are processed via office calls, telephone and mail each biennium.

Scientific and Special Permits - A total of 127 Scientific Collecting Permits were issued during the biennium, mostly to educational and scientific institutions or organizations.

A total of 431 Special Permits were issued, including bird banding, 44; hawks and owls (falconry) 162; and miscellaneous, 225. The latter included those for special scientific investigations (usually by college students or staff members); those for retaining native fishes in aquaria; for harvesting or planting aquatic plants (other than wild rice harvested under a license); and those for retention of animals as pets. No fee is charged for the foregoing permits which are issued under statuatory authority assigned to the Commissioner of Natural Resources.

Future Goals

To provide for more effective environmental protection and enhancement, the Section will strive toward the following goals in the next biennium:

(1) Better control and supervision of the aquatic nuisance control program to permit removal of harmful aquatic plants without degrading lake ecosystems.

(2) Improved laboratory facilities and capabilities to monitor environmental contaminants affecting fish and wildlife and their ecosystems and provide more effective technical services and support to all divisions of DNR.

(3) Greater efforts in determining precise ecological impacts of all water and related land development projects and in providing specific recommendations for fish and wildlife protection and enhancement in project plans.

PARKS AND RECREATION

History and Growth

The Division of State Parks was established as a unit of the Minnesota Conservation Department in 1935. At that time, there were 32 state park areas established by statute; nine of the above units were monument sites one acre or less in size. The total dedicated park lands embraced 43,410.77 acres, of which 72% or 30,000 acres were in Itasca State Park. Camp Release State Park, a 12-acre historic site, was the first unit of the system established by the Legislature in 1889. Itasca State Park was established in the 1891 legislative session.

The 32 park and monument sites, formerly administered by local boards and commissions under several state official authorities, formed the nucleus of present Minnesota State Park System. Growth of the system proceeded rapidly in view of Federal assistance programs in the last half of the 1930 decade, and in 1940 the system comprised 47 units with a gross land area of 45,711 acres, with a total valuation of lands and improvements of $6,640,480, of which $1,409,880 represented land values and $5,230,600 represented capital improvements.

Long-range plans for Minnesota's State Park System developed and published in 1939 were virtually completed in 1958. A re-evaluation at this time dictated an expansion of this plan to adequately protect the unique natural features of this great state and protect historic heritage areas and provide opportunities for outdoor recreation for the increasing state population.

A new study in 1959 - completed with the assistance of the National Park Service - projected the Minnesota Park and Recreation Plan of 1939. This resulted in the recommendation to add 35 new park areas to the system. It further recommended the expansion of some 23 previously dedicated parks to provide for the ever-increasing use which was threatening the destruction of the natural features of these parks. This study resulted in the recommendation for removal of 9 park areas from State jurisdiction because of loss of significance due to modern developments and loss of State heritage significance.

As of June 1, 1972, the Minnesota State Park and Recreation Area System comprised 86 areas, comprising 204,344 acres of land authorized and dedicated. The lands actually acquired in the name of the State as of this date totaled 160,000 acres and the total land value amounted to $8,538,000; this does not include eight of the nine park areas which were deleted from the state system and transferred to local government jurisdictions, in accordance with the last re-evaluation plan.

Recreational Trail System

Recreational trail systems have been added to the jurisdiction of the Division of Parks and Recreation as a result of a study of the recreational potential of Minnesota's rivers. There were 16 rivers

selected and designated as recreational boating and canoe routes by legislation enacted in 1969. Long distance overland recreation trails have also been added to the State Park and Recreation System. There are now seven such overland trails designed by statute. The establishment acts for both the recreational rivers and the overland trails provide authority for acquisition of lands, but specific land areas are not precisely defined. Trail rights-of-way and rest areas are in the plans of coordinated planning with other state agencies, counties and local governmental jurisdictions to carry out the development in each project. There are 4 of the trails established which relate to the railroad abandonment programs now underway throughout the State.

Legislation enacted for the establishment of the Minnesota River Valley Trail was more specific than the acts establishing other trails; it included the designation of 6 major wayside areas of extensive size to provide access, administration, rest stop camp facilities for both overland recreation travel and recreational watercraft travel.

The dedicated trail systems comprise an authorized land area acquisition program of approximately 9,157 acres; this includes approximately 5,446 acres of authorized wayside areas in the Minnesota River Valley Trail. As of June 31, 1972, 1,000 acres of land were acquired in the trail program.

Snowmobiles have been an extremely popular recreation vehicle. Legislation providing for licensing and regulating use of these machines, enacted in 1969 and amended in 1970, under the DNR also required that opportunities for safe operation be provided. The Division of Parks and Recreation was assigned the program of setting up trails for snowmobile operation; this involved coordination with the State and Federal Forest Services as well as many counties and local snowmobile clubs. Carefully selected trails in certain state parks, recreational areas, forest areas, selected game management areas, and inter-connecting winter right-of-way easements were worked out in a statewide network of recreational snowmobile trails totaling some 1700 miles; literature including maps, laws and safe operation guidelines were disseminated.

Scientific and Natural Areas

The Scientific and Natural Areas Law enacted in 1969 added an additional responsibility to the Division of Parks and Recreation. It provided that unique natural and scientific areas as determined by a select committee could be established by the Commissioner of DNR; it provided further that such land areas selected for designation which were not under public ownership and jurisdiction could be purchased by the Commissioner. Land acquisition appropriations for park and recreational land purchase were authorized for this purpose as well. As of June 30, 1972, there were three areas dedicated under this program; one of these areas was purchased, namely, The Rush Lake Heron Rookery, located on a 28-acre island which was in inniment danger of destruction by private development. The Nature Conservancy had obtained a donation in the amount of $11,714 for the purchase of the Purvis Lake Natural Area from the Ober Foundation and purchase is in the process of finalization for the 140-acre tract in northern St. Louis County. A Salt Lake area is in the process of appraisal for acquisition

with State funds. The Salt Lake area is located in western Lac Qui Parle County and comprises 391 acres; it is the only saline lake water in Minnesota and supports vegetation and wildlife not found elsewhere in the State.

Establishment and dedication of park and recreational trail systems by statute is only the first step in the realization of the public objectives. Private lands within these dedicated areas must be obtained with legal title vested in the State of Minnesota. Land ownership and full State jurisdiction of dedicated park areas is accomplished in only 36 units of the present 86 park entities. Total jurisdiction for management and development of dedicated lands remains to be accomplished in 50 park areas and will require acquisition of 43,262 acres as of June 30, 1972. There were 5,698 acres acquired in the biennium with funds made available by appropriations from the Natural Resources Acceleration Program, supplemented with Federal aid.

It is to be noted that Federal surplus lands were transferred without cost in three park areas totaling 308 acres. All lands obtained were successfully obtained through direct negotiation with owners, except two tracts, which required eminent domain procedures. In this instance efforts to acquire the lands were under negotiation, without success, for a period of 12 years.

It appears that the goal of total park land jurisdiction will not be realized at the present rate of accomplishment will require a period of 9 bienniums, or 18 years. It is well established that land costs are increasing each year.

In addition, the park lands and rights-of-way for the dedicated recreation trails are in the process of acquisition and comprise a program of 9,157 acres of land, of which 1,015 acres or only 11 per cent have been obtained. Three of the established long distance recreational trails are designed to utilize abandoned railroad rights-of-way and can be acquired as single entities. Other trail segments will require in excess of 300 individual tract purchases.

Permanent Improvement Programs

Capital improvement programs during the biennium provided road construction and parking areas in previously acquired land areas in parks. Tourist camp developments were completed in several parks and included modern toilet and shower facilities as well as camp sites. There were several sanitary disposal waste stations to serve self-contained camper trailer units. The major emphasis has been in the design and construction of sewerage disposal systems to serve modern service buildings and meet the standards of the Minnesota Pollution Control Agency.

The largest construction project undertaken and completed was the installation of a trunk sewer system with lift stations to collect and discharge all sanitary waste from the lower park area of Fort Snelling to the Metropolitan Sewer System. This project also included water and

electric power system to serve public facilities planned for construction in the lower park area.

At Hayes Lake plans were completed for the construction of a dam to create a 120-acre lake; contract for construction was awarded in the amount of $425,000. Work is still underway.

Construction of two archaeological museums was a new type of facility for park activity. Museums at Big Stone Lake and Mille Lacs Kathio State Parks were designed by private architects and constructed under contract.

Also, this program has provided staff personnel to direct not only snowmobile trail development but also the total recreational trail systems. There are three administrative staff personnel engaged in coordinating the development of trails on both land and riverways. These trail establishments are designed to utilize state forests, federal forests, county and community services. There are many snowmobile or single purpose trails implemented through local citizens organizations within the scope of state regulations and standards; these are activated only during the winter seasons in most instances and are arranged for on a seasonal basis with landowners. The total winter trail system was in excess of 3,000 miles in 1972.

The Natural Resources Acceleration Program has required two project personnel to be employed on the central administration staff. A project engineer to direct the detailed plans and construction of capital improvements in the park development programs as approved by the State Building Commission and financed by both appropriations from the Natural Resources acceleration funds and Federal funds on a matching basis. The current construction program includes 210 construction projects located in 65 park areas; it also includes 9 projects in two established recreation trail units.

