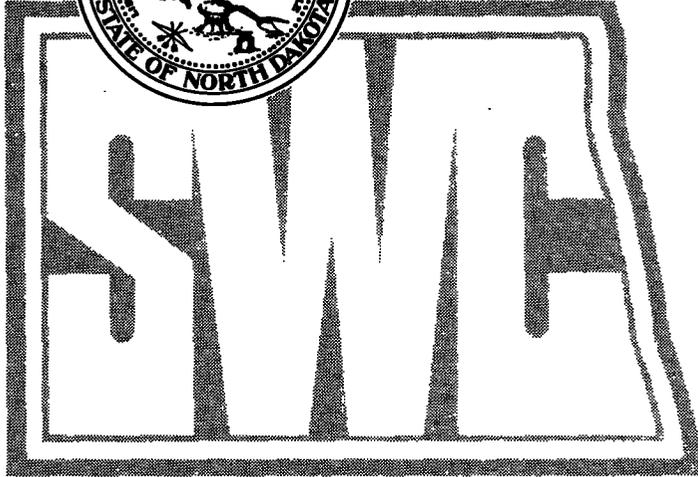


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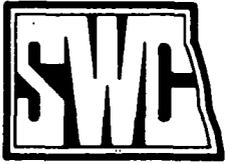


NORTH DAKOTA

State Water Commission

BIENNIAL REPORT
FOR THE PERIOD
July 1, 1985 to June 30, 1987

TC824.N9 A32 BIE



North Dakota State
Water Commission

GOVERNOR GEORGE A. SINNER
CHAIRMAN

VERNON FAHY
SECRETARY & STATE ENGINEER

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LIBRARY

November 12, 1987

Honorable George A. Sinner
Governor of North Dakota
State Capitol
Bismarck, North Dakota 58505

RE: 1985 - 1987 Biennial Report

Dear Governor Sinner:

In compliance with North Dakota Laws, we transmit for your information and consideration the Biennial Report of the State Engineer and State Water Commission for the period July 1, 1985 to June 30, 1987.

Respectively submitted,

A handwritten signature in cursive script that reads "Vernon Fahy".

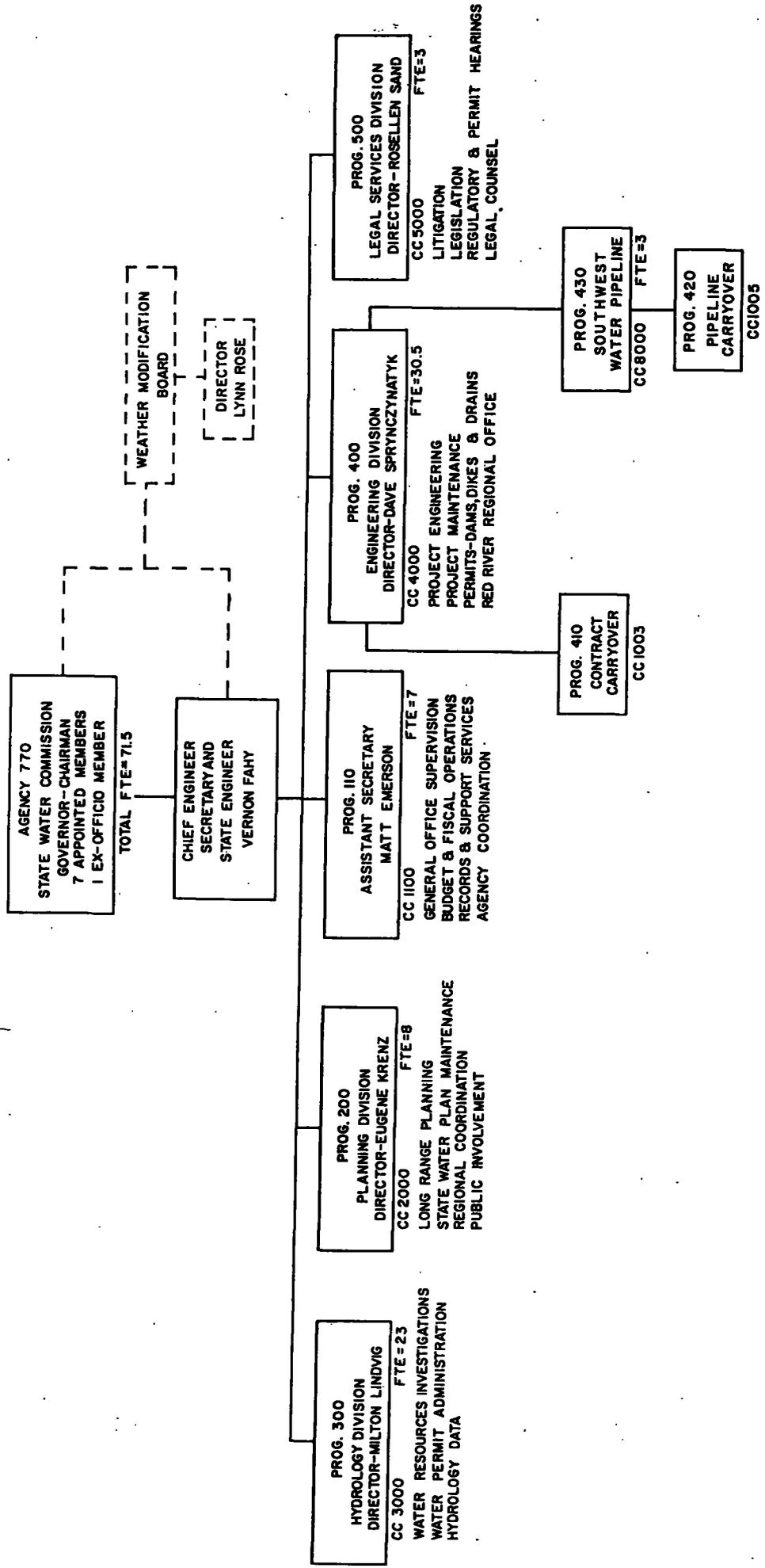
Vernon Fahy
Secretary & State Engineer

VF:kh

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THE SWC. PROVIDES GENERAL GUIDANCE TO THE WEATHER MODIFICATION BOARD.
THE WEATHER MODIFICATION BOARD IS A SEPARATE BUDGET DOCUMENT.

