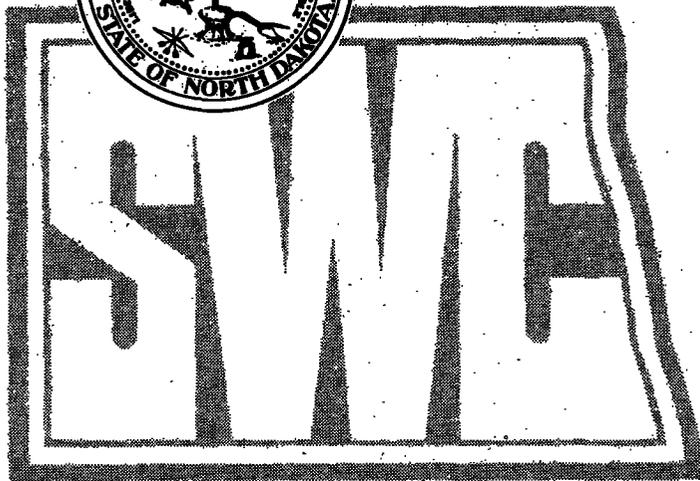


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NORTH DAKOTA STATE AGENCY



NORTH DAKOTA

# State Water Commission

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**BIENNIAL REPORT**  
FOR THE PERIOD  
JULY 1, 1983 to June 30, 1985



# North Dakota State Water Commission

GOVERNOR GEORGE A. SINNER  
CHAIRMAN

VERNON FAHY  
SECRETARY & STATE ENGINEER

October 21, 1985

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

RE: 1983 - 1985 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, 1983, to June 30, 1985.

Respectively submitted,

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

Vernon Fahy  
Secretary & State Engineer

VF:kj

INDEX

	<u>PAGE NUMBER</u>
Administrative Division . . . . .	7
Authority and Function . . . . .	3
Available Resources . . . . .	27
Engineering Division . . . . .	13
Function Summary . . . . .	23
Fund Summary . . . . .	26
Hydrologic Division . . . . .	11
Members and Meetings . . . . .	2
Object Expenditures . . . . .	25
Organization Chart . . . . .	1
Planning Division . . . . .	9
Policy Documents . . . . .	5
Water Permit Summaries . . . . .	8
Weather Modification . . . . .	21

COMMISSION  
GOVERNOR - CHAIRMAN  
7 APPOINTED MEMBERS  
1 EX-OFFICIO MEMBER

CHIEF ENGINEER  
SECRETARY AND  
STATE ENGINEER

VERNON FAHY

DIRECTOR  
DIVISION OF  
HYDROLOGY

MILTON LINDVIG

GROUND WATER  
PLANNING AND  
DEVELOPMENT,  
WATER PERMIT  
ADMINISTRATION.

DIRECTOR  
DIVISION OF  
PLANNING

EUGENE KRENZ

WATER RESOURCE  
PLANNING

MANAGEMENT DIRECTOR  
&  
ASSISTANT SECRETARY

MATT EMERSON

GENERAL OFFICE SUPERVISION,  
FISCAL, PURCHASING, BUDGET  
CONTROL.

DIRECTOR OF  
DIVISION OF  
GENERAL ENGINEERING

DAVE SPRYN CZYNYATYK

GENERAL ENGINEERING  
ADMINISTRATION

DIRECTOR  
LEGAL SERVICES  
DIVISION

JOE CICHY

LEGAL ADVISOR TO  
COMMISSION STAFF

COMMISSION MEMBERS AS OF JUNE 30, 1985

NAME	POSITION	TERM ENDS
George A. Sinner	Governor-Chairman	
Kent Jones	Department of Agriculture	
William Guy	Member from Bismarck	July, 1987
Joyce Byerly	Member from Watford City	July, 1987
Ray Hutton	Member from Oslo, Minn.	July, 1987
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

