

To
Governor George S. Mickelson
and the
Sixty-Third Session, Legislative Assembly
1988

1988 STATE WATER PLAN
and
1987 ANNUAL REPORT

Board of Water and Natural Resources
January 1988

TABLE OF CONTENTS

	Page
PREFACE.....	iv
STATE WATER PLAN - 1988.....	1
o Overview.....	1
o Purpose.....	1
Statewide Goal.....	1
Statewide Objectives.....	2
General Statewide Policies.....	3
o Structure.....	4
o Annual Review.....	6
o Natural Resources Inventory.....	8
o State Water Facilities Plan.....	10
o State Water Resources Management System.....	12
Recommendations for SWRMS.....	12
ANNUAL REPORT - 1987.....	16
o Board of Water and Natural Resources Report.....	16
o 1987 Water Development Legislation.....	17
Federal Legislation.....	17
Governor's Initiative.....	18
State Legislation.....	19
o State Water Resources Management System--Progress Report..	23
Belle Fourche Irrigation Project.....	23
Big Sioux Hydrology Study.....	24
Big Stone Lake Restoration Project.....	25
Black Hills Hydrology Study.....	27
CENDAK Irrigation Project.....	27
Dakota Lakes Irrigation Research Farm.....	29
Forest City Irrigation Project.....	30
Garrison Extension Study.....	30
Gregory County Pumped Storage Project.....	32
James River Improvement Program.....	33
Lake Andes-Wagner Irrigation Unit.....	35
Lake Herman Restoration Project.....	36
Lyman-Jones/West River Rural Water System.....	37

	Page
Marty II Unit.....	38
Missouri River National Recreational River Project...	39
Missouri River Recreation & Fishery Development Plan.	40
Riverside Irrigators.....	41
Slip-Up Creek Project.....	41
Turkey-Clay Watershed.....	42
Vermillion River Basin Flood Control.....	43
Water for Energy Transport (WET) System.....	43
WEB Pipeline Project.....	44
West River Aqueduct.....	45
Whetstone Irrigation Unit.....	47
o State Water Facilities Plan--Progress Report.....	48
o Lake Restoration--Progress Report.....	54
Level III Lakes.....	55
Brant.....	55
Campbell.....	55
LaBolt.....	56
Leola.....	57
Mitchell.....	57
Poinsett.....	58
Ravine.....	59
Stockade.....	60
Swan.....	60
Level II Lakes.....	61
Byre.....	61
Kampeska.....	62
Legion.....	62
Mina.....	63
Pelican.....	63
Redfield.....	64
Richmond.....	64
Thompson.....	65
Wall.....	65
Level I Lakes.....	66
o Water Development Financing Programs--Progress Report.....	68
Water Facilities Construction Fund.....	69
Community Development Block Grants.....	76
Consolidated Water Facilities Construction Program...	77
EPA Construction Grants Program.....	78
Interim Financing.....	79

LIST OF FIGURES

<u>Figures</u>	<u>Page</u>
1. State Water Plan.....	4
2. Water Planning Process.....	7
3. Pick-Sloan Water Initiative (Short Term).....	20
4. Pick-Sloan Water Initiative (Long Term).....	21
3. SWRMS Project Locations.....	22

LIST OF TABLES

<u>Tables</u>	<u>Page</u>
1. Natural Resources Inventory - Technical Assistance List.....	8
2. State Water Facilities Plan.....	11
3. State Water Resources Management System.....	14
4. Rural Water Systems.....	49
5. Municipal Water Projects.....	50
6. Municipal Wastewater Projects.....	51
7. Lake Restoration Projects.....	52
8. Flood Control/Erosion Control/Watersheds.....	53
9. Water Facilities Construction Fund.....	69
10. Community Development Block Grants - Water and Wastewater.....	76
11. Consolidated Water Facilities Construction Program.....	77
12. EPA Construction Grants Program - Wastewater Facilities.....	78
13. Interim Financing.....	80

Preface

The purpose of this document is to fulfill the statutory requirements placed on the Board of Water and Natural Resources. These requirements are generally outlined as follows:

**SDCL 46A-2-2 To prepare and submit to the Legislature and Governor a yearly progress report on the State Water Plan*

**SDCL 46A-1-10 To make recommendations to the Governor and Legislature concerning projects for the State Water Resources Management System*

**SDCL 46A-1-14 To make an annual report on all activities during the preceding year and funding recommendations necessary to implement the water plan*

The report consists of two principal sections: the 1988 State Water Plan and the 1987 Annual Report. The first section sets forth the projects included in the Natural Resources Inventory, the State Water Facilities Plan, recommendations for the State Water Resources Management System and recommendations for the funds necessary to implement the State Water Plan. The second section is the annual report which provides the progress report on each project and on Board activities during 1987.

STATE WATER PLAN

Overview

In 1972 the State Legislature entrusted the South Dakota Conservancy District with the development of a Comprehensive State Water Plan. The plan was to be based on a study of possibilities for creative and innovative utilization of South Dakota's water resources. At the same time the Legislature passed the South Dakota Water Resources Management Act to serve as the vehicle for implementing the Comprehensive State Water Plan. The 1972 Act provided two approaches for implementing items in the Comprehensive State Water Plan: (1) categorical grant and loan programs, and discretionary bonding authority for small water development projects; and (2) state authorization and bonding for large water development projects.

In 1980, the South Dakota Conservancy District abandoned its efforts to create a general management plan in favor of a more functional planning approach that emphasized specific project development. The plan that evolved has two action components which parallel the two approaches the Legislature established for project implementation.

Purpose

The State Water Plan is intended to implement state policy on water resources management, to serve as the principal guide for the expenditure of state water development revenues, to influence federal funding decisions to follow state policies and priorities, and to identify areas for technical assistance.

The South Dakota Legislature established the State Water Plan in its present form in 1982. At that time, the Legislature in SDCL 46A-1-1 generally defined the plan's statewide goal:

Statewide Goal

To achieve the optimum over-all benefits of the state's water resources for the general health, welfare, safety and economic well-being of the people of South Dakota through the conservation, development, management and use of those resources.

The Legislature placed the responsibility upon the Board of Water and Natural Resources to develop a state water plan which would further this goal. In SDCL 46A-2-2 the following objectives were established by the Legislature to assist the Board in its efforts to develop the plan:

Statewide Objectives

- * *Provide for the future economic welfare and prosperity of the people of this state;*
- * *Provide for the irrigation of lands to stabilize the agricultural economy of the state and the production of crops thereon;*
- * *Replenish and restore the depleted waters of lakes, rivers, streams and underground waters in the state and to stabilize the flow of said streams, levels of lakes, and levels and pressures of underground waters;*
- * *Reserve within the state for present or future beneficial uses, all waters and, particularly, waters impounded on the Missouri River within the boundaries of the state, except to the extent that the construction of facilities for the diversion of water outside this state will make substantial water available for use within this state not otherwise available or will directly benefit the people of this state economically or otherwise;*
- * *Provide and enhance beautification, flood protection, recreation, fish and wildlife benefits, domestic and industrial water supply, water quality, scenic rivers, navigation, and erosion management, and in all other ways to conserve, regulate and control the waters in this state;*
- * *Protect and improve the quality of the waters of the state as opportunity permits;*
- * *Provide for the generation and sale of hydroelectric power from projects which may include provisions for irrigation and municipal, rural or industrial water supplies; and*
- * *Plan and coordinate with any Indian tribe of this state, the joint development of water resources whenever such joint action is possible, appropriate and in the best interests of the state and of the respective tribe.*

Under SDCL 46A-1-7, the Board of Water and Natural Resources is charged with the responsibility to establish the statewide policies for water resources management. The Board recognizes that water resources management encompasses many areas including economic development, irrigation, water conservation, domestic water, tourism, rural water systems, lake restoration, recreation, flood control, watershed management, erosion control, drainage, water quality, and water supply. All of these areas are interrelated with many other economic and social factors necessary to build a healthy rural and business economy.