6/30/87

COMMISSION MEMBERS AS OF JULY 1, 1987

| NAME | POSITION | TERM ENDS |
|------------------|---------------------------|------------|
| George A. Sinner | Governor-Chairman | |
| Kent Jones | Department of Agriculture | |
| Jacob Gust | Member from West Fargo | July, 1989 |
| Jerome Spaeth | Member from Bismarck | July, 1989 |
| Richard Backes | Member from Glenburn | July, 1991 |
| William Lardy | Member from Dickinson | July, 1991 |
| William Guy | Member from Bismarck | July, 1993 |
| Joyce Byerly | Member from Watford City | July, 1993 |
| Daniel Narlock | Member from Oslo, MN | July, 1993 |

COMMISSION MEETINGS

JULY 1, 1985 THROUGH JUNE 30, 1987

| DATE | LOCATION |
|--------------------|-----------------|
| September 5, 1985 | Bismarck, ND |
| November 8, 1985 | Bismarck, ND |
| December 13, 1985 | Fargo, ND |
| February 18, 1986 | Bismarck, ND |
| April 17, 1986 | Bismarck, ND |
| May 28, 1986 | Valley City, ND |
| June 18, 1986 | Larimore, ND |
| September 10, 1986 | Bismarck, ND |
| October 17, 1986 | Bismarck, ND |
| November 19, 1986 | Bismarck, ND |
| December 3, 1986 | Bismarck, ND |
| February 13, 1987 | Bismarck, ND |
| April 8, 1987 | Bismarck, ND |
| June 17, 1987 | Bismarck, ND |

WATER PERMITS SUMMARY

JULY 1, 1985 THROUGH JUNE 30, 1987

TOTAL APPLICATIONS FILED ----- 110

IRRIGATION --

Applications Filed ----- 37
Total Acre-Feet of Water Granted -- 11,818.8 (Includes Backlog)
 From Ground Water: 5,339.7 Acre-Feet
 From Surface Water: 6,479.1 Acre-Feet
Total Acres Requested ----- 4,739.7
Total Acres Granted ----- 8,905.5 (Includes Backlog)

FLOOD CONTROL --

Applications Filed ----- 1
Acre-Feet Storage Granted ----- 63.8 (Includes Backlog)
Acre-Feet Annual Use Granted ----- 16.0 (Includes Backlog)

INDUSTRIAL --

Applications Filed ----- 46
Total Acre-Feet of Water Granted -- 1,857.2 (Includes Backlog)

MUNICIPAL --

Applications Filed ----- 4
Total Acre-Feet of Water Granted -- 535.3 (Includes Backlog)

RECREATION, FISH AND WILDLIFE --

Applications Filed ----- 17
Acre-Feet Storage Granted ----- 11,106.7 (Includes Backlog)
Acre-Feet Annual Use Granted ----- 3,188.7 (Includes Backlog)

RURAL DOMESTIC --

Applications Filed ----- 4
Total Acre-Feet of Water Granted -- 493.0 (Includes Backlog)

STOCKWATER --

Applications Filed ----- 1
Acre-Feet Storage Granted ----- 99.1 (Includes Backlog)
Acre-Feet Annual Use Granted ----- 33.8 (Includes Backlog)

NORTH DAKOTA STATE WATER COMMISSION

FUNCTION

The Commission was created in 1937 by the 25th Session of the Legislative Assembly. Originally the Commission body was the Governor and six appointed members. In 1939, the Legislature reduced the number of members to five including the Governor; in 1949, the Commission was increased in size to seven members, and in 1981, to nine members.

The Commission has the duty and authority to investigate, plan, regulate, undertake, construct, establish, maintain, control, operate and supervise all works, dams and projects to achieve any of the following objectives: provide water supplies for domestic, agricultural, municipal and industrial, irrigation, recreation and wildlife needs; control stream flow and channeling; provide for drainage of lands injured by excessive rainfall or water diversions; provide water for generation of electric power; develop and conserve waters within natural watersheds and provide for trans-basin diversion if deemed necessary; prepare and maintain a statewide master plan for future water resources development; and establish rules and regulations for the control of water supplies in the State.

The State Water Commission is located at the State Office Building near the State Capitol in Bismarck, North Dakota. The Commission is made up of the Governor as Chairman, the Commissioner of Agriculture as an ex-official member and seven appointed members who are appointed by the Chairman to serve terms of six years each. The terms of office for appointees are so arranged that two terms and not more than three terms shall expire on the first day of July of each odd numbered year. The Commission appoints a Secretary-State Engineer as their executive officer and he employs a staff as may be needed.

The State Engineer's role, during the 1981 Legislative Assembly, was separated from direct Water Commission authority although he remains as the Executive Officer for their activities. The State Engineer's duties are primarily in issuance of water permits and drainage permits, and to control any works used for storage, diversion or carriage of water.

In light of the responsibilities delegated by the State Legislature, the State Water Commission has promulgated a comprehensive state water resources program as follows:

1. Administration of the State's water laws and representation of the State's interest in water on federal and international levels;
2. Preparation and maintenance of a statewide master plan for future water resources development, including the collection of basic data;
3. Investigation and direction of planning of development of water resources projects in accordance with the master plan;

4. Coordination of the program and projects of federal, state and local agencies in water resources planning and development and research; and cooperation with water management and other entities in planning and completing water resources development projects;

5. Organization of various types of legal entities through which water resources projects can be completed and operated;

6. Construction and repair of dams, drains and other water management facilities;

7. Appearances before federal agencies and congressional committees relative to appropriations and enactment of proposed legislation that may aid or oppose the state water resources development program;

8. Investigate or determine the ground-water availability in the state for municipal, agricultural and industrial uses.

**NORTH DAKOTA STATE WATER COMMISSION
ADMINISTRATION DIVISION**

The Administrative Division provides the overall direction of agency powers and duties as described in the State Water Laws. The activities include both the State Engineer's and the Water Commission's operations as well as accounting, records and support services for all agency programs.