COMMISSION MEETINGS

JULY 1, 1983 THROUGH JUNE 30, 1985

DATE	LOCATION
July 12 and 13, 1983	Devils Lake, ND
September 20, 1983	Bismarck, ND
September 28, 1983 (Special Meeting)	Bismarck, ND
December 7, 1983	Dickinson, ND
February 21, 1984	Bismarck, ND
May 3, 1984	Bismarck, ND
July 23, 1984	Bismarck, ND
September 10, 1984	Bismarck, ND
September 28, 1984	Lisbon, ND
December 5, 1984	Bismarck, ND
March 15, 1985	Bismarck, ND
March 25, 1985 (Telephone Conference Call Meeting)	Bismarck, ND
June 6, 1985	Bismarck, ND

## 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 the 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.

STATE WATER COMMISSION  
POLICY DOCUMENTS

1. STATUTORY MANDATES

The State Water Commission was created by legislative action following the depression of the 1930's for the specific purpose of fostering and promoting water resources development throughout the state.

The Office of State Engineer was created in 1905 to regulate and administer matters concerning allocation of the state's water and related land resources in compliance with Section 210 of our constitution which declares all waters to be property of the state for public use. In 1937, additional duties were added to this office when the State Engineer was designated chief technical advisor of the Commission. Subsequently, in the years following, the State Engineer was assigned responsibilities for regulation of drainage, control of dikes and dams and management of development in the flood plains of the state.

2. POLICIES PROMULGATED

The State Water Commission and the State Engineer have developed procedures and policies based upon the comprehensive legislation contained in Section 61 of the North Dakota Century Code to:

- . Administer the water laws of the state and its interest in federal and international waters.
- . Prepare and maintain a comprehensive plan for future growth and development of the state and to direct project development in accordance with that plan.
- . Conduct studies to determine availability and occurrence of the ground and surface waters of the state for the purposes of allocation and management.
- . Assist local entities of government in the development and construction of water resource projects.
- . Assist local entities of government in management and maintenance of water resources projects.
- . Assist in the organization of various legal entities through which water resource projects can be sponsored and operated.
- . Coordinate activities of federal, state, and local entities in water resources development.
- . Represent the interests of the state in water resources matters in national, state, and international forums.

3. OTHER POLICIES

Many of the policies in effect have evolved as a result of the agency's financial participation in project development along with local government sponsors. The amount of financial participation varies with the project with the project purposes. The contract fund is the source of funds for assistance to local sponsors and is controlled by the Commission.

#### 4. MAJOR POLICY ISSUES

- . Establishing the procedures for claiming this state's share of the flows of the Missouri River for our future needs as reflected in our comprehensive planning documents.
- . Pursuing through litigation the complex problems associated with agricultural levees along the Red River.
- . Developing policies and initiatives that will stimulate progress in solving flooding problems along the Pembina and Red Rivers.
- . Revision of legislation to modernize procedures for creation of irrigation districts.
- . Revision of legislation to improve effectiveness of water resource districts.
- . Continued funding by the legislature for advanced ground-water studies. Completion of these more detailed studies, which will more precisely define the nature and occurrence of ground-water, is essential in order to optimize development of the state's ground-water resources.
- . Developing legislation and policies for creating and administering a Water Supply Facilities Fund through which water facilities such as the delivery of water into southwest North Dakota can be constructed where needed. This includes the assistance for creation of irrigation districts to increase agricultural productivity.

#### 5. INTERRELATIONSHIP

This agency works as a catalyst for development of programs by several federal agencies including the Bureau of Reclamation, Corps of Engineers, U.S. Geological Survey, Soil Conservation Service, Federal Emergency Management Administration and the Water Resources Council.

These relationships are undergoing some rather radical changes as a result of the Reagan Administration reorganization efforts. The effects of the change are not as yet discernable since federal agency agreement in Washington has not been realized.