A Federal Aid Expediter is also a part of the administrative staff; this position is required to prepare and submit required data and documents to insure that Federal funded projects are documented and transmitted to assure reimbursement to the State upon the completion of the eligible projects. Both construction projects and land purchases are involved in the Federal Aid programs. The state park land and development federal assistance programs have been implemented with H.U.D., U.S. Department of the Interior's LAWCON and Upper Great Lakes Commission. The funds received under these programs are deposited in a special federal reimbursement account in the State Treasurer's office, and appropriated to the Governor for release upon recommendation of the Legislative Advisory Committee to finance programs and projects related to the Natural Resources Accelerated Program. The Federal Reimbursement account generates over a million dollars a biennium, the bulk of which is derived from park and recreation land acquisition and construction projects. Funds released and expended are also eligible for Federal matching funds.

Park Attendance; Activity Program

Attendance and activity programs in the parks and recreation areas continue to grow. Interpretive Service programs were continuing during the summer seasons of 1970 and 1971, with expended interest and participation. Six parks were staffed with 5 seasonal qualified natural history programs personnel. Activities included guided nature trail hikes, motor caravans and campfire programs.

There were several major noteworthy events; (1) Fort Snelling Sesquicentennial sponsored by the Fort Snelling State Park Association during 1970; (2) the transfer of 141 acres of land embracing the parade grounds and polo field in Fort Snelling State Park, with Mrs. Richard Nixon delivering the deed in person on August 17, 1971; (3) Dedication and acceptance of 7.5 acres of land and the Historic Split Rock Lighthouse buildings transferred form the U.S. Coast Guard and Bureau of Outdoor Recreation on May 2, 1971.

The annual attendance records for the State Park System during the biennium have been estimated and recorded to reflect major utilization demands in visitor days:

	1970	1971
Cabins and rooms	12,535	12,907
Organized Youth Camps	81,448	80,632
Tourist Camps	770,405	825,975
Day Visitors	5,105,110	5,998,509
Total:	5,969,558	6,918,023

Special Fee Services

It has been a tradition dating back over 50 years in the Minnesota State Parks that special privilege facilities be subject to fees and charges. Special service for privileged use of state park property and facilities is logical and in the public interest.

The fee service schedules now in effect include: family campsites, boats and canoes, organized youth camp areas, cabin and lodge units, special building rental for private group programs, launch rides, mine tours, and golf course green fees.

Supplementing services include refectories, souvenir shops, camp supply outlets, and lodge dining room service.

Income from the fees and service operation, which is directly operated by State personnel with the exception of five contract operators, was recorded as follows:

1970-71 fiscal year	$1,051,127.40
1971-72 " "	970,259.80

This income is deposited in the State's General Revenue Fund, except that

receipts for merchandise sold is available for reexpenditures during the fiscal year of replacement of stock. At the end of the fiscal year any unencumbered balances in excess of $50,000 is transferred to the General Revenue fund. There is no flexibility in management expense in these operations for utilities, salary overload or merchandising fixture replacement, all of which are subject to a fixed appropriation allocation.

The Motor Vehicle Permit Law, first enacted in 1953, was designed to provide a source of revenue to provide for major maintenance and development of the State Park System. These permits are required to be affixed to motor vehicles, as defined in laws for operation on the public road systems of the State. It is a vehicle fee system, not a personal obligation, in the form of a park entrance fee. There are no fees for persons entering state parks on foot, or on bicycles, or riding on motor vehicles properly equipped with a permit. Snowmobiles are deemed to be exempt from motor vehicle permit requirements since they are licensed by the DNR and classed as off-the-road vehicles.

The Motor Vehicle Permit (commonly called a "park sticker") is available on an annual basis for a $3.00 fee; there is a fee of $1.00 for a two-day period of operation within the park. Parks less than 50 acres in area are not subject to the motor vehicle requirement.

The income from Motor Vehicle Permit sales in the biennium was as follows:

1970-71	$463,720.00
1971-72	440,138.00
Total:	$903,858.00

These funds are deposited in a special account identified as the State Park Finance Fund, which is appropriated each succeeding biennium for development and construction of park facilities.

Scientific and Natural Areas Program

The Scientific and Natural Areas Program for land acquisition of unique features in Minnesota is an added activity in the State Park and Recreation administration. Areas selected are to be managed primarily for protection and used only for scientific study by students or specialists in natural history science.

There have been three such areas designated by the Commissioner of Natural Resources, upon recommendation of the Scientific and Natural Areas Advisory Committee, which lie outside the limits of state lands under Department administration; these three areas have been acquired and regulated programs for use is now under development.

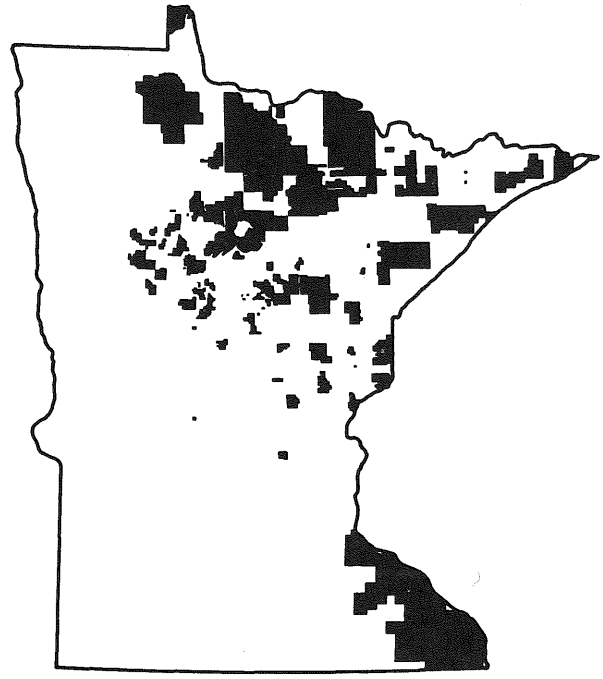
Sixteen major rivers are established by statute as recreational boat and canoe travel routes; temporary access and landing sites have been designated. Studies are underway to develop more permanent access

points, campsites, portages and signs to guide the safe use of these natural travel route opportunities.

Preserving Ecologic and Heritage Values

The ever increasing scope of the State Park and Recreation System reflects a broad spectrum of the varied activity interests of the citizens of this modern age. Mechanized recreation interests and primitive recreation interests are creating an increasing divergence of utilization of the systems programmed and under development. Regulation and direction of utilization of the park and trail systems must be intensified to avoid conflicts. Prime concern must be directed to maintaining inherent natural environment, ecologic and heritage values of the State Park and Recreation System of Minnesota for the maximum public benefit for future ages.

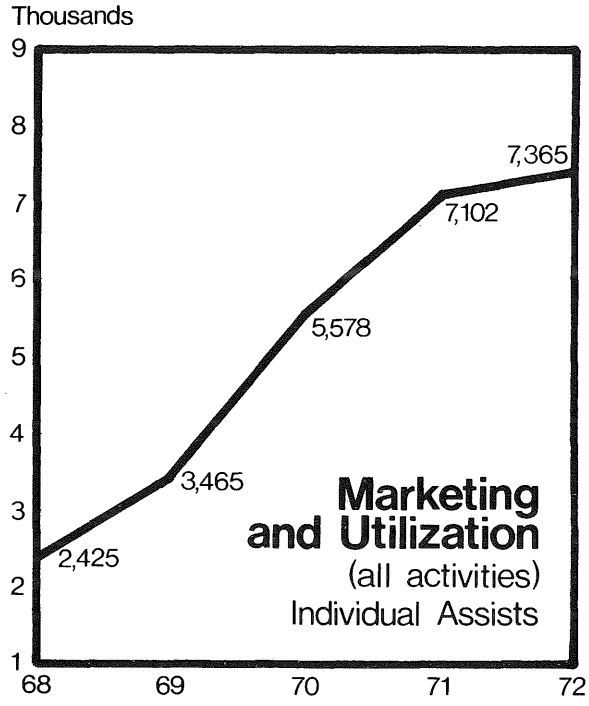
Lands and Forestry



Minnesota's 55 state forests encompass 2,984,200 acres. The renewable resources of these lands are managed and protected by the Division of Lands and Forestry. Coordinated management of these resources is necessary to achieve maximum yield of forest products and to provide recreational opportunities for the public.

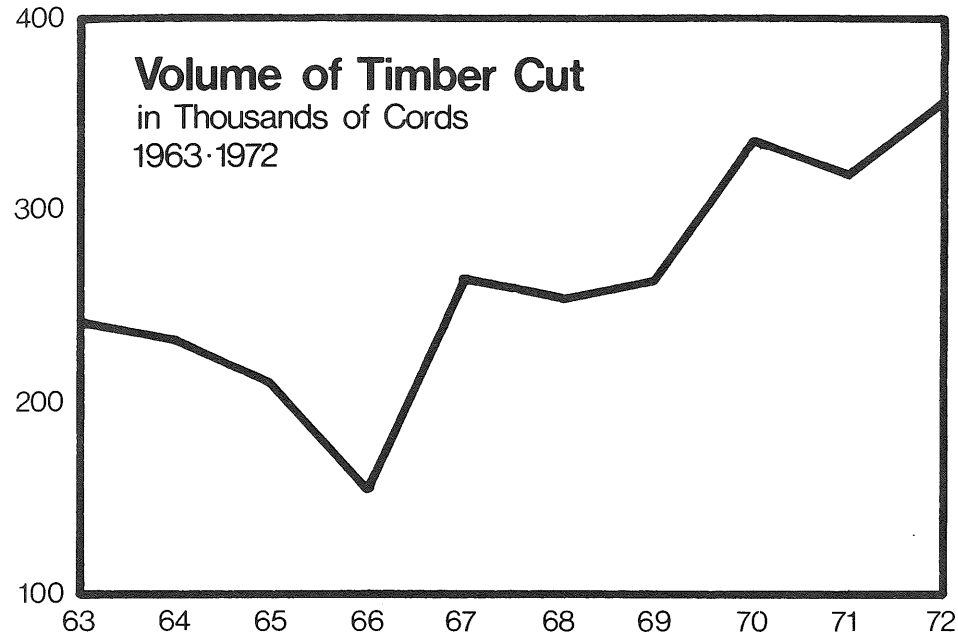
FOREST PRODUCTS MARKETING AND UTILIZATION

Minnesota has 17 million acres of forest land producing, or capable of producing, timber of commercial value. The potential annual timber harvest is 2.5 times greater than the current yearly cut. Efforts were made to obtain maximum wood utilization by expanding present markets and developing new markets. The increased consumption of wood amounted to 27 million board feet annually with a log value of 1.4 million dollars. Present proposals when implemented will result in an increased consumption of approximately 500,000 cords of wood annually representing 7.5 million dollars. If markets could be obtained for all timber that should be harvested from Minnesota lands, the total value of forest products harvested would increase to 1.1 billion dollars annually.