Budget and fiscal control work is carried on within the provisions of statutory law and principles or rules of that law. Agency accounting consists of keeping adequate financial records, preparation of financial statements and reports, project or program cost accounting, preparation of budgets and proper control of various funds appropriated by the State Legislature.

A considerable portion of time is spent in coordination of water resource program with federal agencies and other state and local entities. The division works with contracts and agreements necessary to carry out investigations, planning and cooperation with various other agencies in water resources development. A close liaison is maintained with Irrigation Districts, Water Resources Districts and the Garrison Conservancy District.

Activities during the current biennium under the combined duties of the nine-member Commission and the State Engineer, who also serves as Commission secretary, includes the following:

- (1) Supervise planning and preliminary design of Southwest Pipeline Projects involving services for engineering design, bonding repayment and to acquire necessary rights-of-way and easements.
- (2) Attend regular meetings held to conduct Commission financial participation in water resource projects and other business.
- (3) Represent the State's interest in water resources at regional and federal levels by assignments to issue such as the Ogallala Aquifer Study, Western States Water Policy, Missouri River Water Allocation and Garrison Diversion Unit hearings.

PLANNING DIVISION

State Water Plan Maintenance

The current State Plan was published by the State Water Commission in early 1983. Past experience has shown, however, that once a plan is completed in document form, it is very easy for unforeseen social, political, technical, or economic changes to render the plan obsolete.

To prevent the State Water Plan from becoming outdated, the Planning Division has worked to maintain the 1983 State Water Plan by computerizing its most important components. This computerization not only makes it possible to quickly and easily update information contained in the plan, but also improves the ability to respond in a timely fashion to inquiries. Another benefit is the ability to better analyze the implications of a project proposal on other existing and proposed projects in the affected watershed. With the increased capability provided by computer, the agency can move closer to planning along watershed boundaries, rather than planning along political boundaries as has often been the case in the past.

Missouri Basin States Association

After the Missouri River Basin Commission (MRBC) was terminated and federal funding was eliminated in 1981, the governors of the ten states in the Missouri River basin formed the Missouri Basin States Association (MBSA). MBSA, which is entirely state-supported, continues to promote communication and coordination between the basin states.

Red River Water Resources Council

Funds to continue operation of the Red River Water Resources Council beyond July 1, 1983 were not included in the Executive Budget recommendations for either North Dakota or Minnesota. Although the office in Moorhead, Minnesota was closed, the Council continues to function as it has in the past as a vehicle for coordinating water and related land resources matters in the Red River basin. Funding led to a decision by the two states not to fill the vacant staff position or to continue renting office space.

The Red River Water Resources Council operates without staff and with a chairmanship that rotates annually between North Dakota and Minnesota. Meetings are held on a quarterly basis.

The International Coalition for Land and Water Stewardship in the Red River Drainage Basin

In early 1985, representatives of the International Coalition for Land and Water Stewardship in the Red River Drainage basin met with members of the Red River Water Resources Council to request help in coordinating the Coalition's activities with federal, state, and local water management entities.

To assure that the efforts of the Coalition complement both the work that has been done in the past and the work that is currently being done by water management agencies, the representatives requested the

involvement of the Red River Water Resources Council on two committees - the policy guidance committee and the education/information committee.

Public Education Program in North Dakota Water Resource Management

The Planning Division's plan for the Public Education Program has as its primary goal the creation of greater public awareness and appreciation of North Dakota's water resources. To achieve this goal, the Planning Division has developed and distributed a number of informational pamphlets, fact sheets, newsletter articles, and education aids.

The Oxbow Newsletter

The Planning Division assumed publication of the Oxbow newsletter in March of 1984.

As in the past, the Oxbow newsletter serves a dual purpose of information and education, keeping readers aware not only of State Water Commission projects and programs, but also of recent activities in water resource management and development at the local, regional, and national levels.

The newsletter is sent to over 2100 people on a monthly basis.

Water Education Workshop for Teachers

The State Water Commission and several other water agencies sponsored several water education workshops for teachers during the biennium. These workshops were designed to acquaint participants with North Dakota's water resources, and to provide them with information regarding the management of water resources by federal, state, and local water agencies. In addition, the workshops were intended to help introduce water education into the North Dakota school system. More workshops are being planned for the next biennium.

HYDROLOGY DIVISION

Goal

Development and management of the State's water resources to serve the needs of present and succeeding generations of North Dakota citizens.

Objectives

1. Identify the availability and quality of the State's ground-water resources.
2. Assist municipalities and other public entities in developing solutions to particular water supply problems.
3. Assess impacts on existing water supply development in an aquifer or watershed on water levels, streamflow and water quality for purposes of allocation and management.
4. Construction and operation of predictive models that simulate hydrologic conditions for the purpose of developing viable water management programs and assist in the equitable allocation of the resource.
5. Collect, store and disseminate data on stream flow, ground-water levels, water quality and water use.
6. Provide orderly processing of water permit applications for the equitable allocation of the resource.
7. Provide recommendations on individual water permit applications to the State Engineer on the availability of water and impact on senior appropriations for the equitable allocation and management of the resources.
8. Provide for the orderly storage and retrieval of water permit records.
9. Maintain a record of the utilization of each conditional water permit and water right.