With this recognition, the Board adopted the following general policy guidelines to be used in the preparation of the 1988 State Water Plan.

General Statewide Policies

- * *Implement a priority system for all state decisions affecting water project development;*
- * *Allocate financial resources for water development in a cost-effective manner and avoid allocating financial resources where the local ability exists to provide sufficient resources to solve the problem;*
- * *Accomplish development of water resources in such a manner as to have minimal negative environmental impacts;*
- * *Consider water conservation as an integral part of project development;*
- * *Encourage the multiple purpose use of water and related land resources;*
- * *Continue to support the diversion and use of water from the mainstem of the Missouri River for developments found to be feasible and desirable;*
- * *Allow interstate and interbasin transfers of water for feasible and desirable uses that benefit South Dakota and its citizens;*
- * *Require that an opportunity for local citizen review be provided on all water resources projects for compatibility with local government comprehensive plans;*
- * *Encourage local governments to demonstrate sound land use and fiscal management, and where improved planning or fiscal management could solve similar problems, positive action must be taken prior to requesting assistance;*
- * *Examine and encourage water reuse projects providing for the maximum benefit to the state;*
- * *Provide development assistance in such a manner as not to subsidize further urban sprawl (any rural nonfarm development outside the boundaries of any municipality);*
- * *Coordinate financial resources and those federal financial resources over which the state has influence through the development and implementation of the State Water Plan;*
- * *Make a thorough evaluation of groundwater resources and protect the integrity of the aquifers of the state;*

- * Support education of the general public about the problems and potentials of water development;
- * Encourage regionalized solutions to water resource problems in order to achieve economies of scale and better resource management; and
- * Require communities to complete an analysis of their problem by completing a preliminary engineering report and cost estimates prior to requesting financial assistance.

Structure

The State Water Plan consists of two components: the planning component, the Natural Resources Inventory; and the financing component which includes the State Water Facilities Plan and the State Water Resources Management System.

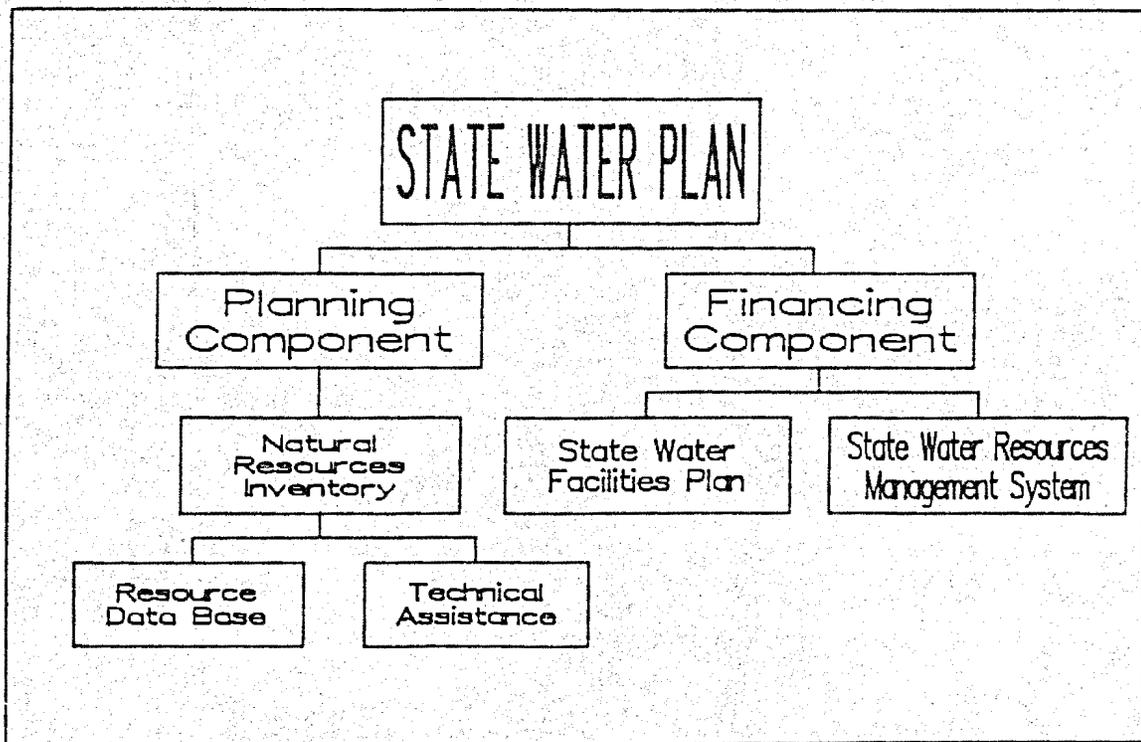


Figure 1

The planning component, the Natural Resources Inventory, provides the foundation for the other component of the plan. The Inventory is composed of two elements: Resource Data Base and Technical Assistance.

The Resource Data Base includes information such as existing water rights in South Dakota, the quantity and quality of South Dakota water resources, and a listing of constructed and proposed water projects. All projects are eligible for the Resource Data Base.

Technical Assistance is a list of Inventory projects identified for non-financial support through the state's Technical Assistance Program. This program provides the basic knowledge and sources of information to resolve problems using local resources. To be included on the Technical Assistance list, projects must meet one of the following eligibility criteria as established by the Board of Water and Natural Resources:

- * *Projects which have been proposed but preliminary engineering evaluations have not been completed.*
- * *Projects with an identified solution but are normally excluded from the Water Facilities Plan because of established policies.*
- * *Projects that propose rehabilitation of existing systems.*

Inclusion of a project in the Inventory carries no judgment of the project's priority or significance for development. The Natural Resources Inventory is established and maintained by the Board of Water and Natural Resources.

The financing component is comprised of the State Water Facilities Plan and the State Water Resources Management System. This component makes available potential funding through Legislative and Federal authorizations, state grant and loan programs, and federal categorical grant programs. To be eligible for funding, projects must be part of the financing component.

The State Water Facilities Plan identifies those priority projects which can be developed within the next two years through the Board of Water and Natural Resources' discretionary authority. With sufficient funding, the Board can directly finance certain projects; but equally important, the Board can significantly influence federal categorical grant decisions. To be eligible for funding from the state's water development grant and loan programs, a project must be included in the State Water Facilities Plan. In addition, any project which needs state support for federal categorical program funding should be included in the State Water Facilities Plan. The Board established the following eligibility criteria as priority guides for projects seeking inclusion in the State Water Facilities Plan:

- * Economic development projects which encourage and strengthen the economy of the state.
- * Health and safety projects which correct serious health hazards.