It is evident that state and local governments will be required to participate financially in areas historically assigned to federal funding. New Principles and Guidelines intended to facilitate project development have been published but they appear to provide little change from the old "log jam" Principles and Standards.

This agency works closely in several areas with the State Health Department, N.D. Geological Survey, State Game & Fish Department, State Public Service Commission, State Parks & Recreation, State Economic Development Commission, State Highway Department in the regulation, research and development of our water resources. The expertise and the activities of all agencies are compatible without being duplicative which is a major plus for this state.

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 must be carried on within the provisions of statutory law and principles or rules of that law exert a powerful influence in agency accounting. 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 Resource 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 issues such as the Ogalala Aquifer Study, Western States Water Policy, Missouri River Water Allocation and Garrison Diversion Unit hearings.

WATER PERMITS SUMMARY

JULY 1, 1983 THROUGH JUNE 30, 1985

TOTAL APPLICATIONS FILED -----167

IRRIGATION --

Applications Filed ----- 56  
Total Acre-Feet of Water Granted -- 18,463.8 (Includes Backlog)  
    From Ground Water: 8,965.6 Acre-Feet  
    From Surface Water: 9,498.2 Acre-Feet  
Total Acres Requested ----- 19,286.6  
Total Acres Granted ----- 13,601.3 (Includes Backlog)

FLOOD CONTROL --

Applications Filed ----- 2  
Acre-Feet Storage Granted ----- 665.0  
Acre-Feet Annual Use Granted ----- 220.0

INDUSTRIAL --

Applications Filed ----- 69  
Total Acre-Feet of Water Granted -- 2,919.87

MUNICIPAL --

Applications Filed ----- 8  
Total Acre-Feet of Water Granted -- 14,505.0  
(Includes 13,047.0 Acre-Feet For Southwest Pipeline Project)

RECREATION (FISH AND WILDLIFE) --

Applications Filed ----- 22  
Acre-Feet Storage Granted ----- 2,812.9  
Acre-Feet Annual Use Granted ----- 10,470.9  
(Includes 10,122.0 Acre-Feet Annual Use For Garrison Dam  
Fish Hatchery In McLean County)

RURAL DOMESTIC --

Applications Filed ----- 5  
Total Acre-Feet of Water Granted -- 5,221.4  
(Includes 4,053.0 Acre-Feet For Southwest Pipeline Project)

STOCKWATER --

Applications Filed ----- 5  
Acre-Feet Storage Granted ----- 241.6  
Acre-Feet Annual Use Granted ----- 88.0

## PLANNING DIVISION

### State Water Plan Maintenance

The current State Water 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 will not only make it possible to quickly and easily update information contained in the plan, but will also improve the ability to respond effectively to inquiries. Another benefit will be 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.

### Water Resource District Master Plans

Legislation enacted by the 1981 Legislature stipulated that each water resource district prepare and adopt master plans for each of the various water management activities in the district. The State Engineer was also required to provide guidelines to help districts in developing their master plans. The Planning Division, in compliance with this law, proposed and distributed guidelines to the chairmen of the water resource districts.

In reviewing this legislation in 1985, the legislature found the master plan process to be less than desirable and, consequently, removed the requirement for water resource district master plans.

### 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. This lack of funding, coupled with the resignation of the Council Executive Director, led to a decision by the two states not to fill the vacant staff position or to continue renting office space.

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.

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 proposed and completed a development plan for the Public Education Program near the end of the biennium. The Public Education Program was proposed in response to the apparent public need for quality information on North Dakota water resources and related water resource management topics.

The main goal of the program is to create a greater public awareness and appreciation of North Dakota's water resources. To achieve this goal, the Planning Division will develop and distribute a number of informational pamphlets, fact sheets, newsletter articles, and education aids (for incorporation into the North Dakota school system.).