Project Activities for 1985-87

1. Reports Published:
 - A. The Hydrogeology of Major Glacial-Drift Aquifers in Burleigh, Emmons, and Kidder Counties, North Dakota
 - B. Water-Resources Data for the Lower James River, Dickey, LaMoure, and Stutsman Counties, North Dakota
 - C. Compendium of Selected North Dakota Unsaturated Flow Data in Functional Format
 - D. Hydrogeology and Computer Simulation of the Sindre Aquifer System Ward and McHenry Counties, North Dakota

E. Hydrology of the Devils Lake Basin, Northeastern North Dakota

2. Aquifer Investigations

- A. Oakes aquifer - Dickey County
- B. Study of the Feasibility of Artificial Recharge to the Oakes Aquifer - Dickey County
- C. Wahpeton aquifer - Richland County
- D. Eastern McLean County Hydrologic Study
- E. New Rockford Aquifer - Wells County
- F. Inkster Aquifer - Grand Forks County
- G. Fox Hills - Hell Creek Aquifer System - Western North Dakota
- H. Englevale Aquifer - Ransom and Sargent Counties
- I. Lost Lake Aquifer near City of Wilton for municipal water supply
- J. Evaluation of ground-water resources in the vicinity of the city of Plaza
- K. Skjermo Lake Aquifer - Divide County
- L. Evaluation of Natural Recharge to Unconfined Aquifers

3. Stream Evaluation Investigations

- A. Little Missouri River
- B. Heart River
- C. Sheyenne River
- D. James River
- E. Maple River

4. Hydrologic Data Collection

- a. Streamflow - statewide
- b. Ground-Water Levels - statewide
- c. Water Quality (chemical) - statewide
- d. Water Use - statewide

DIVISION OF ENGINEERING

The Division of Engineering provides for the issuance of permits for water resource project development, establishment of criteria and guidance for water management, assistance to communities on floodplain management, technical assistance to water resource districts, and hydrologic investigations for quantification of surface water resources. In addition, activities include the design, construction, maintenance and inspection of water resource projects in the State. The Division is also responsible for the distribution of maps, field notes, and government land office plats as directed by Section 61-03-11 of the North Dakota Century Code, and to ensure adequate map coverage is available by contracting with United States Geological Survey to map additional areas.

The major goals of the Division of Engineering are to provide data; to manage and ensure that the surface waters of the State are developed in an orderly and safe manner; to ensure that the waters in which the State has a direct interest are protected for future generations; to develop necessary water resource projects at the request of local entities in the State; to provide technical data to communities in floodplain; and to satisfy public demands for availability of maps, field notes, and government land office plats.

During the biennium the Garrison Diversion Municipal, Rural, and Industrial Water Supply Program was authorized by the U.S. Congress on May 12, 1986, through the Garrison Diversion Reformulation Act of 1986. The act authorized the appropriation of \$200 million of federal funds for the planning and construction of water supply facilities for Municipal, Rural, and Industrial use throughout the State of North Dakota. The North Dakota State Water Commission and the Garrison

Diversion Conservancy District are responsible for administering the MR&I Program.

A report entitled "Garrison Municipal, Rural, and Industrial Water Supply Program," was completed in February, 1987, by the Garrison Diversion Conservancy District and the North Dakota State Water Commission. The report discusses the water supply and water treatment needs for municipal, industrial, and rural uses within the State of North Dakota and presents a general concept of development to meet those needs.

The administering of the Municipal, Rural, and Industrial Water Supply Program by the State Water Commission involves a review, evaluation and approval of MR&I program applications, preliminary engineering reports, feasibility studies, environmental documents, final design plans, and other submittals required of the program. The program requires a close working relationship between the State Water Commission and local sponsors, the Garrison Diversion Conservancy District, and the U.S. Bureau of Reclamation.

Construction began in April, 1986, on the Southwest Pipeline Project, which will divert water from Lake Sakakawea to areas in southwestern North Dakota for municipal and rural domestic water uses. The project consists of 324 miles of pipeline, a 15.25 million gallon per day water treatment plant and several pump stations and reservoirs.

In 1986, the State Water Commission entered into an agreement with the Basin Electric Cooperative for joint use of their Lake Sakakawea intake. The Southwest Pipeline Project acquired a perpetual easement from Basin to install pumps in the intake structure. By June 30, 1987, approximately 21.5 miles of 30 and 36 inch pipeline had been laid. The Southwest Pipeline Project also began receiving federal funds in

1987 through the Garrison Diversion MR&I program. Prior to 1986, all funds expended in the project were state funds.

The Red River Valley office, located in West Fargo, includes one water resource engineer and a part-time employee. The cost of operating the office is shared by the Red River Joint Water Resource Board and the State Water Commission.

Approximately half of the engineer's time involves working on projects eligible for Red River Joint Water Resource Board funding. The purpose of this Board, comprised of 13 water resource boards within 10 counties, is to develop flood protection projects within the Red River Basin.

The engineer represents the State Water Commission at meetings held in the Red River Valley. Upon request, he also attends the individual water resource board meetings. He provides technical assistance to the boards on numerous issues. Technical assistance that would require several days of the engineer's time are requested in writing. A total of 19 written requests requiring the engineer's assistance were received during the biennium. In addition, the following studies ranging from reconnaissance level to slightly less than the preliminary investigation level, were also prepared during the biennium:

- Magnolia Dam Reconstruction (Cass County).
- Potential Dam Site on Tributary of Labella Creek (Sargent County).
- Flood Control Study (Potential Dam Sites) on Goose River.
- Potential Dam Site on Wild Rice River: WR-190 (Richland County).
- Flood Control Study on Antelope Creek (Richland County).
- City of Kathryn Flood Control Study (Barnes County).
- City of Clifford Flood Control Study (Steele County).

The engineer also inspects the construction of projects within the Red River Valley that have been approved for cost-sharing by the State Water Commission. Upon final inspection, a recommendation on distribution of funds is made.