TIMBER SALES

Loggers benefited and increased State revenue resulted from the implementation of a new local auction timber sales program. The increased number of auction permits through competitive bidding resulted in greater revenue to the State and because of their size the administrative costs were less than the informal sale.



CONSUMER SCALING

Consumer scaling enacted in 1969 has made it possible for the forester to spend less time scaling wood taken off state timber sales. The timber operator has been able to move his products to the consumer without waiting for a scale in the woods. As a result, the State is now more competitive in its sales, increasing the volume of State timber sold.

SCHOOL FORESTS

The School Forest, a new kind of classroom, is growing at a rapid rate in Minnesota. During the biennium, nine new forests were established bringing the total to 54.

The popular "Forestry for Minnesota Schools" was revised in 1972 by a team of foresters and educators. This revised publication, complete with challenging classroom and field activities, was sponsored by the Division of Lands and Forestry, and endorsed by the Minnesota Education Association.

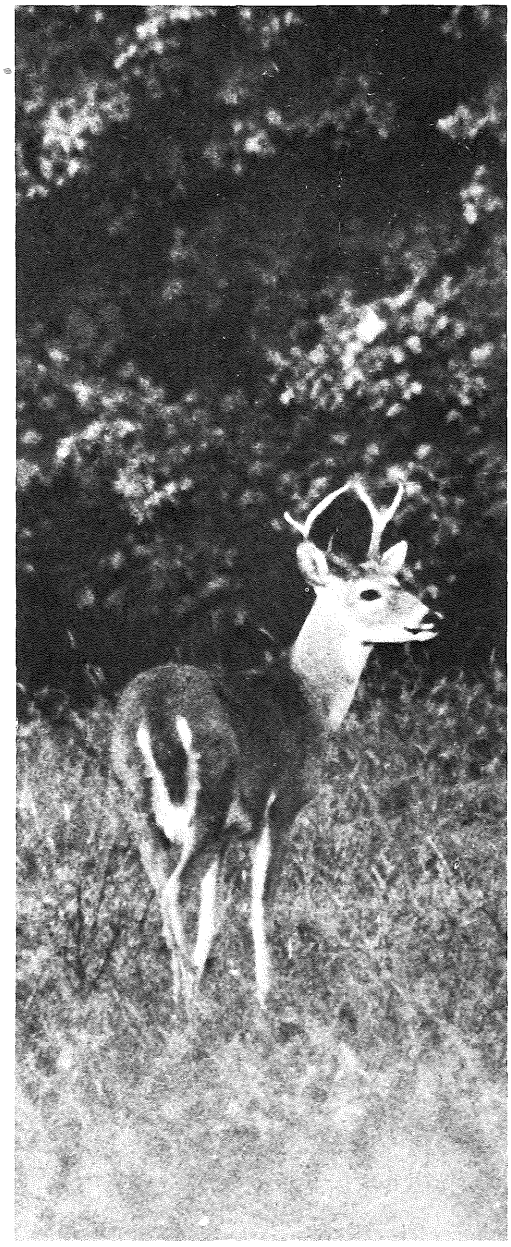
STATE LAND LEASES

State land is being leased for various temporary uses, the most common being for: utility right-of-ways, lakeshore and hunting site cabins, agricultural purposes, gravel and other earth materials, and roadways. Before any leases were issued, future development of the land was considered.

During the biennium, the total number of leases administered by the Division of Lands and Forestry increased 15 percent to a total of 5,600. This was due to a 52 percent increase in leases issued for utility right-of-ways. Revenue from leases increased 20 percent from the previous biennium to a total of $270,900.00.

LAND EXCHANGE

The land exchange program consolidates State land in State forests, State parks, State wildlife areas and other State conservation areas. In so doing, it consolidates other landowners holdings such as federal, county, and private. Land exchange proposals are investigated and recommendations are made to the Land Exchange Commission.



ENVIRONMENTAL GUIDELINES

Environmental guidelines have been made available to the field forester to help him maintain a balance between providing mans needs from the forest and protecting its environmental quality. A system of environmental impact statements has also been implemented this beinnium to insure coordinated environmental benefits through forest management activities.

FOREST/WILDLIFE HABITAT MANAGEMENT

The recently instituted Forest/Wildlife habitat management planning procedure will facilitate habitat management by the placement of commercial timber sales where the maximum habitat improvement can result. This will also permit a continuous yield of forest products. The plan also pinpoints locations where habitat improvement is needed which can not be accomplished through commercial timber sales. In these areas, wildlife habitat improvement funds are used.

USES OF CONTROLLED FIRES (ACRES*)
Primary Purpose of Burn

Fiscal Year	Forest Regeneration Site Preparation	Wildlife Habitat Improvement	Hazard** Reduction	Other***	Total**** Acres Treated
1971	1,522	2,454	114	165	4,155
1972	2,493	522	-	136	3,151
TOTAL	3,915	2,976	114	301	7,306

* Approved burns by the Division of Lands and Forestry
** To reduce damage by fire, insects, and disease
*** Includes blueberry improvement, prairie grass restoration, etc.
**** Although 7,306 acres were burned for specific purposes, 6,148 acres of this burned area will benefit wildlife habitat.