- * Consolidated or regional projects which stabilize or improve the economy of the state through sound fiscal and land management.
- * Expansion of existing systems which provide an increase in services and promote the objectives contained in criteria 1 through 3 above.

Projects in the State Water Facilities Plan are authorized by the Board of Water and Natural Resources.

The State Water Resources Management System (SWRMS) identifies typically large, costly and often controversial projects that require specific state or federal authorization and financing. Projects which expect state support for congressional authorization or are seeking financial support from the state beyond the discretionary authority of the Board of Water and Natural Resources must be part of the State Water Resources Management System. These projects are established by the Governor and the Legislature from recommendations made by the Board of Water and Natural Resources as necessary priority objectives for water resources management in South Dakota. No project in the State Water Resources Management System may also be in the State Water Facilities Plan. The Board has adopted the following as the eligibility criteria for the system:

- * The project is necessary for the needs and general welfare of the people of South Dakota.
- * The project preserves a free-flowing stream or river possessing such unique natural scenic beauty, water conservation, fish, wildlife and outdoor recreational values of present and future benefit to the people of the state.

Annual Review

Each year, the Board of Water and Natural Resources implements the water planning process to update the State Water Plan. The Board and interested local groups reviewed the goals, objectives and policies for water development in the state, delineated responsibilities for plan development and established the planning process timetable. After a draft document was completed, each of the interested local groups was asked to review and comment on the draft planning process. Soon thereafter the Board of Water and Natural Resources met to review the proposed planning process, consider any recommended changes and give final approval to the process.

The process adopted by the Board placed a heavy responsibility on the water development districts to develop, review and establish project priorities within their areas. Projects outside the water development

districts were reviewed and ranked by the Board using the same procedures the districts use.

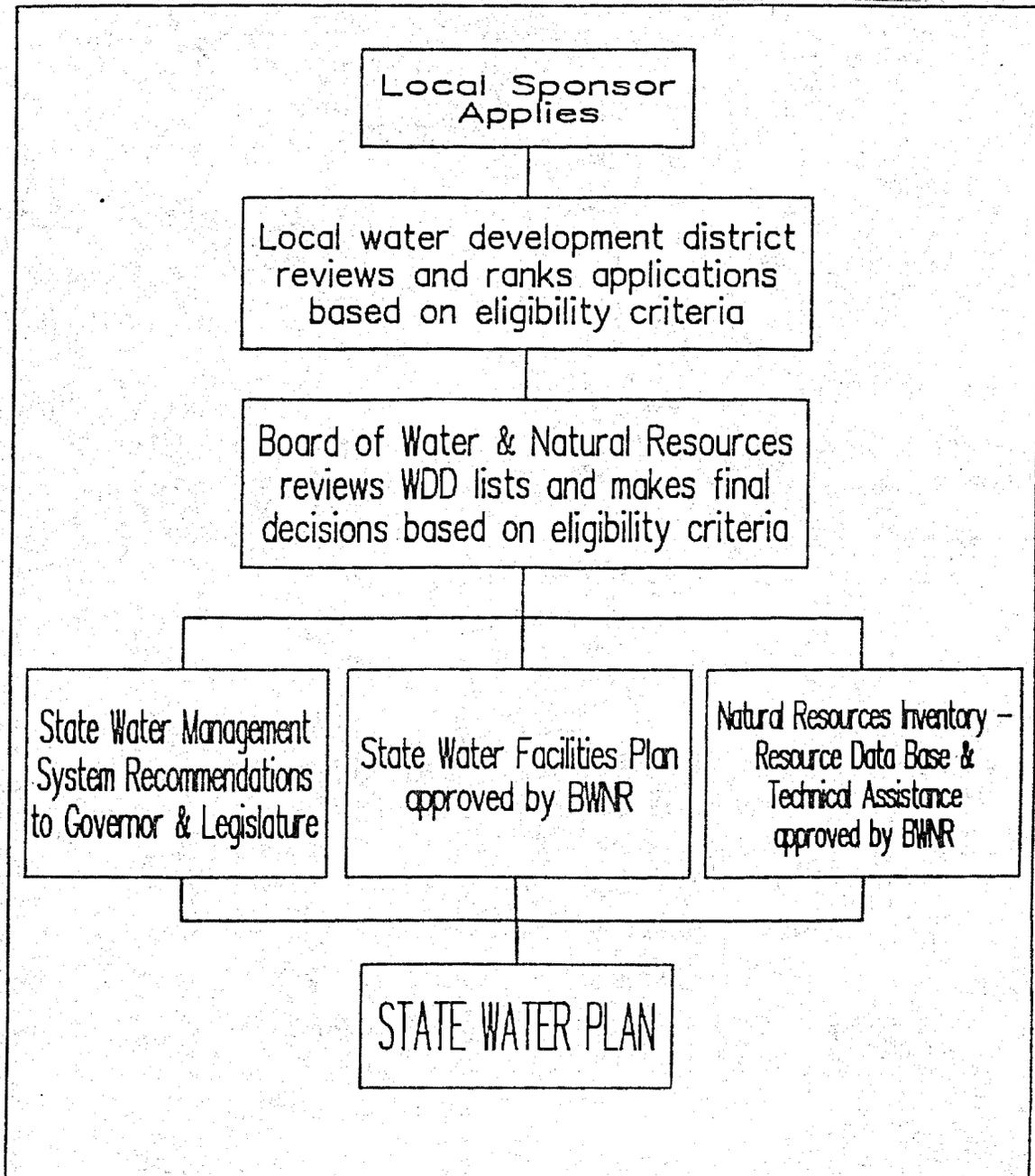


Figure 2

Using the eligibility criteria, each water development district reviewed the projects from its area and priorities were established. Based upon the water development district recommendations and the criteria, the Board updated the State Water Facilities Plan and the Natural Resources

Inventory and makes recommendations for the State Water Resources Management System.

State Water Resources Management System recommendations are sent to the Governor and Legislature for approval and possible funding. The revised State Water Facilities Plan is the list of projects eligible to apply for state funding. The Natural Resources Inventory (Technical Assistance list) sets forth those projects which may request nonfinancial assistance.

Natural Resources Inventory

The Natural Resources Inventory is the foundation for the financing component of the State Water Plan. The two elements of the Inventory (the Resource Data Base and the Technical Assistance list) are updated each year. No new additions were proposed to the Resource Data Base and the Board of Water and Natural Resources has adopted the Technical Assistance for 1988 list as shown in Table 1.