During the 1985-87 biennium, the Regulatory Section processed 50 dam-dike-other device permit applications and 775 applications to drain. There were 6 drainage applications of statewide or interdistrict significance, with one being withdrawn. The dam-dike-other device applications consist of 15 for fish and wildlife, 6 to protect agricultural land, 5 for roadway changes, 4 for recreation, 4 for mining operations, 4 for irrigation, 3 to protect farmsteads, 3 to protect city property, 2 for watersupply, 2 for erosion control, 1 for industrial use, and 1 for a lagoon site.

The Regulatory Section also processes request for pipeline and utility crossings of streams, such as gas mains, power distribution lines, water and sewer lines, and telephone lines. Requests for mine permits involving new lands for mining and reclamation activities are also reviewed.

The Floodplain Management Act of 1981 placed the responsibility for the floodplain management in North Dakota in the office of the State Engineer. This Act gives the State Engineer the authority to assist communities in delineating floodplains and to work with them to meet the requirements of the National Flood Insurance Program (NFIP). The office of the State Engineer has been designated as the State Coordinating Agency for the National Flood Insurance Program.

Assistance to communities participating in the National Flood Insurance Program involves: converting communities to the Regular phase of the program, helping communities to develop or revise ordinances, performing or coordinating floodplain hazard studies, technical assistance in resolving mapping and administration problems, publication of a newsletter, assisting in the development of local flood hazard mitigation plans for Linton, Lisbon, Drayton. Flood Hazard Mitigation workshops were held during the biennium to increase awareness of local

officials and administrators of the methods available to lessen the impact of flooding problems.

Preliminary engineering and hydrologic investigation reports were prepared by the Investigation Section for the following projects during the biennium:

- Sheyenne River Snagging and Clearing (Ransom County - SWC #568)
- Sundown Acres Bank Stabilization (Burleigh County - SWC #576-27)
- WR-190 Dam (Richland County - SWC #1792)
- Odland Dam Restoration (Billings County - SWC #394)
- Raising Raleigh Dam (Grant County - SWC #507-1)
- New Raleigh Dam (Grant County - SWC #507-2)
- Baukol-Noonan Dam (Divide County - SWC #1696)
- Rock Lake Flood Control (Towner County - SWC #1362)

The Investigation Section also provides hydraulic modelling for floodplain management studies done by the Floodplain Management Section. This type of modelling was accomplished for the studies of Grafton, Watford City and Williston.

Other investigation studies initiated during the biennium included the following:

- Whitetail Creek Dam (Billings County - SWC #1825)
- Linton Snagging and Clearing (Emmons County - SWC #558-1)
- Chain of Lakes Hydraulic Improvements (Ramsey County - SWC #1802)
- Max Flood Control (McLean County - SWC #1833)
- Dickinson Floodplain Management Study (Stark County - SWC #1751E)
- Red River Channel Improvement Study (Various Counties - SWC #1701)

During this period, the Investigations Section also provided major technical assistance in the following projects:

- Mouse River Flood Control (SWC #1408)
- Red River Dikes (SWC #1638)
- Dam Safety Hydrology (SWC #1579)
- Garrison Diversion (SWC #237)
- Golden Lake Restoration (Steel County - SWC #1525)
- Red Willow Lake Restoration (Griggs County - SWC #1356)

Major construction projects undertaken by the Design and Construction Section during the biennium included:

- Big Coulee Dam (Towner County - SWC #1418)
- Spec Davis Dam (Slope County - SWC #1784)
- Baukol-Noonan Dam (Divide County - SWC #1699)

Antelope Creek Snagging and Clearing (Mercer County - SWC #1517)
 Sheyenne River Snagging and Clearing (Barnes County - SWC #1816)
 Golden Lake Restoration (Steele County - SWC #475)

Maintenance was performed by the Design and Construction Section
 at the following projects during the biennium:

Glen Ullin RR Dam #1 (Morton County - SWC #673)
 Spring Lake Dam (Bowman County - SWC #388)
 White Earth Dam (Mountrail County - SWC #327)
 Hillsboro Dam (Foogman) (Traill County - SWC #482)
 English Coulee (Grand Forks County - SWC #1351)
 Niagara Dam (Grand Forks County- SWC #464)
 Pembina Dam (Pembina County - SWC #299)
 Cass County Drain #29 (Cass County - SWC #1081)
 Golden Lake (Steele County - #475)
 Spiritwood Lake (Stutsman County - SWC #461)
 Mott City Dam (Hettinger County - SWC #249)
 Dead Colt Creek Dam (Ransom County - SWC #1671)
 Camel Hump Dam (Golden Valley County - SWC #1382)
 McGregor Dam (Williams County - SWC #528)
 East Broadway Dam (Stark County - SWC #1307)
 Lisbon Channel Dam (Ransom County - SWC #316)
 Wyard Dam (Foster County - SWC #467)
 USGS Gaging Stations (SWC# 1393)
 -Sherwood Gaging Station
 -Helca Gaging Station
 -Bear Creek Gaging Station
 -Bear Den Creek Gaging Station
 -Pingree Gaging Station
 -Abercrombie Gaging Station
 -Mauvais Gaging Station

Under the State's Dam Safety Inspection Program, a total of 44 dams were inspected and reports prepared. Thirty-five of the inspections were reinspections of dams previously inspected. Nine of the dams inspected were dams in which the State Water Commission had previously participated in construction or maintenance. Of the 44 dams, nine were considered to be high hazard, 21 were medium hazard, and the remaining 14 dams were considered to be low hazard dams. None of these inspections revealed unsafe structures. Dams inspected included:

| <u>Reinspections</u> | <u>Hazard Class</u> |
|---|---------------------|
| Sweetbriar Creek Dam (Morton County - SWC #642) | M |
| Mt. Carmel Dam (Cavalier County - SWC #1346) | M |
| Camel Butte Dam (Golden Valley - SWC #1382) | M |
| Blacktail Dam (Williams County - SWC #560) | M |
| Tioga Dam (Williams County - SWC #561) | H |