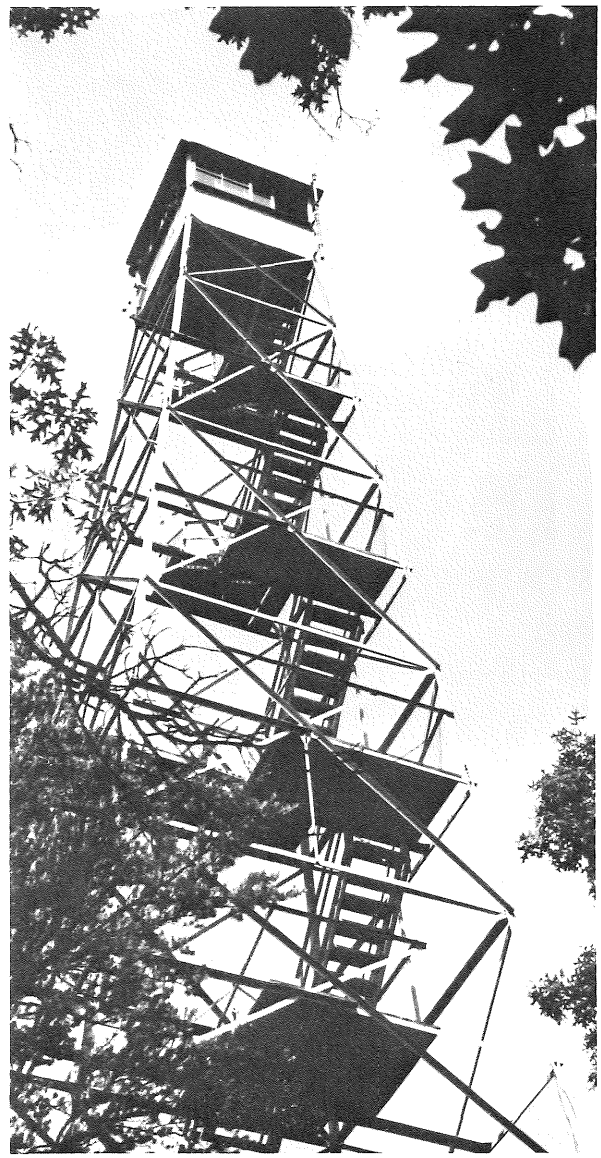
FOREST PROTECTION

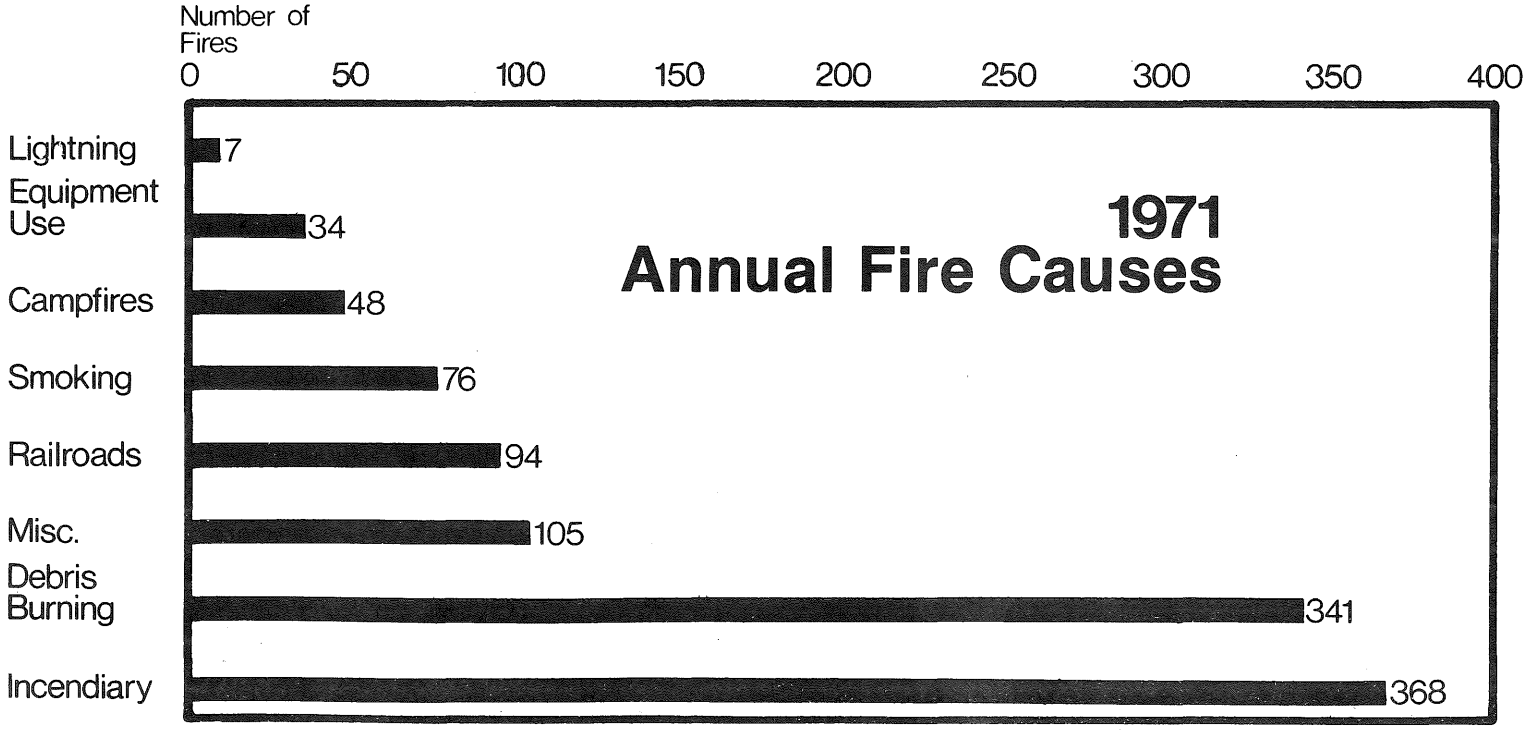
Man is directly involved in 87 percent of Minnesota's fires. Figures indicate that these man-caused fires blazed through 27,300 acres in 1971. Man's equipment caused 12 percent of the total fires and less than one percent were caused by lightning.

Personnel of the Division of Lands and Forestry used a variety of equipment to combat the type of fires that occur in Minnesota. The extreme slopes in Southeast Minnesota; the Jack Pine areas of Central Minnesota; and the great acres of grass and swamp in Northwestern Minnesota have demanded different types of suppression equipment. Hand tools, plows, tractors, trucks, jeeps, water trailers, pumps, power saws, and even boats and motors were required to carry out the Division's fire fighting role. Much of this equipment served as a dual role in forest management activities during low fire hazard seasons.

The Division employed 3,000-plus emergency fire fighters each year of the biennium to augment the State's fire fighting organization. 1,745 Fire Wardens assisted the Division on a voluntary basis in the issuance of burning permits in the forest areas of the State. Fire law violators were issued 191 violation tickets and $5,172.42 was collected in fire fighting costs.

Although fire control is a major operation in our program of forest protection, forest pest control receives constant attention.





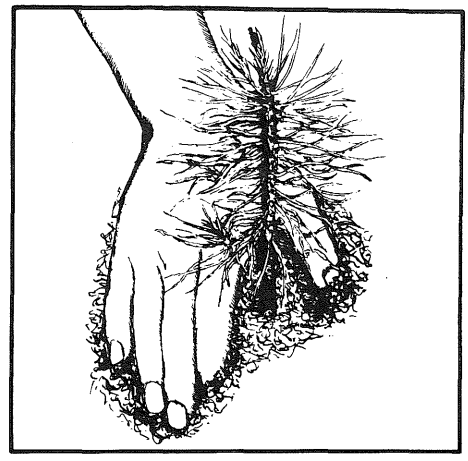
NEW DEVELOPMENTS IN BLACK SPRUCE MANAGEMENT

Black spruce management has seen a marked change in the past few years. Prescribed or controlled burning has become our main management tool in pure or near pure stands of black spruce. After a timber harvest, the slash is burned at a low cost per acre to prepare the site for natural or artificial seeding. Controlled burning, snowmobile seeding, and new techniques in mechanical harvesting are helping to increase the black spruce yield.

SEEDLING DISTRIBUTION

The three State nurseries shipped 14.4 million tree seedlings during 1970-71 growing season and 13.7 million tree seedlings during the 1971-72 growing season.

Over 49 percent of the seedling crop was shipped for planting on public lands. Individual and private landowners purchased 48 percent of the seedling crop while industry accounted for less than three percent.



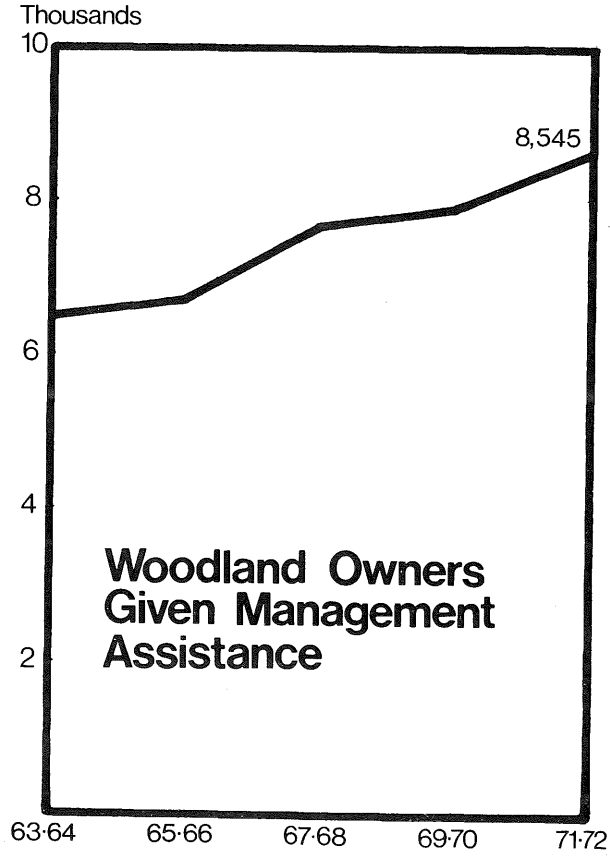
SMALL OWNER ASSISTANCE

In 1971-72 Division foresters examined 8,545 small private holdings comprising about 190,000 acres. An additional 14,500 landowners were given forestry advice during this same period.

The services included professional forestry assistance to owners owning less than 1000 acres of forested land. Foresters examined, analyzed, and prescribed recommendations for their woodland resources.

Division foresters also worked closely with the American Forest Institute in the implementation of the Tree Farm Program. Most of Minnesota's approximately 1,400 tree farms were inspected by DNR foresters.

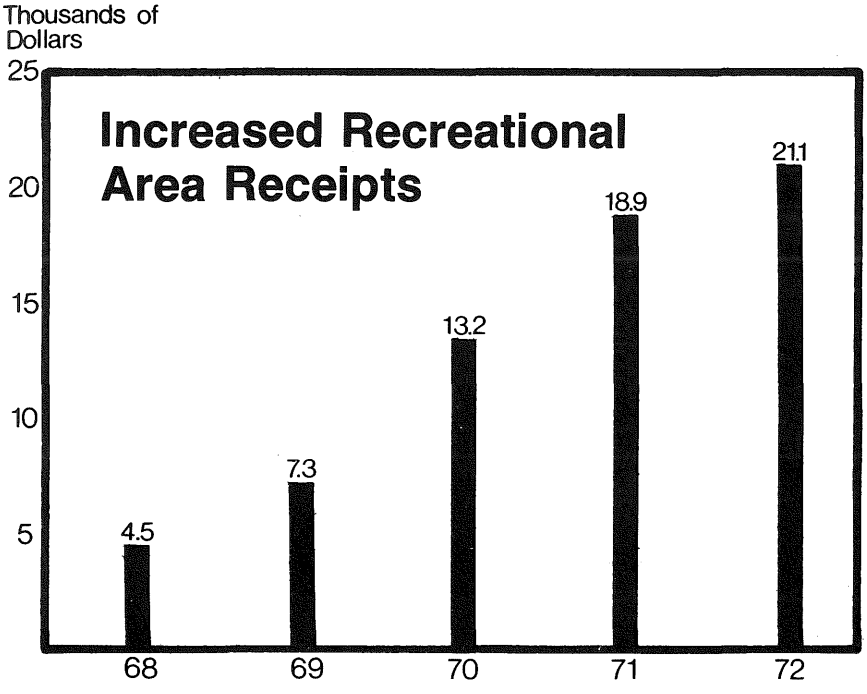
Four field days were held for public demonstration of forestry practices. The objective is to show the small owner how to improve his woodlands and achieve maximum benefit.



FOREST RECREATION

13 new campgrounds were added to the Division of Lands and Forestry primitive campground system during the biennium bringing the total to 63 campgrounds. Visitor use increased 13 percent to 319,570 visitor days in the 1971 calendar year. Campground receipts for fiscal year 1972 increased by 11 percent. In addition to campgrounds, the Division maintains over 45 picnic areas and 170 boat accesses.