### 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 two 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 resource.
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 - 1979-1981

1. The reports for the ground-water studies for Bottineau, Rolette, Towner and McKenzie Counties were published. This completes all phases of the county ground-water studies program.
2. Aquifer Evaluation Investigations
  - A. Oakes Aquifer - Dickey County
  - B. Englevale Aquifer - Ransom County
  - C. Page Aquifer - Cass and Steele Counties
  - D. Spiritwood Aquifer - Barnes, Stutsman, LaMoure, Dickey and Sargent Counties

- E. Edgeley Aquifer - LaMoure County
- F. West Fargo - Cass County
- G. South Bismarck Water Table Study - Burleigh County
- H. James River Hydrology Study - Stutsman, LaMoure and Dickey Counties
- I. Sindre Aquifer - Ward County
- J. Evaluation of methods to determine recharge to unconfined aquifers
- K. Eastern McLean County Hydrologic Study

3. Stream Evaluation Investigations

- A. Sheyeene River
- B. Forest River
- C. Heart River
- D. Pembina

4. Basic Data Collection

- A. Streamflow
- B. Ground-water levels
- C. Water quality - chemical
- D. Water use

## 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, at the request of the Red River Joint Water Resource Board, the State Water Commission established an office within the Red River Valley. The office, located in

West Fargo, includes one water resource engineer with arrangements for part-time secretarial services.

The Red River Joint Water Resource Board and State Water Commission each pay fifty percent of the total cost of operating the office. Approximately half of the engineer's time involves working on projects eligible for Red River Joint Water Resource Board funding. The purpose of the Red River Joint Water Resource Board, comprised of 13 water resource boards within 10 counties, is to develop flood protection projects within the Red River Basin.

The engineer has attended several of the individual water resource board meetings. He has provided technical assistance to the boards on numerous disputes, and related matters. When requested, hydrological studies have been performed to determine adequate culvert sizes. Field investigations of potential detention dam sites were made for the following sites during the biennium:

- Tributary of Wild Rice River (Sargent County)
- Tributary of Maple River (Cass and Barnes County)
- Cart Creek (Pembina County)
- Tributary to Sheyenne River (Griggs County)
- Wild Rice River (Richland County)

Further study will be performed on the sites to determine their feasibility.

The Southwest Pipeline Project will divert water from Lake Sakakawea to areas in southwestern North Dakota for municipal and rural domestic water uses. The project consists of 326 miles of pipeline, a 15.25 million gallon per day water treatment plant and several pump stations and reservoirs.

The 1983 legislature appropriated \$6 million for final design and right-of-way easement acquisition for the project. As of June 30, 1985, the entire project was essentially designed and ready for construction bidding. Nearly 84 percent of the right-of-way easements were acquired, all on a negotiated basis.

During the 1983-85 biennium, the Regulatory Section processed 46 dike-dam permit applications and 197 applications to drain. Of the dike-dam applications, 23 were for flood control and of those, eight protected city property with the remaining 15 protecting agricultural lands or farmsteads. Of the remaining 23 dike-dam applications, 15 were for wildlife purposes, six were for irrigation or stockwater, one was for recreation, and one was for erosion control. Of the 197 drainage applications, 12 were found to be of statewide or interdistrict significance by the State Engineer.

The Regulatory Section processes requests 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, and 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 for the following projects during the biennium:

- Painted Woods Lake (McLean County - SWC #160)
- Larson Lake (Hettinger County - SWC #350)
- Rost Lake (Bottineau County - SWC #330)
- Thirty-Mile Creek Dam (Hettinger County - SWC #1497)
- Trotters Dam (McKenzie County - SWC #1776)
- DesLacs River (Burke, Mountrail, Renville and Ward Counties - SWC #1772)
- Grand Forks City Water Supply Dam (Grand Forks County - SWC #1536)
- Valley City Flood Insurance Study (Barnes County - SWC #1504)
- Rush Lake Restoration (Cavalier County - SWC #462)
- North Dakota Dam Design Handbook (SWC #1579-1)

Major construction projects undertaken during the biennium included:

- Dead Colt Creek Dam (Ransom County - SWC #1671)
- Dead Colt Creek Dam Recreation Areas (Ransom County - SWC #1671-A)

Mirror Lake Restoration, Phase 1 and 2 (Adams County - SWC #420)  
Grafton Flood Control Bypass Channel (Walsh County - SWC Project #1771)  
English Coulee Diversion, Phase 1 and 2 (Grand Forks County - SWC #1351-1 and #1351-2)  
Big Coulee Dam Modification (Towner County - SWC #1418)

Maintenance was performed at the following projects during the biennium:

White Earth Dam (Williams County - SWC #327)  
Epping Dam (Williams County - SWC #346)  
Beaver Lake Dam (Williams County - SWC #390)  
Niagara Dam (Grand Forks County - SWC #464)  
Kota Ray Dam (Grand Forks County - SWC 489)  
Grand Forks Riverside Park Dam (Grand Forks County - SWC #520)  
Blacktail Dam (Williams County - SWC #560)  
Beulah Flood Control Dam ( Williams County - SWC #1732)  
Short Creek Dam (Williams County - SWC #568)  
USGS (2 sites) -  
    Foxholm Gaging Station (Ward County - SWC #1393)  
    Upham Gaging Station (McHenry County - SWC #1393)  
Cavalier Dam (Pembina County - SWC #640)  
Drayton Dam (Pembina County - SWC #681)  
Tolna Dam #1 (Nelson County - SWC #266)  
Karey Dam (Hettinger County - SWC #1453)  
Danzig Dam (Morton County - SWC #374)  
Glen Ullin RR Dam (Morton County - SWC #673)  
Spring Lake Dam (Bowman County - SWC #388)

Under the State's Dam Safety Inspection Program, a total of 34 dams were inspected and reported on. Twenty-nine of the inspections were reinspections or addendums to original reports, completed during the National Dam Safety Program. Twenty-two of the dams inspected were dams in which the State Water Commission had previously participated in construction or maintenance. Of the 34 dams, seven were considered to be high hazard, 24 were significant hazard, and the remaining three dams were considered to be low hazard dams. None of these inspections revealed unsafe structures. Dams inspected were:

Hazard Class

Burlington Dam #1 (Ward County - SWC #221)	1
Burlington Dam #2 (Ward County - SWC #221)	1
Senator Young Dam (Cavalier County - SWC #849)	1
Olson Dam (Pembina County - SWC #849)	1
Bylin Dam (Walsh County - SWC #929)	1
Matecjek Dam (Walsh County - SWC #929)	1
Renwick Dam (Pembina County - SWC #849)	1
Wyard Dam (Foster County - SWC #467)	2
Colt Dam (Mercer County - SWC #1349)	2
Sather Dam (McKenzie County - SWC #1289)	2
Mt. Carmel Dam (Cavalier County - SWC #1346)	2
Big Coulee (Towner County - SWC #1418)	2
Pheasant Lake (Dickey County - SWC #501)	2
Edmore Dam (Ramsey County - SWC #927)	2
Drayton Dam (Pembina County - SWC #681)	2
Sweetbriar Creek Dam (Morton County - SWC #642)	2
Daub Dam (Oliver County - SWC #1527)	2
Crown Butte Dam (Morton County - SWC #870)	2
Flasher Dam (Morton County - SWC #1292)	2
Wilson Dam (Dickey County - SWC #1455)	2
Neché Dam (Pembina County - SWC #274)	2
Erie Dam (Cass County - SWC #1471)	2
Minto Dam (Walsh County - SWC #448)	2
Tolna Dam #1 (Nelson County - SWC #266)	2
Harvey Dam (Wells County - SWC #671)	2
Vigness Dam (Walsh County - SWC #546)	2
Bourbanis Dam (Cavalier County - SWC #849)	2
Big Coulee Dam (Towner County - SWC #1418)	2
Sweet Briar Creek Dam (Morton County - SWC #642)	2
Epping Dam (Williams County - SWC #346)	2
North Lemmon Lake Dam (Adams County - SWC #543)	2
Spec Davis Dam (Slope County - SWC #1784)	3
Olga Dam (Cavalier County - SWC #849)	3
Grafton Dam (Walsh County - SWC #660)	3