TABLE 1

TECHNICAL ASSISTANCE LIST

<u>Project Sponsor</u>	<u>Project Description</u>
Aurora	Test wells in aquifer
Aurora-Brule RWS	North Reservoir addition
Bancroft	Distribution system rehab
Big Sioux River Cleanout	Big Sioux cleanout/flow improvement
Big Sioux-S. Brookings Co.	Improve flow capacity-S. Brookings
Big Stone	Flood control
Blue Dog Lake	Sediment analysis
Brant Lake	Shoreline Stabilization
Brown County	Water and Sewer System Installation
Brown County	Lower Crow Creek development
Burke Lake	Feasibility study
Canton	Sewer line rehab along Hwy. 18 East
Centennial Lake	Dredge existing slough in Ft. Pierre
Clark	MW expansion project
Clear Lake	Lake restoration
Crow Creek Dev. Project	Crow Creek area development
Davison RWS	Internal Improvements
Deadwood	Water dist. rehab in East
Eagle Butte (Bruschke Dam)	Dam restoration
Edgemont	Wastewater improvement
Egan	System Reconstruction
Fish Lake	Lake restoration
Flandreau	River stabilization
Forestburg	Wellfield improvements and dist.
Herrick	Water tower improvements
Huron	Sediment removal-3rd Street dam
Huron	Groundwater recharge
Huron	Dredging of James River
James R. Economic Dev. Project	Study to use Pick-Sloan revs for dev
James River Restoration	Cleanup along James by local dist
Lake Andes	Water system diversion to lake
Lake Byre	Restoration of dam
Lake Campbell	Lake restoration

TABLE 1 (Cont.)

Lake Hendricks	Water quality improvement
Lake Mitchell	Lake restoration
Lake Pelican	Shoreline stabilization & sed. traps
Lake Poinsett	Feasibility study/dredge Big Sioux
Lake Redfield	Lake restoration
Lane	Water storage basin rehab
Lemmon	Storage & phase 2 of 5 yr rehab plan
Leola Lake	Bank Stabilization
Letcher	Rehab water tower for Davison RWS
Lower James RC&D	Tributary storage
Lower James RC&D	Gavins Point Dam impact on James R.
McCook Lake	Dredging and feasibility study
Menno	Water main rehabilitation
Mina Lake	Water system improvement
Mission Hill	Sewage lagoon riprap
Murdo	Water system improvements
Onida	Two water storage reservoirs
Pennington County	Rapid Valley drainage improvements
Philip	Waste water lagoon
Platte	Water system rehab
Ponca Lake	Lake restoration
Punished Woman Lake	Diagnostic study
Rapid City	Pactola Dam hydroelectric generation
Ravine Lake	Feasibility study
Redfield Dam	Dam and Lake restoration
Richmond Lake	Lake restoration
Rimrock 5 Water Users System	Consolidation of water systems
Rosholt	Waste water improvements
Sioux Falls	Groundwater study
Sioux Falls	Split Rock Creek aquifer analysis
South Dakota	Super Collider-water portion
Swan Lake	Lake restoration
Tulare	Distribution system rehab
Valley Springs	Industrial development
Vermillion	WW Interceptor replacement
Vermillion	Water supply by Mo. River & lines
Wall Lake	Lake restoration
Ward	Water source and distribution
Warner	Water system improvements
West Dakota WDD	Rapid Creek reservoir & water system
Westport	Hookup to WEB
Woonsocket	Trailer park utilities

State Water Facilities Plan

The State Water Facilities Plan is comprised of priority water development projects which can be implemented using the discretionary authority of the Board of Water and Natural Resources and the programs administered by the Department of Water and Natural Resources. Unlike the larger projects in the State Water Resources Management System, water facilities plan projects do not require specific legislative authorization.

During the water planning process, over 87 projects were submitted to the state and water development districts for review. To be considered for the plan, projects must have a completed preliminary engineering report and must be ready for construction within two years.

Based upon the water development district recommendations and the eligibility criteria, the Board included projects totaling over \$31 million in the State Water Facilities Plan (see Table 2). Six of these projects were included in the plan to support their efforts in obtaining federal or local funds.

TABLE 2
STATE WATER FACILITIES PLAN

Project Sponsor	Project Description	Total	Stipulations
Aberdeen	Water transmission line	\$1,052,000	Support for Fed. funds
Armour	WW treatment facility improvement	\$279,676	
Aurora-Brule RWS	South Reservoir	\$160,500	Support for Fed. funds
Avon	WW treatment facility	\$172,000	
Belle Fourche	Ziebach St. loop installation	\$50,000	
Bison	Water storage	\$408,000	
Box Elder	Flood control project	\$171,520	
Brookings-Deuel RWS	Treatment and distribution imp.	\$424,000	
B-Y Water District	Phase III in West Hutchinson Co.	\$3,100,000	
B-Y Water District	Water storage facility	\$413,000	
Camelot Water Assn.	Hookup to Pierre & dist. system	\$139,000	
Canton	New well	\$105,625	
Clark RWS	New storage facility	\$665,000	
Crooks Sanitary Dist.	New WW treatment facility	\$385,000	
Custer	System expansion	\$127,300	
*Custer State Park	Water and sewer imp.	\$585,000	
Doland	Sanitary sewer system imp.	\$251,537	
Douglas Co. Rural Water	New system construction	\$1,417,000	
Elkton	New water source and facility	\$137,869	Ltd to RWS hookup
Garretson	New water source	\$291,455	
Geddes	WW treatment facility	\$306,000	Support for fed. funds
Hanson RWS	System expansion	\$329,839	
Iroquois Lake	Dam Rehabilitation	\$177,800	Support subject to local ownership of Dam
Kingbrook RWS	Source treatment and dist.	\$4,505,000	
Lake Cochrane San. Dist	Sewer project	\$715,000	
Lake Poinsett San. Dist	New waste water facility	\$930,000	
Lake Preston	WW treatment improvements	\$1,100,000	
Lennox	New well, storage, & lines for RWS	\$700,000	
Leola	Water system expansion	\$154,768	
Lincoln Co. RWS	New water storage	\$1,311,000	
Marion	Water distribution improvements	\$140,508	
Minnehaha Co. Water Co.	Source treatment and dist.	\$2,240,000	Support for fed. funds
Murdo	WW expansion	\$282,400	
Parkston	Main Street line rehab.	\$312,936	
Pierre	WW treatment additions	\$474,000	
Randall Co. Rural Water	Control system improvements	\$50,000	Support for fed. funds
Rapid City	Rapid Creek equalization res.	\$377,800	
Redfield	Storage and transmission	\$449,445	
Reliance	WW treatment facility	\$85,000	
Sioux Falls	North Reservoir addition	\$2,206,000	
Sioux RWS	Phase I improvements	\$525,000	
Sioux RWS	Phase II & III improvements	\$1,725,000	
Sisseton	Water distribution improvements	\$261,209	
Spearfish	New well and reservoirs	\$813,000	
TM Rural Water Dist.	Member expansion	\$137,500	
Tripp	Water and sewer rehab	\$101,350	
Tripp	WW treatment facility	\$227,862	
Tripp Co. Water Dist.	Water storage tank	\$212,925	
Wall	Water supply expansion	\$208,000	
Wall	Sewer line expansion	\$123,340	
White River	Two additional cells to lagoon	\$189,000	
Willow Lake	Lagoon and wetland	\$411,000	
Yankton Econ. Dev.	Water system improvements	\$537,119	

State Water Resources Management System

The State Water Resource Management System (SWRMS) is the priority projects established by the Legislature as needed objectives for optimum water resources management in South Dakota. These projects are typically large and costly requiring specific state and/or federal authorization and financing. Such projects cannot be developed through the Board of Water and Natural Resources' discretionary authority or federal categorical grant programs. To be included in the System, each project must be reviewed by the water development district having jurisdiction over it, receive a positive recommendation from the Board and the Governor, and be approved by the State Legislature.