The Division maintained over 1,500 miles of hiking, equestrian and snowmobile trails.

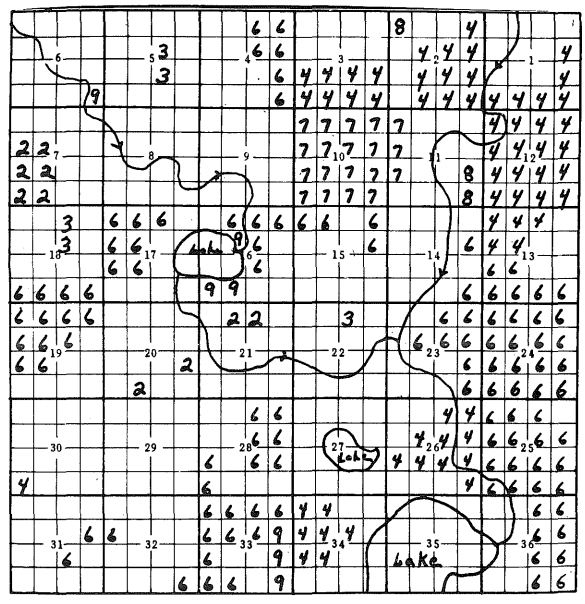


LAND USE CLASSIFICATION

The Division of Lands and Forestry in co-operation with other divisions of the Department of Natural Resources and most of the counties having a substantial amount of tax-forfeited land have been engaged in re-examining their lands. The re-examination, entitled Land Use Classification, has three distinct phases.

Phase I determines the highest and best use of the land in light of its physical characteristics and the surrounding social and economic environment.

This phase of the program has been active since June 1969 with over four million acres of State land and over one million acres of tax-forfeited lands being classified as of June 30, 1972. This leaves nearly 2.5 million acres to be completed in the 1972-73 biennium. Phase II and Phase III will follow as manpower and funds are made available.

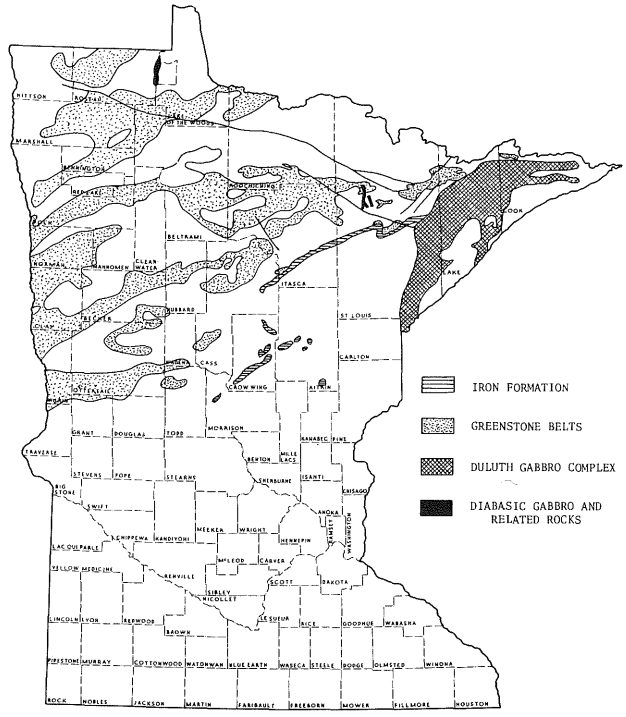


A typical township map classified for highest and best land use. The numbers indicate the classification code. For example, #6 represents a public forty suited for multiple use Conservation.

Water, Soils, and Minerals

MINERALS SECTION

The Minerals Section is responsible for the administration of more than five million acres of trust fund mineral rights owned by the State, and approximately five million acres of tax forfeited mineral rights.



MINNESOTA'S
MINERAL FORMATIONS

The management program consists of a number of major activities:

Evaluation of Mineral Resource Potential

The major long range objective is to evaluate the mineral potential of state administered mineral rights and to develop techniques applicable to Minnesota resources for exploration and processing.

Mineral Lease Administration

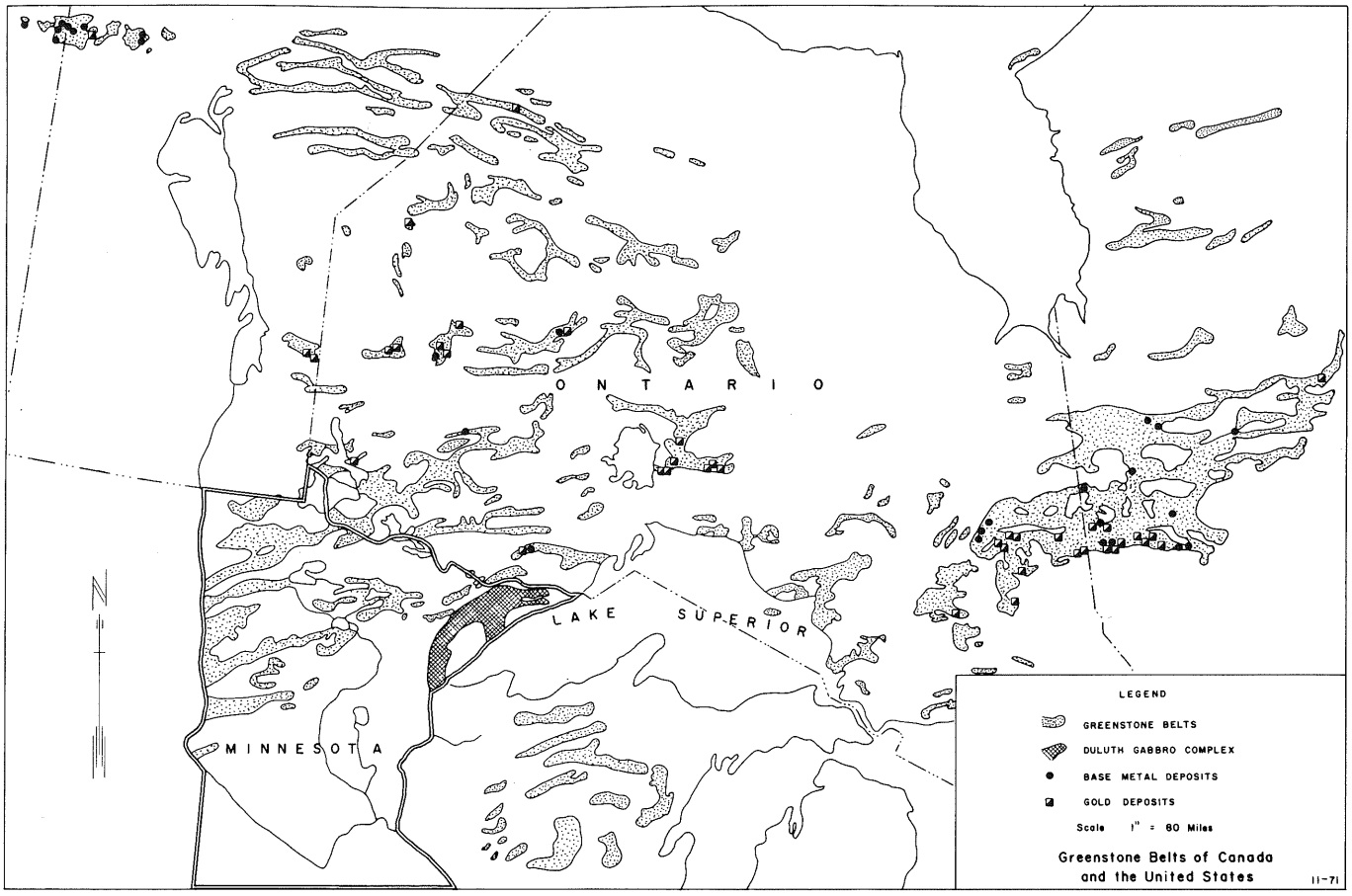
Administer and regulate the exploration and development of state-owned or administered minerals in order to provide equitable rental and royalty income for the state's trust funds and local taxing districts.

Control of Environmental Effects of Mining

Develop information on the environmental effects of mining, provide planning and technical assistance on minimizing these impacts, and implement and administer rules and regulations for mineland reclamation.

Determination of Mineral Ownership

To establish and improve methods of determining mineral ownership, to assist counties in developing mineral ownership records and to collect data needed to determine stream and lake bed navigability.



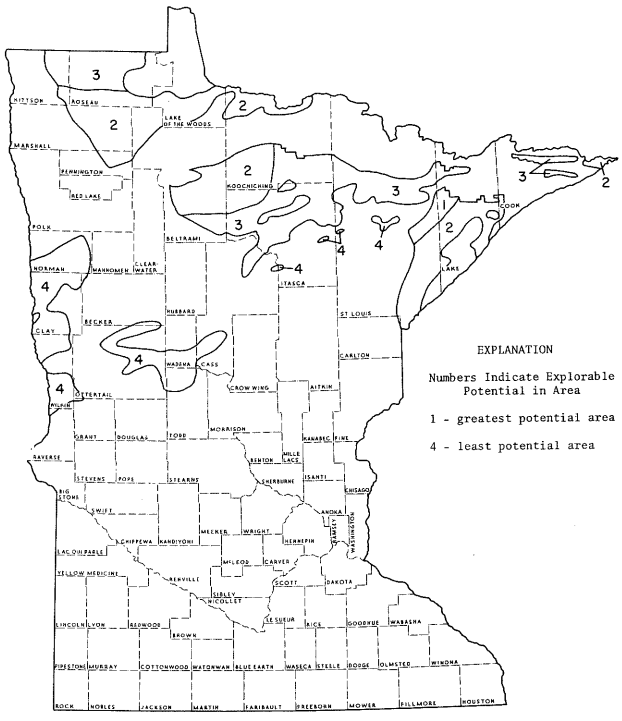
EVALUATION OF MINERAL RESOURCE POTENTIAL

Regional geologic mapping and detailed exploration data are used to make preliminary mineral evaluations in certain areas of the Duluth Complex and the greenstone. This information is used for land use classification, surface sales, land exchanges and mineral lease sales. To make the resource data readily available, a drill core library and literature library is maintained at the Mineral Section's Hibbing field office.