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 1983-85 biennium, from the contract fund:

1983-85 Biennium  
 Construction Contract Fund Expenditures  
 (Includes Carryover From Previous Biennium)

		<u>County Total</u>
Adams County		
420 Mirror Lake	\$	51,600
Bottineau County		
1684 Russell Drain		20,708
Burleigh County		
385 McKenzie Slough	11,000	
1551 Salinity and Drainage Research	<u>15,780</u>	
		20,780
Cass County		
568 Sheyenne River Snagging & Clearing	23,965	
583 Fargo 4th Street Dam	33,823	
1008 Bell Twp. Critical Area Treatment	2,090	
1067 Cass County Drain #10	71,112	
1086 Cass County Drain #35	47,850	
1751A Argusville Flood Control	45,000	
1751C Casselton Flood Study	3,075	
1751F Fargo Floodplain Study	7,350	
1785 Maple River Flood Control Dam	293,500	
1790 Walburg Twp. Critical Area Treatment	<u>3,367</u>	
		531,132
Cavalier County		
1438 Mulberry Creek Drain #1 - Phase III	17,779	
1787 Manilla Township Drain #2	2,425	
1793 Easby Township Drain #2	<u>6,360</u>	
		26,564
Grand Forks		
1107 Grand Forks County Drain #4	20,240	
1351 English Coulee	<u>980,857</u>	
		1,001,097
Hurricane Lake Joint Board		
559 Hurricane Lake Control		21,887
LaMoure County		
1751E Edgeley Floodplain Management Study		1,280
McLean County		
160 & 1789 Painted Woods & Lake Nettie	4,260	
1739 Coal Lake Coulee Drain	6,600	
1782 County Water Supply Study	<u>7,250</u>	
		18,110
Morton County		
1292 Zachmeier Coulee	1,841	

1292	St. Anthony Flood Control	5,088	
1778	Flasher Critical Area Treatment	<u>20,752</u>	27,681
Pembina County			
1751H	Hamilton Floodplain Study		1,280
Ramsey County			
1671	Dead Colt Creek Dam	146,304	
1712	Devils Lake City Flood Control	11,130	
1746	Morrison Lake Outlet - Phase I & II	<u>72,800</u>	230,234
Ransom County			
1299	Ransom Co. Critical Area Treatment	5,380	
1657	Enderlin Flood Control	<u>111,000</u>	116,380
Richland County			
1027	Richland County Drain #65	43,769	
1182	Richland Co. Drain #12 (Lateral 1)	19,040	
1545	Richland Co. Drain #72	150,133	
1748	Richland Co. Drain #8	13,370	
1792	Wild Rice River Dam	13,035	
1217	Tri-County Drain #6	<u>22,165</u>	261,512
Stark County			
1721	Dickinson Floodplain Study	3,548	
1777	Dickinson Flood Control	<u>35,200</u>	38,748
Towner County			
1418	Big Coulee Dam		145,818
Traill County			
1238	Traill Co. Drain #19	38,130	
1244	Traill Co. Drain #27	42,981	
1246	Miller Drain #29	23,672	
1743	Traill Co. Drain #52	<u>25,000</u>	129,783
Walsh County			
1771	Grafton Flood Control		15,492
Williams County			
1751C	Williston Floodplain Study		<u>780</u>
			\$2,660,866

NORTH DAKOTA WEATHER MODIFICATION 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 programs 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 Health Department, 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.

Currently, the State of North Dakota is working with counties in cost-share programs where the state paid for 44% of the programs and the counties, plus some other incomes, paid for 56 percent. Again, the importance of local control is stressed by these figures.