| | |
|--|---|
| McGregor Dam (Williams County - SWC #528) | H |
| Short Creek Dam (Burke County - SWC #586) | M |
| Clausen Springs Dam (Barnes County - SWC #1378) | H |
| Valley City Mill Dam (Barnes County - SWC #477) | M |
| Fort Ransom Dam (Ransom County - SWC #275) | L |
| Lisbon Dam (Ransom County - SWC #316) | M |
| Fargo 4 St S Dam (Cass County - SWC #583) | L |
| Fargo 12 Ave N Dam (Cass County - SWC #591) | L |
| Hunter Dam (Cass County - SWC #619) | H |
| Ueland Dam (Griggs County - SWC #460) | L |
| Portland Dam (Traill County - SWC #409) | L |
| Upper Turtle R No. 9 (Grand Forks County - SWC #985) | H |
| Herzog Dam (Pembina County - SWC #849) | M |
| Mott Watershed Dam (Hettinger County - SWC #1457) | H |
| Nelson Lake Dam (Oliver County - SWC #1478) | H |
| Square Butte Creek Dam #4 (Oliver County - SWC #846) | M |
| Square Butte Creek Dam #5 (Oliver County - SWC #846) | H |
| Daub Dam (Oliver County - SWC #1527) | M |
| Bowman-Haley (Bowman County - SWC #216) | M |
| Burlington Dam No. 1 (Ward County - SWC #221) | H |
| Daub Dam (Arrode Lake) (Oliver County - SWC #1527) | M |
| Sweet Briar Creek Dam (Morton County - SWC #642) | M |
| Sather Dam (McKenzie County - SWC #1289) | M |
| Sheep Creek Dam (Grant County - SWC #1358) | L |
| Queen City Dam (Stark County - SWC #1409) | L |
| Neché Dam (Pembina County - SWC #274) | M |
| Chyle (N. Br Forest R #6) (Walsh County - SWC #929) | M |
| Cotton Wood Creek (Lamoure County - SWC #1515) | M |
| Tolna Dam No. 1 (Nelson County - SWC #404) | M |
| Lisbon Dam (Ransom County - SWC #316) | M |

New Reports

| |
|---|
| Arnegard Dam (McKenzie County - SWC #613) |
| Northgate Dam (Burke County - SWC #667) |
| Colt Dam (Mercer County - SWC #1349) |
| Big Coulee Dam (Towner County - SWC #1418) |
| Speck Davis Dam (Slope County - SWC #1784) |
| Indian Creek Dam (Hettinger County - SWC #1556) |
| Froelich Dam (Sioux County - SWC #627) |
| Wilson Dam (Dickey County - SWC #1455) |
| Wyard (Kivan's) Dam (Foster County - SWC #467) |

During the biennium, approximately 15,000 maps, field notes, and government land office plats were distributed to the public.

The contract fund for construction is used to cost participate in water resource projects throughout the state. The following is a list of projects in which the Water Commission cost participated during the 1985-87 biennium, from the contract fund:

LEGAL DIVISION

During the 1985-87 biennium the Legal Division assisted the State Water Commission, State Engineer, and the water resource districts in performing their duties including developing legislation, assisting in administration, regulation, and commencing and defending against litigation.

The Division was involved for a large part of its time in developing and amending new administrative rules and legislation. The Division worked to develop new administrative rules for water appropriation, weather modification, and the resources trust fund.

Additionally, the Division assisted in the formulation, drafting, and presentation to the 1987 Legislative Assembly of several bills. These enactments involved project maintenance, revision of the drainage laws, and ground water legislation.

Administratively the Division involved itself with researching liability, contracts, governmental immunity, and navigability issues. The Division developed a bid procedure manual which has proved to be very useful at bid openings and in preparing bid documents. The Division also attended and presided over water permit hearings and illegal dam and drainage hearings. Most of the time and effort in this area concerned administrative hearings held to address dikes in the Red River Valley.

In the litigation area the Red River dikes also consumed the vast majority of the Division's time. The most significant litigation from a policy standpoint, however, were cases presented to the U.S. Supreme Court. In the first case the Court refused to overturn a federal district court decision upholding the Yellowstone River Compact. This Compact was challenged because a provision of the Compact required the approval of the compacting states, Montana, Wyoming, and North Dakota, for an out-of-basin transfer. This provision was upheld.

The second case, now ongoing in the U.S. Supreme Court, is the "ETSI" litigation. This case addresses the issue of which federal agency, the Bureau of Reclamation or the U.S. Army Corp of Engineers, may contract to deliver water from the Mainstem Missouri Reservoirs. The case may also provide insight into the more significant question of whether the Flood Control Act of 1944 was an apportionment to the several Missouri Basin states of the waters of the Missouri River.

On a more local nature, litigation on the White Spur drainage project resulted in a North Dakota Supreme Court decision that the State Engineer's decision on an appeal from an assessment for a drainage project was final and could not be appealed to the district court. Also, the Division assisted the Barnes County Water Resource District in successfully defending an appeal of its decision to deny a drainage permit.

**NORTH DAKOTA ATMOSPHERIC RESOURCE BOARD
A DIVISION OF
NORTH DAKOTA STATE WATER COMMISSION**

The public of North Dakota has sought means for over a third of a century to better utilize its atmospheric resources. A small percentage increase in rainfall, or a decrease in hail damage, are both economically viable for North Dakota. In 1975 the Board was established to specifically:

1. Conduct scientifically and socially acceptable program of cloud modification.
2. Provide guidance in following established environmentally prudent procedures in weather modification.
3. Assess the effects of modifying precipitation in an operational cloud modification program.

The Board consists of the state engineer of the State Water Commission; director of the State Aeronautics Commission; a representative of the State Department of Health & Consolidated Laboratories; and seven gubernatorial appointed members. The state has taken well planned steps to achieve each goal through the Board.

First, the Administration Program consists of making and enforcing reasonable rules and regulations concerning qualifications, procedures, and conditions for issuance, revocation, suspension, and modification of licenses and permits. The Board establishes the standards and instructions governing weather modification operations.