Applied exploration research is required to evaluate the adaptability of techniques to the geologic conditions which exist in Minnesota. Results of this research are used to evaluate mineral potential.

Metallurgical research is being conducted to develop techniques and processing equipment that may enable the development of otherwise uneconomic mineral resources.

Over 60,000 feet of exploration drill core was classified and approximately 7,500 chemical analysis were conducted during the biennium.



BASE METAL RESOURCE POTENTIAL

MINERAL LEASE ADMINISTRATION

As the largest single owner of mineral rights, the state, by its mineral leasing policy, plays a major role in administration, development, and conservation of mineral resources. Mineral lease administration encompasses the entire sequence of mineral leasing from the initial step of negotiation or sale of a lease to the final lease termination, whether it be after completion of a mining operation or after exploration surveys have shown that the potential of locating marketable mineral deposits on a particular property is low. This activity is divided into five major tasks:

1) Negotiation and sale of leases
2) Field geology and engineering
3) Interpretation and evaluation
4) Auxiliary minelands
5) Mineral testing

By the end of the biennium, the Division was administering 151 Iron Ore and Taconite leases covering 13,350 acres and 173 Copper-Nickel leases covering 75,902 acres. Of the Iron Ore and Taconite leases, 22 state-owned mining units were active in producing 23,147,870 tons of royalty ore. Revenue from rentals and royalties totaled $4,873,908 including $4,495,320 from Iron Ore and Taconite leases and $378,588 from rentals under the state Copper-Nickel exploration leases.

Tax forfeited mineral rentals and royalties for the period totaled $1,118,336, most of which was derived from royalty paid under taconite leases. Of this total, 80% was returned to the taxing districts in which the mineral leases are located and the remaining 20% was retained by the state and deposited in the general revenue fund.

Due to interest shown in exploration for Copper-Nickel and other associated minerals, a public lease sale was held in December of 1971 and resulted in 71 leases being issued covering 35,647 acres in St. Louis, Koochiching, Lake of the Woods, and Beltrami Counties. In addition, three leases covering 800 acres in Roseau and Lake of the Woods Counties were negotiated during 1971.

SUMMARY

SALES OF COPPER-NICKEL LEASES

Acreage Offered	Sale Date	Leases Awarded	Lessees	Gross Acreage	Leases and Acreage by County													
					Cook		Lake		St. Louis		Itasca		Koochiching		Lake of Woods		Roseau	Beltrami
132,550	12/20/66	267	13	87,635	29	6,115	37	8,955	201	72,565								
424,000	8/15/68	130	2	58,235									117	50,455	13	7,780		
327,000	12/11/68	238	6	88,082					169	59,680	54	21,470	15	6,932				
230,916	6/30/70	199	7	92,510					18	8,415	82	37,983	14	7,658	85	38,454		
800	9/30/71	3	1	800											1	160	2	640
791,399	12/14/71	71	5	35,647					10	2,720			4	2,431	7	3,186		50 27,310
1,906,665	5 Sales	908	15	362,909	29	6,115	37	8,955	398	143,380	136	59,453	150	67,476	106	49,580	2	640 50 27,310

LEASES IN EFFECT JULY 1, 1972

Formation	No. of Leases	Lessees	Gross Acreage	Leases and Acreage by County													
				Cook		Lake		St. Louis		Itasca		Koochiching		Lake of Woods		Roseau	Beltrami
Gabbro	39	5	10,181	0	0	7	2,151	32	8,030								
Greenstone	134	6	65,721					19	9,795	32	15,544	4	2,430	29	10,642	0	0 50 27,310
Totals	173	10*	75,902	0	0	7	2,151	51	17,825	32	15,544	4	2,430	29	10,642	0	0 50 27,310

* Some of the lessees hold both Gabbro and Greenstone leases.

CONTROL OF ENVIRONMENTAL EFFECTS OF MINING

Minnesota is possibly on the threshold of a new major industry; that of copper-nickel and associated mineral development. The development of such an industry could have a substantial environmental, economic and social impact on this state and its citizens for this and many future generations.

During FY 1971-72, the Department published a report entitled "Possible Environmental Impact of Base Metal Mining in Minnesota." The purpose of this report was to review and summarize available information on the mining and processing of base metals, such as copper and nickel, in order to provide a guide for planning and evaluating the impact of future mining operations in Minnesota. The Governor in January, 1972, directed the Department to establish an Inter-Agency Task Force to study the impacts of future base metal mining in Minnesota. These documents, for the first time, provide the citizens with a comprehensive background of base metal mining and its potential impacts in the State of Minnesota.

DETERMINATION OF MINERAL OWNERSHIP

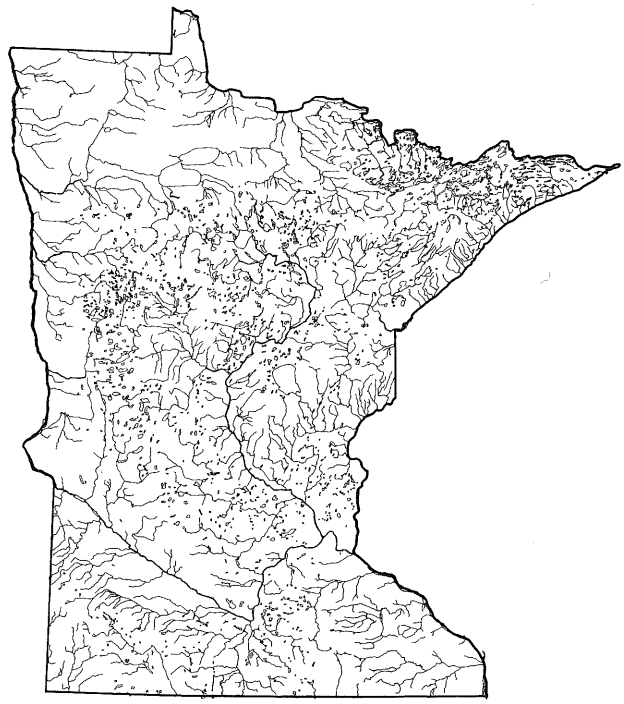
The current ownership of mineral rights on tax forfeited lands and on private lands where there has been a severance of mineral rights from the surface interest can at present only be determined by a title search. A number of counties in the state do not have a public tract index and tract indexes in the remaining counties do not usually contain data relative to the current mineral ownerships.

During the biennium the Minerals Section provided assistance to counties interested in improving their mineral ownership records. In addition, a pilot study was completed by the Department in conjunction with the Land Exchange Review Board and the University of Minnesota, to assess the feasibility of producing a mineral resources sub-program to the state Land Use Mapping Program. The major effort during this biennium was a study determining mineral ownerships. The study showed extremely complex mineral ownerships, with undivided fractions commonly in the 10,000's, and in a few cases with denominators as large as 64,800,000. These results emphasized the need to strengthen mineral registration laws in the state.

The Minerals Section continued to collect data needed to determine stream and lake bed navigability,and, therefore, state ownership. Periodic lake level readings are currently being taken on 268 lakes and streams in areas having mineral potential. Shoreline surveys, lake soundings, cross-section surveys, location of old logging dams and other historical data documenting commercial use were tasks conducted during the biennium, in order to provide necessary engineering and historical data for litigation.

WATERS SECTION

The Waters Section has the primary responsibility for managing the water resources of the state including more than 15,000 lakes of 5 acres or more, over 25,000 miles of streams and many billions of gallons of underground water.



MINNESOTA'S LAKES & STREAMS

The management program consists of a number of major activities including:

Water Resources Permit Administration

Provides for issuance, denial or modification of permits for changes in public waters and appropriation and use of underground waters.

Land & Water Surface Control Programs

1. Shoreland management of the unincorporated lands abutting approximately 9,500 lakes of 25 acres or more in area.
2. Flood plain management of all the flood plain areas of Minnesota within 260 communities and along streams in nearly every county.
3. Water surface use management for all lakes and streams capable of substantial beneficial use as requested by local government.

Lake and Stream and Ground Water Management

Involves obtaining and disseminating basic information on lakes, streams and ground water availability, distribution and use.

Watershed Management

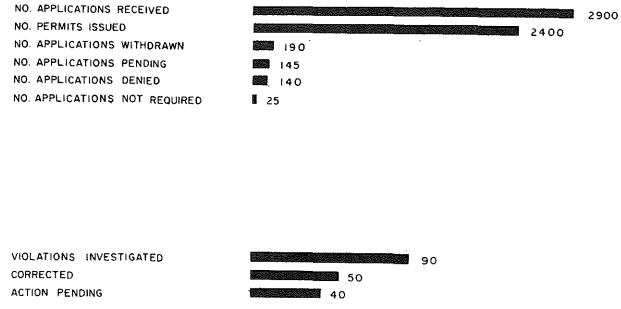
Involves review and advisory services for watershed districts, soil and water conservation districts, federal, state and local government water development projects and operation and maintenance of over 300 state dams.