Third, the board has taken action on its own, with the federal government, to address the critical questions concerning cloud modification. The absence of long-term formal planning for a coordinated evaluation that could achieve scientific acceptance is evident. As a result, technological development and assessment have been sporadic over the past thirty years. Such national shortcomings have been addressed by a few states, including North Dakota, in a cooperative effort in answering local questions that have national impact. The research being conducted by the state is leading to better understanding of precipitation in the Northern Great Plains.

The readers who desire further information are directed to the 1983-85 Biennium Report of the Board.

NORTH DAKOTA  
STATE WATER COMMISSION  
FUNCTION SUMMARY FOR BIENNIAL  
PERIOD ENDING JUNE 30, 1985

FUNCTION NUMBER & DESCRIPTION	COST TO DATE
110 Administrative Division Including Management, Commission Members, Fiscal Control and Records Coordination, Personnel and Staff Support	\$ 705,731
200 Planning Division Administration	23,832
210 Upper Mississippi River Basin Commission	12,670
220 Missouri River Basin Commission	22,044
221 Missouri River Basin Commission Assessment	42,357
230 State Water Plan Process	389,437
240 Special Studies	10,820
301 Hydrology Division Administration	455,868
302 Field Work Related to Water Permits	27,266
303 Cancelling Water Permits	3,051
304 Computer Storage and Management	130,084
305 Hydrologic Studies	26,834
306 Design	10,386
307 Research	141
311 Preliminary Planning	164,957
312 Water Records	136,677
314 Subsurface Exploration	438,594
315 Quality of Water Work	148,390
316 Aquifer Testing and Special Investigations	109,248
317 Data Compilation and Analysis	176,046
318 Report Preparation and Review	94,995
319 Special Investigations	82,489
320 Repay	412,494
330 Ground-Water-Shop Related Act.	41,579
400 General Engineering Administration	355,577
401 Administration, Microfilming, Filing, Ect.	63,523
402 Training	14,856
403 Equipment Maintenance	40,676
404 Shop Maintenance	42,652
410 Definition and Protection of State Owned Lakes	10,181
411 Drainage Permits	53,002
412 Diking Permits	16,800
413 Flood Plain Management	308,477
415 Strip Mine and Energy Plant Regulation	5,934
416 Federal Permit Review	2,673
417 Inter Agency Coordination	99,869
418 Emergency Disaster Assistance	4,207
419 Intra Agency Coordination	6,175
420 Flood Control Project Hydrology	77,256
421 Drainage Project Hydrology	17,331
422 Recreation Project Hydrology	9,783

Continued

423	Water Supply Project Hydrology	535
424	Irrigation Project Hydrology	1,964
425	Streambank Erosion & Maintenance Hydrology	2,445
426	Snagging, Clearing & Channel Impr. Hyd.	100
430	Flood Control Project Investigation	198,061
431	Drainage Project Investigation	43,587
432	Recreation Project Investigation	21,756
433	Water Supply Project Investigation (Includes SW Pipeline)	5,294,115
434	Irrigation Project Investigation	12,600
435	Streambank Erosion & Maintenance Investigation	8,089
436	Snagging, Clearing & Channel Improvement Investigation	1,034
440	Flood Control Project Design	38,203
441	Drainage Project Design	668
442	Recreation Project Design	78,461
443	Water Supply Project Design	4,482
445	Streambank Erosion & Maintenance Design	64
446	Snagging, Clearing & Channel Improvement Design	100
450	Flood Control Project Construction	241,562
451	Drainage Project Construction	627
452	Recreation Project Construction	91,032
453	Water Supply Project Construction	229
455	Streambank Erosion & Maintenance Construction	77
456	Snagging, Clearing & Channel Improvement Construction	121
460	Flood Control Project Maintenance	14,305
461	Drainage Project Maintenance	152
462	Recreation Project Maintenance	136,596
463	Water Supply Project Maintenance	27,290
466	Snagging, Clearing & Channel Improvement Maintenance	121
470	Dam Safety Inspection	133,102
480	Topographic Map Sales	39,032
481	Field Note Sales & H & V Control	21,893
490	Contract Payments for Flood Control Projects	1,339,538
491	Contract Payments for Drainage Projects	563,587
492	Contract Payments for Recreation Projects	68,024
493	Contract Payments for Water Supply Projects	34,666
496	Contract Payments for S. & C. & Ch. Impr.	24,285
500	Legal Division Including Agency Division Support and InterAgency Coordination	<u>151,118</u>
		\$ 13,387,943