Recommendations for SWRMS

In accordance with the South Dakota Water Resources Management Act, as amended, and the state water planning process, the Board of Water and Natural Resources on December 10, 1987 took action to recommend two new projects to the State Water Resources Management System and to maintain all projects currently within the System.

The two projects being recommended for inclusion in the System are:

Mid Dakota Rural Water System

Mid-Dakota Rural Water system will provide good quality Missouri River water to 15 communities in and serve 4,500 rural connections in nine counties in South Dakota. (Beadle, Buffalo, Hand, Hyde, Jerauld, Sanborn, Spink, Sully, and Hughes) This system is located in the central portion of the State where water is typically low quality and violates many EPA standards. Water from the Mid-Dakota system would alleviate these problems.

The estimated cost of this system is \$100 million dollars. Costs would vary depending on the source location or the number of users to sign up. The costs are based on two sources: Lake Oahe and Lake Sharpe. Costs from Oahe are \$87 million to \$101 million depending on the number of users, and costs from Lake Sharpe are \$86 million to \$96 million depending on the number of users.

Missouri River Cost Recovery Component

The Missouri River Cost Recovery program is an attempt to provide an annual revenue stream for cost-sharing water projects and resource management activities in South Dakota, including but not limited to:

- Clean Lakes
- Groundwater Protection
- Flood Control
- Rural Water System Development/Expansion
- Municipal Water and Wastewater Systems

Dam Safety Hydrology Studies

The Missouri River Cost Recovery program should be built upon the principle that the integrity of consumer hydropower rates be maintained and that the revenue stream be structured to benefit all the citizens of South Dakota while recognizing preference power principles. In addition, the BWR strongly recommends that the revenues generated by the Missouri River Cost Recovery program be deposited into the South Dakota Water Facilities Construction Fund.

Several cost recovery alternatives, such as upgrading of Missouri River hydropower generating facilities and a payment in-lieu-of-taxes proposal, are under consideration, but no final decision has been on any alternative. The upgrading proposal would involve state financing of new, more efficient turbine blades at the Missouri River hydropower facilities in South Dakota and, in return, South Dakota would receive some degree of compensation from hydropower revenues as part of the cost of the Missouri River Pick-Sloan program. The upgrading proposal is patterned after similar efforts in other western states, and the hydropower facilities as well as the additional energy would remain under federal ownership, operation and marketing consistent with preference customer principles. The payment in-lieu-of taxes proposal, similar to the provisions of the Boulder Canyon Act, would make in-lieu-of-tax payments to the upper Missouri River basin states for the existing hydropower facilities, and such payments could be made from hydropower revenues, possibly through a reallocation of system benefits.

The BWR recognizes that a number of issues involving the cost recovery program and Pick-Sloan hydropower are unresolved, and the BWR is sensitive to the concerns of the public power community over such issues. These issues include proper rates of return for the state, power rate impacts, hydropower markets and supplies, and appropriate structures and mechanisms for implementing the cost recovery program.

The key to the Missouri River Cost Recovery program is to structure it in a manner that provides a source of revenue to partially fund water projects and that precludes unwarranted revisions in the Pick-Sloan hydropower rate structure and the ultimate development concept. Governor Mickelson has pledged that the Missouri River Cost Recovery program must be structured in a manner that will not adversely impact South Dakota preference power consumers, but the effects of various cost recovery options on power rates are not clear. An analysis of hydropower upgrading, payment in-lieu-of-taxes and other options such as reallocation of Pick-Sloan repayment costs, possibly in combination with payment in-lieu-of-taxes, must be conducted over the next several months.

Those projects currently authorized and recommended for retention in the System are as follows:

TABLE 3

STATE WATER RESOURCES MANAGEMENT SYSTEM

<u>Project</u>	<u>Project Description</u>
Belle Fourche Irrigation Project	Rehabilitation of Belle Fourche project
Big Sioux Hydrology Study	Hydrologic study of Big Sioux Aquifer
Big Sioux River Basin Study	Flood control on Big Sioux
Big Stone Lake Restoration Project	Lake restoration project
Black Hills Hydrology Study	Hydrologic study in Black Hills
CENDAK Irrigation Project	Irrigation project in central SD
Dakota Lakes Irrigation Research Farm	Irrigation research project
Forest City Irrigation Project	Irrigation project in Potter county
Garrison Extension Study	Study of effects of Garrison unit in ND
Gregory County Pumped Storage Site	Multi purpose water utilization
James River Improvement Program	Study of improvement program in James River
Lake Andes-Wagner Irrigation Unit	Irrigation project in Charles Mix county
Lake Herman Restoration Project	Lake restoration & watershed mgmt project
Lyman-Jones Rural Water System	New rural water system in western SD
Marty II Unit	Yankton Sioux tribe irrigation project
Missouri River National Recreational River	Stabilization & enhancement of Mo. R. in SE
Mo. River Recreation & Fishery Dev. Plan	Development of recreation & fisheries
Pick-Sloan Riverside Irrigation	Pick-Sloan integration of irrigation
Slip-Up Creek	Reservoir on Big Sioux River near Sioux Falls
Turkey Clay Watershed	Flood control & watershed mgmt project
Vermillion	Flood control study on Vermillion River
Water for Energy Transport (WET) System	Water for energy transport system
WEB Pipeline Project	Construction of rural water system
West River Aqueduct	Delivery system of water for western SD
West River Rural Water System	New rural water system for western SD
Whetstone Irrigation Project	Irrigation project in Gregory county

PART II
1987 ANNUAL REPORT

ANNUAL REPORT

An annual report of the Board of Water and Natural Resources is statutorily required under SDCL 46A-1-14 and SDCL 46A-2-2. The report is presented in six sections:

- o Board of Water and Natural Resources Report
- o 1987 Water Development Legislation
- o SWRMS - Progress Report
- o SWFP - Progress Report
- o Lake Restoration - Progress Report
- o Water Development Financing Programs

Each section shows the progress on the state's water development projects and in the various financing programs within the Board's purview.

Board of Water and Natural Resources Report

Substantial progress was made in 1987 toward accomplishing the state's water development goal and objectives. Recognizing the different water the Board has encouraged maintenance of the state's quality of life through infrastructure development which directly stimulates statewide economic development continues to be pursued by the Board.

Since the demise of the conservancy subdistricts in 1984, the Board has been settling all outstanding financial obligations. Three subdistricts, East Dakota, Oahe, CENDAK, remain functional in 1987 having longterm contractual commitments until the 1990's. Of the three, the Oahe Conservancy Subdistrict is the only subdistrict in which the Board must collect taxes to meet the contractual commitment for WEB.

The state's six water development districts have been in operation for the past three years. The districts are instrumental in developing and coordinating the water development needs within their borders. The Board relies heavily upon the districts for input into the State Water Plan and development of the plan's projects.

In 1985 the Legislature established a new type of single purpose district to act as local water project sponsors. This year the following two water project districts were formed:

- * Brookings-Hamlin-Sioux Water Project District was formed to find ways of flood control along the Big Sioux River basin.
- * Lake Poinsett Water Project District was formed to do restoration work on the lake.

Each district was formed by an election of local landowners and approved by the Board of Water and Natural Resources. At present, several other groups are working to form water project districts.

Additional Board of Water and Natural Resources' activities are described in detail throughout the body of the annual report.