WATER PERMITS

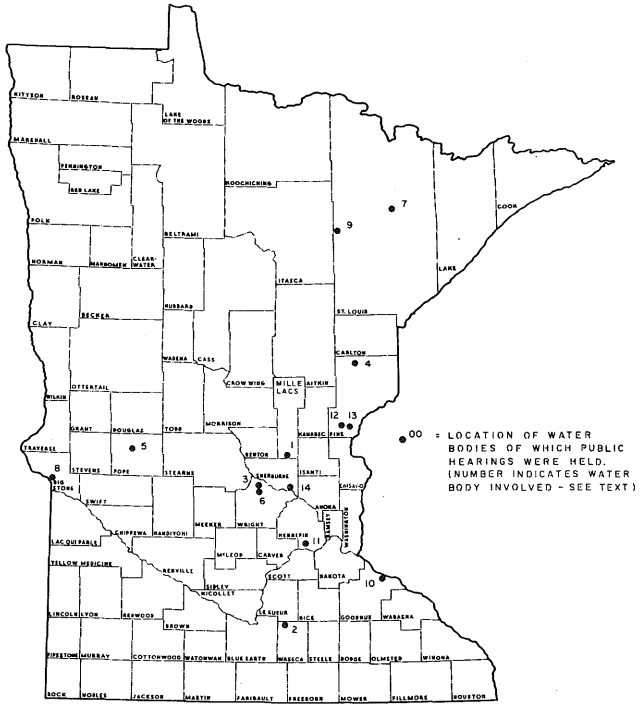
Regulation of activities involving public and private projects affecting public waters and appropriation and use of waters involved 2,900 permits during FY 1971-72. Of this total, approximately 60 percent were for changes in public waters and 33 percent were for appropriation of ground and surface water, mostly for agricultural purposes. The remaining 7 percent was for utility crossings over and under public waters.

Although 2,400 permits were issued and only 5 percent were denied, at least 80 percent of the permits granted were modified to make them compatible with management objectives.

A total of 90 violations of the permit laws were investigated during the biennium. All of the violations involved unauthorized changes in public waters and required considerable time and effort to evaluate. Only 55 percent of the violations have been corrected to date.



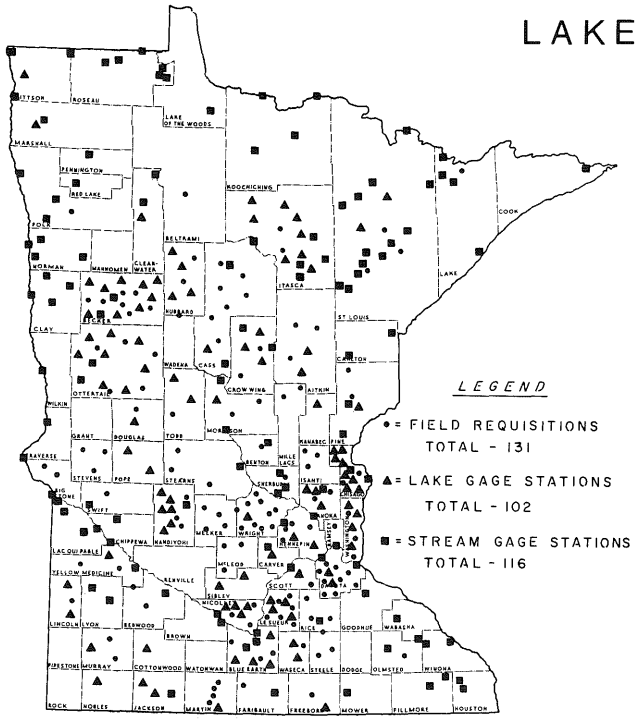
WATER PERMIT SUMMARY
F.Y. 1971 - 1972



PUBLIC HEARINGS

A total of 14 public hearings were held on permit applications or violations of water laws during the biennium.

Number	Water Involved	Situation
1.	Rice Lake	Restoration from illegal drainage
2.	Elysian Lake	Restoration from illegal drainage
3.	Sugar Lake	Channel-PA 69-1091
4.	Rush Lake	Excavation P.A. 71-260
5.	Minnewaska L.	Outlet-PA 71-1051
6.	Cedar Lake	Channel-PA 70-1075
7.	Little Mesave Lake	Water Use - PA 70-1004
8.	Big Stone L.	Water Use 70-1182
9.	Day Brook	Water Use 70-1081
10.	Mississippi River	Water Use (Prairie Island) 69-170
11.	Nine Mile Creek	Channel Change PA 70-42
12.	Snake River	Off channel 71-718
13.	Snake River	Off channel 71-1197
14.	Mississippi River	NSP water use 71-938, 71-939



GAGINGS AND SURVEYS

LAKE-STREAM DATA COLLECTION AND FIELD SURVEYS

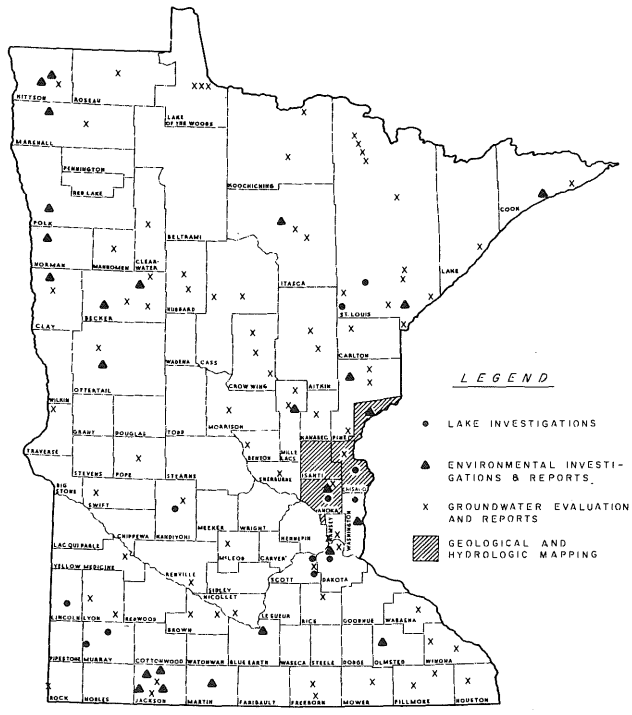
During the biennium the waters section maintained records of lake levels at 102 lakes in the state. Records of streamflow at 116 different sites were obtained for the section by the U. S. Geological Survey.

The 131 field survey investigations made by the surveys unit included surveys of lake outlets, ditching projects, diversion projects, dams and other structures and assistance in flood data and disaster work.

INVESTIGATIONS AND STUDIES OF LAKES, STREAMS AND GROUND WATER

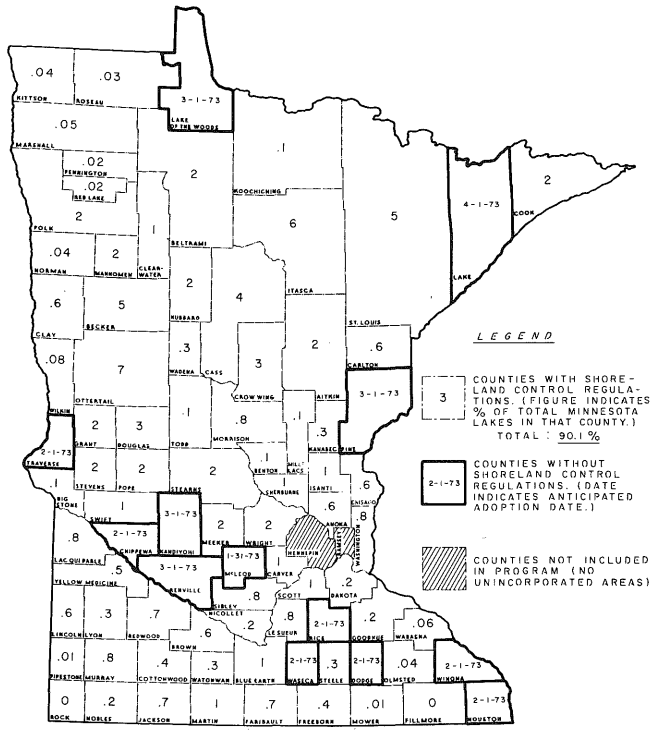
A total of 110 studies and investigations of resources availability, distribution, use or problems were made during the biennium. These included: 12 detailed lake investigations, 14 environmental investigations to evaluate the effects of present or proposed activities of man on the natural resources of various areas; 80 investigations in 50 counties and recommendations on ground water availability including recommended well depth, water bearings formation, etc.

In addition, surficial geologic and shallow hydrologic mapping studies were conducted for all of 3 counties and part of a 4th.



INVESTIGATIONS AND STUDIES

SHORELAND MANAGEMENT



SHORELAND MANAGEMENT PROGRESS

In the past two years the efforts of the Shoreland Management Unit of the Division have centered on contacts with county officials and in the preparation of shoreland informational materials. Our staff has attended over 220 meetings with county officials in 86 counties. The informational materials include a guide for prospective buyers of lakeshore property, an explanation of the public waters classification system, explanation and background information on the shoreland rules and regulations, and a guide outlining implementation procedures for county shoreland controls.

Approximately 17,500 of these reports have been distributed to county officials and the general public.

To date 72 counties have adopted shoreland controls in substantial compliance with the state standards and approximately 90% of the state's lakes in unincorporated areas are regulated by these controls.