Second, operational programs conducted in North Dakota are local programs. The state's involvement is to maintain highest standards, insure public safety, protect the environment, and standardize the operations across the state. The operational programs have local support and funds which provide the major funding resources.

A recent study shows a significant (43.5%) reduction in hail damage was accomplished during the first ten years of the Board. The report was published by the Consortium for Atmospheric Resource Development and was presented at the Weather Modification Conference of the American Meteorological Society.

Currently, the State of North Dakota is working with counties in cost-share programs where the state paid for 31% of the programs, and the counties, plus some other income, paid for 69%. Again, the importance of local control is stressed by these figures.

During the summer of 1987, the State-Federal Cooperative Research Program in Weather Modification was conducted at Dickinson, North Dakota. The research included a "tracer gas" experiment, through which the dispersion of seeding materials can be better understood. This research was publicized on the "Today Show" on NBC.

Readers who desire further information are directed to the 1985-87 Biennium Report of the Board.

**1985-87 Biennium
Engineering Contract Fund Expenditures**

| <u>County</u> | <u>Project</u> | <u>Amount</u> | <u>County Total</u> |
|---------------|---------------------------------|----------------|-------------------------|
| Barnes | Sheyenne R. Snagging & Clearing | \$ 2,812 | \$ 2,812 |
| Burleigh | McKenzie Slough Flood Control | 2,802 | |
| | Irrigation Research | <u>2,097</u> | 4,899 |
| Cass | Argusville Flood Control | 40,861 | |
| | Cass Drain No. 10 | 43,386 | |
| | Cass Drain No. 16 | 27,926 | |
| | Cass Drain No. 30 | 27,404 | |
| | Cass Drain No. 40 | 52,393 | |
| | Cass Drain No. 42 | 12,252 | |
| | Maple River Flood Control | <u>235,001</u> | 439,223 |
| Cavalier | Easbey Township Flood Control | 6,380 | |
| | Manilla Township Flood Control | <u>2,425</u> | 8,805 |
| Divide | Baukol-Noonan Dam | 16,941 | 16,941 |
| Gr. Forks | Grand Forks Drain No. 4 | 20,240 | |
| | Riverside Park Dam | <u>15,584</u> | 35,824 |
| LaMoure | Edgeley Flood Control | 1,280 | 1,280 |
| McHenry | Eaton Irrigation Repair | 18,809 | 18,809 |
| Mercer | Antelope Creek Cleanout | 9,530 | 9,530 |
| Pembina | Hamilton Flood Control | 1,280 | 1,280 |
| Pierce | Rugby Flood Control | 27,624 | 27,624 |
| Ransom | Ransom Critical Treatment Area | 4,897 | 4,897 |
| Ramsey | Morrison Lake | 63,165 | 63,165 |
| Richland | Richland Drain No. 48 | 36,700 | 36,700 |
| Stark | Dickinson Flood Control | 35,200 | 35,200 |
| Steele | Beaver Creek Dam | 189,393 | 189,393 |
| Towner | Big Coulee Dam | 121,493 | 121,493 |
| Traill | Miller Drain | 23,672 | |
| | Red Owl Critical Treatment Area | <u>3,881</u> | 27,553 |

Continued

| | | | |
|---------|----------------------------|--------|---------------------|
| Wells | Oak Creek Watershed | 50,177 | 50,177 |
| Various | Red River Dike Control | 45,586 | 45,586 |
| Various | Souris River Flood Control | 46,308 | 46,308 |
| | Total | | \$ 1,187,499 |

Note: 1985-87 Contract Fund carryover to 1987-89 is \$ 2,357,450

NORTH DAKOTA STATE WATER COMMISSION

FUND SUMMARY FOR BIENNIAL
PERIOD ENDING JUNE 30, 1987

| Account Description | Original Appropriation | Adjusted Appropriation | Revenues/Expenditures | Appropriation Balance |
|--------------------------|------------------------|------------------------|--------------------------|-----------------------|
| Revenues | \$21,831,501 | \$29,824,248 | \$15,512,703 | \$14,311,545 |
| General Fund | 7,881,826 | 7,416,553 | 6,816,244 | 600,309 |
| TOTAL | \$29,713,327 | \$37,240,801 | \$22,328,947 | \$14,911,854 |
| Salaries and Wages | \$ 4,536,690 | \$ 4,397,216 | \$4,389,281 | \$ 7,935 |
| Operating Expenses | 979,029 | 956,930 | 896,760 | 60,170 |
| Data Processing | 181,400 | 127,300 | 127,300 | |
| Equipment | 351,850 | 442,650 | 423,738 | 18,912 |
| Contract Carryover 83-85 | | 593,424 | 593,424 | |
| Contracts | 3,664,358 | 3,632,184 | 1,274,734 | 2,357,450 |
| Pipeline Carryover 83-85 | | 477,208 | 472,860 | 4,348 |
| Southwest Pipeline | 20,000,000 | 26,613,889 | 14,150,800 | 12,463,089 |
| TOTAL | \$29,713,327 | \$37,240,801 | \$22,328,897 | \$14,911,904 |
| | | | Fund Cash Balance | 50 |

NOTE: Approved carryover from appropriation balance: Contracts \$2,357,450
Pipeline 7,728,378