1987 Water Development Legislation

This section gives a brief summary of the federal and state legislation passed during 1987.

Federal Legislation

Perhaps the most important water resource bill approved by the U.S. Congress this year was the Clean Water Act Amendments of 1987. This legislation fundamentally transforms the Environmental Protection Agency wastewater construction grants program into a state water pollution control revolving loan program.

Under this new program, South Dakota will be required to establish a state revolving loan fund and to provide matching funds in order to receive federal funds for the construction of publicly owned wastewater treatment facilities and for implementation of non-point pollution source management programs. As specified by the Clean Water Act, states must provide a 20% match in order to obtain the federal funds, and federal funding for the program will be terminated in fiscal year 1994. After that time, the state revolving fund must be self-sufficient and will be the sole source of funding for the construction of local wastewater treatment facilities.

Under the 1987 Clean Water Act Amendments, South Dakota will receive federal funds for this program and must provide matching funds as follows:

<u>Fiscal Year</u>	<u>EPA (Title II) Construction Grant</u>	<u>EPA (Title VI) Revolving Loan Funds</u>	
		<u>Federal Appropriation</u>	<u>State Match</u>
1989	5,958,000	5,958,000	1,191,000
1990	5,958,000	5,958,000	1,191,600
1991	-0-	11,916,000	2,383,200
1992	-0-	8,937,000	1,787,400
1993	-0-	5,958,000	1,191,600
1994	-0-	2,979,000	595,800

Congress also took action on the fiscal year 1988 energy and water appropriations bill, which includes funding for several South Dakota

water projects. This bill provides funding as follows for South Dakota projects: WEB rural water system - \$15 million; Belle Fourche rehabilitation project - \$980,000; James River flood control study - \$150,000; Hilltop irrigation integration report - \$70,000; Vermillion flood control study - \$200,000; and Big Sioux (Watertown) flood control study - \$175,000.

Congressional authorization legislation was introduced this year for the Lyman Jones/West River/Oglala Sioux rural water system and the Lake Andes-Wagner/Yankton Sioux irrigation project. Congressional hearings on these two projects were conducted in December, but no further action was taken prior to adjournment.

The Governor's Water Initiative

Stressing the need for unity and for an effective strategy, on August 21, 1987, Governor Mickelson announced an initiative to secure Congressional approval of a contemporary water development package and to finally resolve the Pick-Sloan issue in South Dakota.

As part of the initiative, Governor Mickelson charged the Board of Water and Natural Resources with the responsibility to conduct public meetings to obtain comments about water issues and to develop recommendations of what should be included in the water development settlement package.

During September and October of 1987, the Board of Water and Natural Resources held eight meetings across the state. Locations of the meetings were: Rapid City, Miller, Huron, Platte, Sioux Falls, Brookings, Pierre and Murdo. Over 350 individuals participated in the meetings including municipal leaders, county commissioners, local water project sponsors, legislators, Indian Tribal representatives, environmental and other special interest groups.

The general attitude of the meeting participants was that if South Dakota is to resolve the Pick-Sloan issue, a statewide consensus must be developed before approaching Congress. Meeting participants generally agreed that a single settlement package would relieve the confusion in Congress that occurs when South Dakota project sponsors propose different projects at different times all under the Pick-Sloan banner.

The Missouri River Cost Recovery Program, or revenue stream as it was generally referred to by the public, received the most discussion at the public meetings and participants strongly supported the need for such a revenue stream for future projects as well as those already being planned. A majority of participants conditioned their support on the understanding that the revenues be utilized in the same manner as the ETSI monies - that the revenues would be deposited into the Water Facilities Construction Fund for the development of water projects. Various needs expressed were: 1) funding for infrastructure development; 2) lake restoration; 3) municipal projects; 4) rural water systems; 5) groundwater protection and 6) cost-sharing for larger projects.

Following the public meetings, the Board met and developed their recommendations on the future of water development in South Dakota. These recommendations focus on two components: a Missouri River Pick-Sloan projects component, and a Missouri River Cost Recovery component. The water projects component consists of short term and long term objectives. The short term objectives are: projects which are under construction, projects proposed for construction (with planning completed), and projects/programs proposed for construction (with further planning required). (See Figure 3.)

Long term objectives are those which the BWNR believes are good projects but considering federal budget deficits and other factors would not be feasible to take to Congress at this time. (See Figure 4.)

The BWNR also recommends formation of a Missouri River Cost Recovery Authority. This authority would be composed of representatives of the Governor, the BWNR, the State Legislature, and public and private electric power interests. This Authority would explore the various alternatives proposed for the Missouri River Cost Recovery Program. (See Figure 4.)

The Governor will submit these recommendations for approval during the 1988 session of the State Legislature.

State Legislation

The 1987 Legislature enacted a number of bills affecting water development in South Dakota. SB 44 created a dredge Wear Element Replacement Fund to provide for repairs to the State-owned dredges. The bill specifies that local dredging project sponsors will deposit money into the fund so that the accumulated amount can be used for future dredge maintenance and repair. HB 1122 added the Big Sioux Basin Study and Improvement Project, the Dakota Lakes Irrigation Research Farm, Pick-Sloan Riverside Irrigation and the Vermillion Basin Flood Control Study to the State Water Resources Management System Component of the State Water Plan.

The Omnibus Water Development Bill (SB 283) authorized funding and other transactions from the Water Facilities Construction Fund for several projects, including \$50,000 each for the Lake Andes-Wagner-Yankton Sioux irrigation project and the West River/Lyman Jones-Ogalala Sioux rural water system for study and project development purposes, a \$150,000 study loan for the Gregory County Pumped Storage Project, and a \$225,000 loan to the Department of Game, Fish and Parks to repair Stockade Dam in Custer State Park. In addition, SB 283 authorized the provision of up to \$1.7 million resulting from the defeasance of the 1983 WEB Interim Financing issue as a grant to the WEB project for construction purposes. SB 283 also deferred payment by project sponsors on existing project study loans until the projects receive federal funding for construction purposes.

SOUTH DAKOTA MISSOURI RIVER PICK-SLOAN WATER INITIATIVE

MISSOURI RIVER PICK-SLOAN PROJECTS COMPONENT (SHORT TERM)

PROJECTS UNDER CONSTRUCTION (\$80.2 MILLION)

✓ WEB RURAL WATER SYSTEM
BELLE FOURCHE IRRIGATION REHABILITATION

PROJECTS PROPOSED FOR CONSTRUCTION (WITH PLANNING COMPLETED) (\$265 MILLION)

✓ WEST RIVER/LYMAN JONES/OGLALA SIOUX RWS
LAKE ANDES-WAGNER/YANKTON SIOUX IRRIGATION

PROJECTS/PROGRAMS PROPOSED FOR CONSTRUCTION (WITH FURTHER PLANNING REQUIRED) (\$435 MILLION)

GREGORY COUNTY PUMPED STORAGE MULTIPURPOSE
WATER SUPPLY AND IRRIGATION PROJECT

✓ JAMES RIVER FLOOD CONTROL

✓ MID-DAKOTA RURAL WATER SYSTEM

MISSOURI RIVER FISH & WILDLIFE MITIGATION

MISSOURI RIVER IRRIGATION INTEGRATION

MISSOURI RIVER STREAMBANK EROSION

RURAL AND MUNICIPAL WATER SUPPLY SYSTEMS

Figure 3

SOUTH DAKOTA MISSOURI RIVER PICK-SLOAN WATER INITIATIVE

MISSOURI RIVER PICK-SLOAN PROJECTS COMPONENT (LONG TERM)