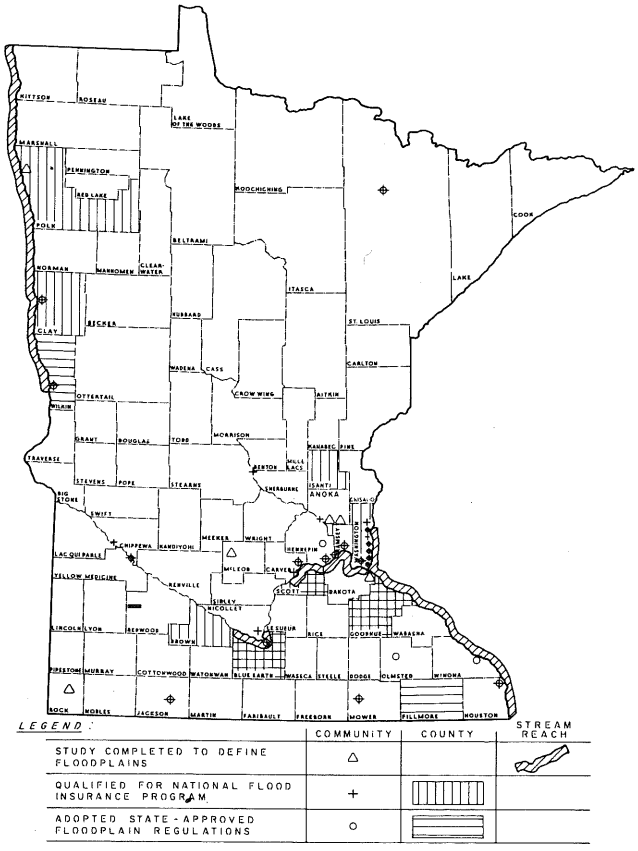
WATER SURFACE USE MANAGEMENT

The enabling legislation for this program was initiated by the 1971 Legislative Session. Little progress in the way of public contact, meetings or adopted regulations was made during the biennium, because no funds were made available to implement this program.

Approximately 5-10 percent of the shoreland management time was diverted to the establishment of basic operating procedures for this program.

FLOOD PLAIN MANAGEMENT

Progress continued in implementing a program to assure that the flood plains of the state are developed in a manner which will result in minimum loss of life and threat to health, and reduction of private and public economic loss caused by flooding. This is being accomplished primarily by local governmental units through the adoption of such flood plain management means as: regulatory controls; development policies and programs; comprehensive land use planning; flood insurance; and the construction of flood control measures, where justified and desired.



FLOOD PLAIN MANAGEMENT ACTIVITIES

To assist local governmental units in developing these management measures three sample ordinances and seven reports were prepared. Studies were completed or caused to be completed by the Section defining flood plain areas along the streams of 22 communities and the unincorporated areas of 17 counties. In addition, studies are underway to provide flood plain information to 18 additional communities and the unincorporated areas of 6 additional counties.

Utilizing available flood plain data, 22 communities and 5 counties adopted one or more forms of regulatory controls after approval by the Section.

Assistance was provided to 33 local governmental units in qualifying to participate in the National Flood Insurance Program.

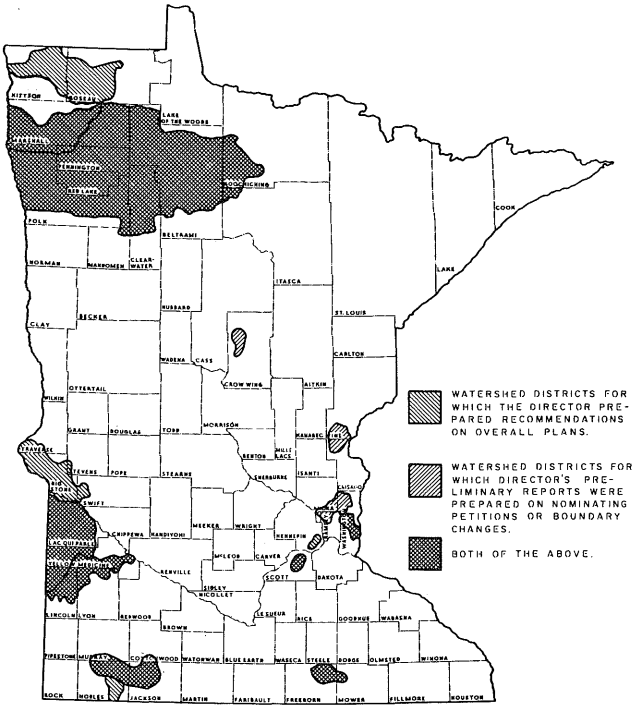
One or more meetings were held with 55 communities and 43 counties to provide flood plain management assistance. Overall 200 meetings were held with local officials.

Preliminary inventory of flood-prone communities was completed and 260 such communities were identified.

Coordination and assistance in flood plain management activities were carried out with the U. S. Army Corps of Engineers, U. S. Soil Conservation Service, U. S. Geological Survey, U. S. Department of Housing and Urban Development, Great Lakes Basin Commission, Souris-Red-Rainy Basins Commission, Minnesota Highway Department, Office of Civil Defense and within the various divisions and units within the Department.

WATERSHED MANAGEMENT

Watershed management activities during the biennium included a variety of watershed district matters, ditch proceedings and inspection and maintenance of a number of state dams as well as many conferences, discussions and much correspondence with Soil and Water Conservation Districts, the U. S. Corps of Engineers and cities, villages and counties on water resources projects.



WATERSHED DISTRICT ACTIVITIES

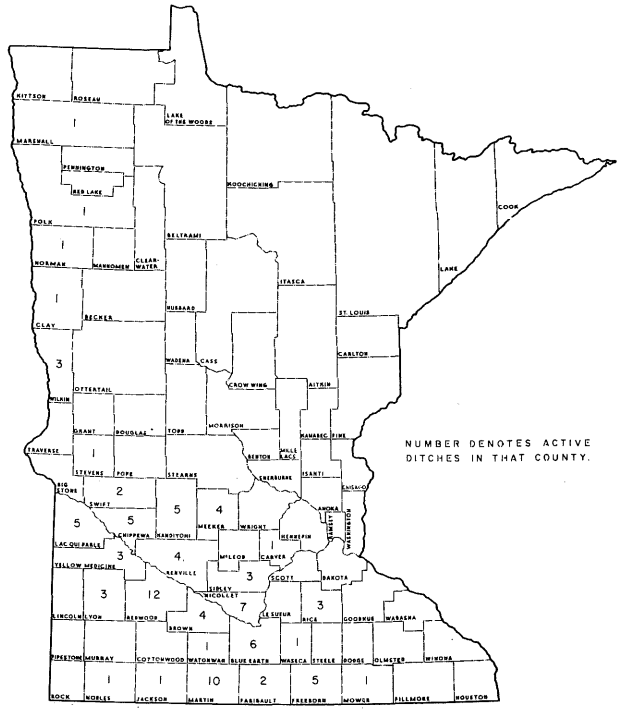
Watershed District Activity

The Waters Section was involved with matters concerning all 30 existing Watershed Districts during the biennium and reviewed annual reports of the districts.

Fifteen watershed districts prepared overall plans and/or nominating petitions on boundary changes during the biennium and the Waters Section prepared recommendations and reports on these matters in accordance with the Watershed Act, Minnesota Statutes Chapter 112.

Drainage Ditch Activities

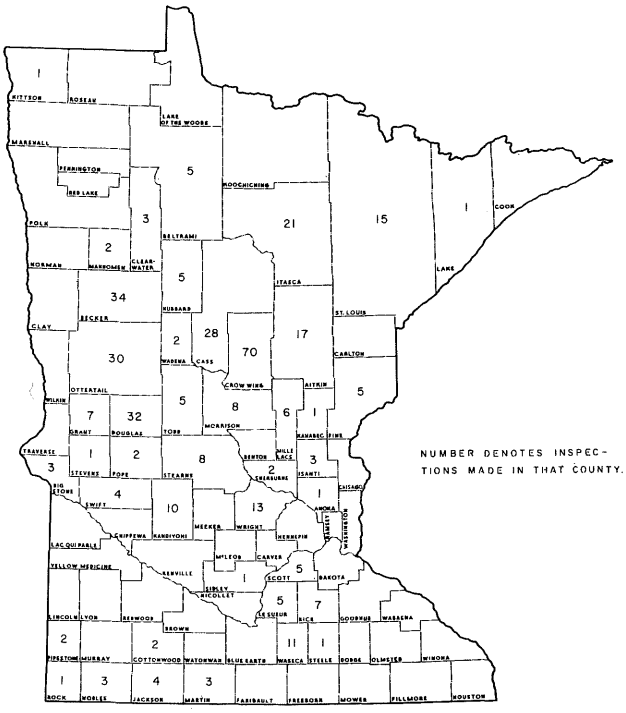
The section was involved in ditch proceedings involving 97 drainage ditch systems during the biennium. All of the ditch projects involved drainage activities in southwestern and south central Minnesota and along the western border adjacent to North Dakota. The drainage projects involved construction of new ditches as well as repair and reconstruction of existing systems. The section's efforts included review of engineering and environmental aspects of drainage proposals in attempts to protect and preserve natural areas as well as to assist in wise use and development of areas involved in drainage enterprises carried out under authority of Minnesota Statutes Chapter 106.



DITCH PROCEEDINGS

Inspection of State Dams

During the biennium the Waters Section made 395 inspections of state dams in Minnesota. In many instances several inspections were made of the same dam in order to provide certain essential information on the structure.



DAM INSPECTIONS

The greatest number of inspections, 70, were made in Crow Wing County.

As a result of the inspections, repairs and/or changes in outlet controls were made at a number of the dams each year.