Special Fund Revenue Deficit 4,733,167
Turnback to State General Fund 92,909

**NORTH DAKOTA
STATE WATER COMMISSION**

**FUNCTION SUMMARY FOR BIENNIAL
PERIOD ENDING JUNE 30, 1987**

| FUNCTION NUMBER & DESCRIPTION | COST TO DATE |
|--|---------------------|
| 100 Administrative Division Including Management, Commission Members, Fiscal Control and Records Coordination, Personnel and Staff Support | \$ 453,822 |
| 200 Planning Division Administration | 2,990 |
| 210 Upper Mississippi River Basin Commission | 16,969 |
| 220 Missouri River Basin Commission | 58,731 |
| 230 State Water Plan Process | 313,663 |
| 240 Special Studies | 122,196 |
| 301 Hydrology Division Administration | 244,561 |
| 302 Field Work Related to Water Permits | 42,661 |
| 303 Cancelling Water Permits | 771 |
| 304 Computer Storage and Management | 134,075 |
| 305 Hydrologic Studies | 105,551 |
| 307 Research | 2,554 |
| 311 Preliminary Planning | 157,289 |
| 312 Water Records | 134,145 |
| 314 Subsurface Exploration | 313,018 |
| 315 Quality of Water Work | 233,508 |
| 316 Aquifer Testing and Special Investigations | 178,682 |
| 317 Data Compilation and Analysis | 180,671 |
| 318 Report Preparation and Review | 108,789 |
| 319 Special Investigations | 147,250 |
| 320 Repay - USGS Coop Program | 408,914 |
| 330 Ground-Water-Shop Related | 46,743 |
| 400 General Engineering Administration | 380,292 |
| 401 Administration, Microfilming, Filing, Ect. | 84,761 |
| 402 Training | 24,691 |
| 403 Equipment Maintenance | 53,077 |
| 404 Shop Maintenance | 33,465 |
| 410 State Owned Lakes | 1,434 |
| 411 Drainage Permits | 94,250 |
| 412 Diking Permits | 127,275 |
| 413 Flood Plain Management | 264,105 |
| 415 Strip Mine and Energy Plant Regulation | 12,278 |
| 416 Federal Permit Review | 5,441 |
| 417 Inter Agency Coordination - Engineering | 224,166 |
| 420 Flood Control Project Hydrology | 24,982 |
| 421 Drainage Project Hydrology | 4,061 |
| 422 Recreation Project Hydrology | 7,993 |

| | | |
|-----|--|---------------------|
| 423 | Water Supply Project Hydrology | 1,132 |
| 426 | Snagging, Clearing & Channel Impr. Hyd. | 2,461 |
| 430 | Flood Control Project Investigation | 126,462 |
| 431 | Drainage Project Investigation | 30,860 |
| 432 | Recreation Project Investigation | 106,127 |
| 433 | Water Supply Project Investigation | 1,279,753 |
| 434 | Irrigation Project Investigation | 2,339 |
| 435 | Streambank Erosion & Maintenance Investigation | 23,492 |
| 436 | Snagging, Clearing & Channel Improvement Investigation | 11,000 |
| 440 | Flood Control Project Design | 9,268 |
| 441 | Drainage Project Design | 1,038 |
| 442 | Recreation Project Design | 38,707 |
| 443 | Water Supply Project Design | 49,009 |
| 445 | Streambank Erosion & Maintenance Design | 3,132 |
| 446 | Snagging, Clearing & Channel Improvement Design | 3,437 |
| 450 | Flood Control Project Construction | 592,451 |
| 451 | Drainage Project Construction | 610,248 |
| 452 | Recreation Project Construction | 207,437 |
| 453 | Water Supply Project Construction | 13,911,727 |
| 454 | Irrigation Project Construction | 21,906 |
| 456 | Snagging, Clearing & Channel Improvement Construction | 19,164 |
| 460 | Flood Control Project Maintenance | 3,919 |
| 461 | Drainage Project Maintenance | 15,237 |
| 462 | Recreation Project Maintenance | 114,930 |
| 463 | Water Supply Project Maintenance | 41,667 |
| 466 | Snagging, Clearing & Channel Improvement Maintenance | 1,569 |
| 470 | Dam Safety Inspection | 135,693 |
| 480 | Topographic Map Sales | 32,670 |
| 481 | Field Note Sales & H & V Control | 18,533 |
| 500 | Legal Division Including Agency Division Support and InterAgency Coordination | <u>163,715</u> |
| | | \$22,328,897 |

**NORTH DAKOTA
STATE WATER COMMISSION**

**OBJECT EXPENDITURES FOR
BIENNIAL PERIOD ENDING JUNE 30, 1987**

| | | |
|------|---|---------------------|
| 1000 | Permanent Salaries | \$ 3,518,750 |
| 1080 | Temporary Salaries | 54,927 |
| 1090 | Overtime Salaries | 102,823 |
| 1800 | Fringe Benefits | 851,657 |
| 2017 | Central Data Processing | 127,300 |
| 2110 | Employee Travel | 240,535 |
| 2140 | Payments to State Motor Pool | 105,813 |
| 2170 | Dues and Professional Development | 65,355 |
| 2200 | Utilities | 10,140 |
| 2310 | Lease/Rental | 20,598 |
| 2400 | Postage | 27,131 |
| 2420 | Telephone/Telegraph | 17,622 |
| 2500 | Repair Services - Non-Contract | 13,666 |
| 2515 | Repair Services - Contracts | 7,267 |
| 2610 | Professional Services (Includes SW Pipeline) | 1,243,283 |
| 2616 | Operating Fees and Services | 19,578 |
| 2710 | Insurances | 10,323 |
| 2900 | Other Fees (Includes SW Pipeline Intake Facility) | 4,245,107 |
| 3050 | Office Supplies | 27,277 |
| 3105 | Data Processing Supplies | 20,497 |
| 3200 | Printing | 62,965 |
| 3210 | Resource and Reference Materials | 23,922 |
| 3400 | Laboratory Supplies | 12,948 |
| 3550 | Building/Equipment Supplies | 123,103 |
| 3800 | Vehicle Maintenance/Operations | 42,250 |
| 4115 | Office Equipment/Furniture | 128,761 |
| 4120 | Scientific Equipment | 21,582 |
| 4180 | Motor Vehicles | 114,712 |
| 4190 | Machinery | 164,041 |
| 5100 | Land/Easements | 104,773 |
| 5550 | Contract Payments (Includes SW Pipeline Const.) | <u>10,737,191</u> |
| | | \$22,328,897 |