NORTH DAKOTA  
STATE WATER COMMISSION

OBJECT EXPENDITURES FOR  
BIENNIAL PERIOD ENDING JUNE 30, 1985

1000	Permanent Salaries	\$ 3,211,410
1080	Temporary Salaries	45,626
1090	Overtime Salaries	91,858
1800	Fringe Benefits	712,082
2017	Central Data Processing	177,867
2110	Employee Travel	249,993
2140	Payments to State Motor Pool	88,300
2170	Dues and Professional Development	46,813
2200	Utilities	9,005
2310	Lease/Rental - Miscellaneous	11,175
2400	Postage	21,652
2420	Telephone/Telegraph	13,886
2500	Repair Services - Non-Contract	17,851
2515	Repair Services - Contracts	8,811
2610	Professional Services ( Include SW Pipeline Design)	4,469,165
2616	Operating Fees and Services	14,301
2710	Insurances	6,183
2900	Miscellaneous Fees and Services	270
3050	Office Supplies	32,766
3105	Data Processing Supplies	734
3200	Printing	71,315
3210	Resource and Reference Materials	31,578
3400	Laboratory Supplies	7,078
3550	Building/Equipment Supplies	159,164
3800	Vehicle Maintenance/Operations	26,843
4115	Office Equipment/Furniture	14,977
4120	Scientific Equipment	19,771
4180	Motor Vehicles	77,329
4190	Machinery	16,106
5100	Land/Easements	786,592
5550	Contract Payments	<u>2,947,442</u>
		\$13,387,943

NORTH DAKOTA STATE WATER COMMISSION

FUND SUMMARY FOR BIENNIAL  
PERIOD ENDING JUNE 30, 1985

Account Description	Original Appropriation	Adjusted Appropriation	Revenues/Expenditures	Appropriation Balance
Revenues	\$ 7,409,982	\$ 7,455,057	\$ 6,127,094	\$1,327,963
Transfer from Gen. Fund	5,952,196	7,798,803	7,614,567	184,236
Total	13,362,178	15,253,860	13,741,661	1,512,199
Salaries and Wages	\$ 3,882,441	\$ 4,045,975	\$ 3,961,320	\$ 84,655
Operating Expense	974,710	1,008,810	854,797	154,013
Central Data Processing	180,750	180,750	176,236	4,514
Equipment	116,260	126,260	125,546	714
1981-83 Contract Carryover		1,820,548	1,513,347	307,210
Contracts	2,213,017	2,071,517	1,433,960	637,557
Southwest Pipeline	6,000,000	6,000,000	5,322,737	677,263
Total	\$13,362,178	\$15,253,860	\$13,387,943	\$1,865,917
			Fund Cash Balance	353,718

NOTE: Approved carryover from revenue balance: Contracts \$626,782  
Pipeline 677,208

Turnback of unused appropriation and carryover to General Fund \$538,117

## Resources Available From The Agency

1. Minutes of meetings held may be obtained by writing to:

State Water Commission  
State Office Building  
Bismarck, ND 58505

2. Data available for public use include:

- a. Government Land Office Plats
- b. Survey Horizontal and Vertical Control
- c. Various Topographic Maps
- d. Water Permit Data
- e. Drainage Permit Data
- f. Stream Flow Data