**CENDAK IRRIGATION PROJECT
GREGORY COUNTY PUMPED STORAGE HYDRO PROJECT
PICK-SLOAN DAMAGES CLAIM**

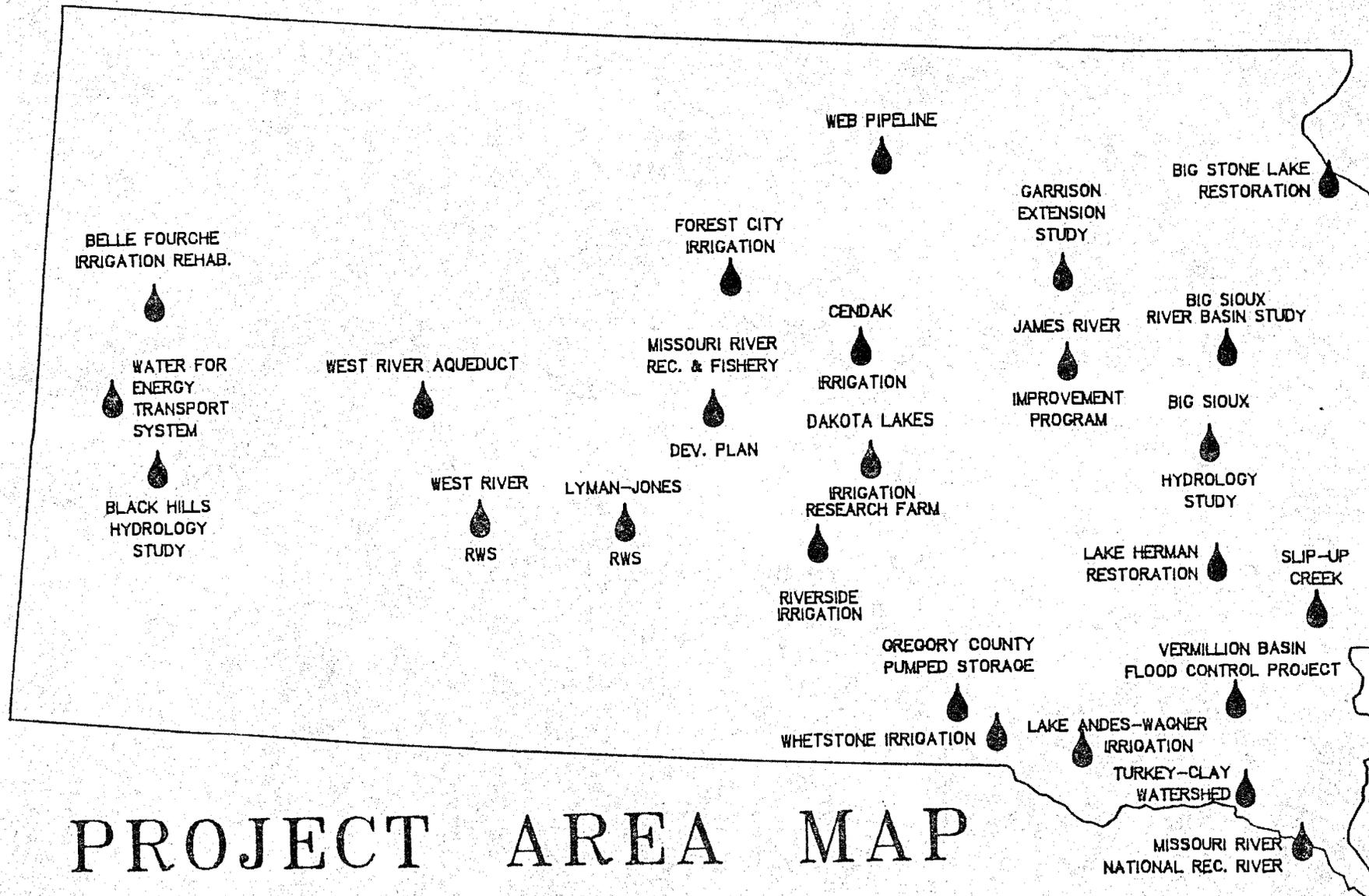
MISSOURI RIVER COST RECOVERY COMPONENT

**ESTABLISHMENT OF MISSOURI RIVER AUTHORITY
FUNDING FOR THE FOLLOWING PROJECTS:**

**CLEAN LAKES
GROUNDWATER PROTECTION
FLOOD CONTROL
RURAL WATER SYSTEM DEVELOPMENT\EXPANSION
MUNICIPAL WATER AND WASTEWATER SYSTEMS
DAM SAFETY
HYDROLOGY STUDIES
NONFEDERAL COST SHARING**

Figure 4

STATE WATER RESOURCES MANAGEMENT SYSTEM



PROJECT AREA MAP

Figure 5

Other legislation included clarification of Board of Water and Natural Resources rulemaking authority (SB 4), a \$300,000 construction grant for the WEB project (SB 231), authorization of \$900,000 for studies and application preparation for the Superconducting Super Collider project (SB 245), and an additional \$400,000 from the Water Facilities Construction Fund and \$470,075 from the general fund for repair of dams in Custer State Park (HB 1069).

Resolutions passed during the 1987 Session included support for Congressional authorization of the Lake Andes-Wagner-Yankton Sioux irrigation project, Pick-Sloan Riverside Irrigation Integration, the West River/Lyman Jones-Ogalala Sioux rural water system, and support for reinstatement of scheduled Bureau of Reclamation funding for the WEB project and the Belle Fourche Irrigation Rehabilitation project.

State Water Resources Management System--Progress Report

This section reports the progress of the authorized projects in the 1987 State Water Resources Management System. A brief summary containing information on the description and status of each project is presented below.

Belle Fourche Irrigation Project

The Belle Fourche Irrigation Project was authorized by the State Legislature as part of the State Water Resources Management System in 1981. The original project was authorized by Congress in 1904 and completed in 1914, providing irrigation water for over 57,000 acres in Butte County. This project was one of the first Bureau of Reclamation projects completed in the nation. Approximately 200,000 acre-feet of water is diverted annually from the reservoir for irrigation; however, only about 67,000 acre-feet is delivered to the field. This approximate two-thirds loss is indicative of the need to modernize and update the delivery system. Rehabilitating the facilities will reduce operation and maintenance costs, conserve water, provide safety features, lessen risk of system failure, reclaim agricultural lands affected by seepage losses, and protect the economic welfare of the area.

Approximately \$48.8 million will be needed to rebuild or improve the old diversion structure and various canals and laterals. A feasibility report for the project has been completed by the Bureau of Reclamation. The U.S. Congress approved and President Reagan signed Legislation to re-authorize the project in 1983. In September 1984, the local sponsor, Belle Fourche Irrigation District, completed contract negotiations with the Bureau of Reclamation which was overwhelmingly approved by the district membership. With the aid of a special \$710,000 federal appropriation in 1984, rehabilitation was begun. An additional \$4.7 million was appropriated for FY 1986 which allowed the district to commence construction on the major features.

The Bureau of Reclamation reduced the FY 1987 appropriation from \$3.9 million to \$2.7 million and the FY 1988 appropriation from \$5.9 million to \$0.9 million. The 1987 Legislature passed a resolution opposing these budget cuts on a discretionary basis inasmuch as such funds were simply being diverted to other projects in the federal reclamation program.

Big Sioux Hydrology Study

The Big Sioux Hydrology Study was authorized by the 1982 State Legislature as part of the State Water Resources Management System. The study is designed to analyze the long and short term effects of differing rates of groundwater recharge, storage and withdrawal of ground and surface water supplies in the Big Sioux River Basin, which covers an area of 6,700 square miles in eastern South Dakota. The final study will utilize a digital model of the Big Sioux aquifer systems to determine the potential groundwater yield in the basin. The study area includes all or parts of Codington, Day, Clark, Roberts, Grant, Hamlin, Deuel, Brookings, Kingsbury, Moody, Lake, Minnehaha, Lincoln and Union counties. The study is intended to provide the necessary hydrologic information to encourage development of municipal, domestic, industrial, rural water and private irrigation systems while at the same time providing protection to existing water users and stream flows.

The Big Sioux Hydrology Study is expected to be a six-year study at an estimated cost of \$3.2 million. The study is being conducted jointly by the South Dakota Geological Survey and U.S. Geological Survey, utilizing a combination of federal, state and local funds. Local funds are provided from various sources through the East Dakota Water Development District and are matched by state funds authorized under House Bill 1247 in 1982. These monies comprise 50 percent of the total funding and are distributed to the Division of Geological Survey by the Department of Water and Natural Resources. The remaining 50 percent funding is provided by the U.S. Geological Survey. Sufficient state money has been appropriated to complete the project and the local funds are essentially in place. Federal funding has been obtained on a year-to-year basis, however, attempts are currently underway to establish the remaining federal funding as a line item in the U.S. Geological Survey budget to insure completion of the federal share of the project.

Initial funding from all sources was realized in 1983. At that time required equipment was purchased, additional personnel hired, and a detailed work plan formulated. Field work by the Division of Geological Survey and the U.S. Geological Survey began in the spring of 1984 and is scheduled to be completed in 1989. To date, field work is essentially complete in Day, Clark, Hamlin, Deuel, Moody, Lake, and Minnehaha counties and is under way in all other areas of the basin. Figures show that 1,792 test holes totalling 190,287 feet of drilling have been completed since the project began in early 1984. Four hundred of the test holes have been completed as observation wells to be used for future monitoring of water levels. All information is entered into a computer data bank to maintain an updated set of records.

The unusually high precipitation experienced in eastern South Dakota the past few years has caused serious flooding problems for residents of the Big Sioux and Vermillion River basins. This has meant mounting economic losses through inundation of lakeside homes and businesses, as well as flooding of cropland and of many county and state highways. Problems include sediment deposition, sandbars, logjams at bridges, inadequate conveyance of water through bridges, and higher groundwater levels feeding the rivers. Most of these problems can be expected to continue if precipitation levels are normal or above normal.

This proposal would provide for basic hydraulic research on the Big Sioux basin including aerial photography work, surveying, and development of a computerized water surface profile model of the river. This would allow identification of specific problems and possible alternatives to address those problems. This proposal is also aimed at coordinating all of the various local efforts being made to relieve high water problems in the Big Sioux basin. Some of these efforts include a cooperative feasibility study by the Corps of Engineers and local entities of possible flood storage on the Big Sioux River above Watertown, improved flow capacity below the Lake Kameska and Lake Poinsett outlets, reduction of flows into Lake Poinsett, improvement of Big Sioux flow capacity in Brookings County and improvement of flow capacity of the existing Corps flood control diversion works at Sious Falls.

In 1987, the DWNR in conjunction with the East Dakota Water Development District and the Lake Kameska Water Project District did remote sensing and aerial photography of the Big Sioux River. Also, the Brookings-Hamlin-Sioux Water Project District contracted with the South Dakota National Guard to clear trees on a seven mile strip of the river.

Big Stone Lake Restoration Project

Located at the head of the Minnesota River, Big Stone Lake acts as part of the northeast border between South Dakota and Minnesota. This long, narrow body of water extends for 35 miles with an approximate width of 1 mile and a surface area of 12,360 acres. South Dakota's portion of the watershed is a confined drainage area of around 850 square miles.

Once a clear, deep recreation and commercial lake, Big Stone Lake began to show signs of stress with the advent of intensive agriculture and the compounding effects of point source pollution. Several studies have been done since the mid 1960's to determine what could be done to reverse the decline in water quality at Big Stone Lake. The latest was a Phase I Diagnostic/Feasibility Study completed in December of 1983 by the Department of Water and Natural Resources - Office of Water Quality. None of the past studies resulted in actual implementation of pollution abatement measures until grant funds were approved in 1984 to begin restoration based on the recommendations in the Phase I study. Following preparation of a detailed workplan and pre-implementation planning, implementation began in 1985.

South Dakota and Minnesota have made significant progress toward point and nonpoint source pollution abatement of Big Stone Lake. First, three of the six animal waste management systems in South Dakota have been completed. The other three in South Dakota are in various stages of construction. The engineering design process or relocation has begun on several others. Second, a no-till drill has been purchased and successfully demonstrated in Big Stone County, Minnesota with over 1,000 acres planted in 1985 and 1986. For the past three years, Roberts County in South Dakota has had a no-till demonstration project, which although not directly associated with the lake project, will directly benefit the lake. Third, electrically operated gates have been installed providing a new lake level control structure to allow increased flows down the Minnesota River channel. This structure will decrease the amount of silt and nutrient laden flood waters diverted into the lake during spring runoff and storms. Fourth, the installation of waterways and other conservation practices in targeted watersheds have been accelerated. Finally, educational tools and personal contacts to heighten awareness among farmers about conservation practices have also been developed.

The engineering survey on 1,500 feet of severely eroded shoreline has been completed and construction is expected to begin in 1987. A 160 acre drained wetland to be recovered as a sediment and nutrient control basin has been purchased, and construction was completed in 1986. In addition, preliminary engineering designs have been developed for Salmonsens Creek streambank erosion control, and construction of structures is expected to begin in 1987 and 1988. Bid letting on the project took place in the spring of 1987. Finally, preliminary work on sediment removal from Lake Farley has been completed. Several sites have been picked for erosion control on access roads to the lake.

As the implementation of pollution abatement measures proceeds in the next few years, major activity is expected in the following areas which may require additional funding: (1) additional work on feedlots, lake shore erosion and streambank erosion control, (2) structures to improve control of Whetstone River flood flows, (3) sediment retention structures, and (4) evaluation of potential pollution from septic tank seepage.

The first grant approved for the Big Stone Lake Restoration Project was a CDBG grant to Grant County to begin work on management of lake levels for water quality improvement, control of feedlot pollution and removal of a sediment hazard from Lake Farley. The CDBG grant to Grant County was followed by EPA grants to both states, a second CDBG grant to Roberts County and the approval of local funding from many sources.

	<u>South Dakota</u>	<u>Minnesota</u>
EPA	\$ 381,500	\$ 501,000
CDBG	200,000	
State		300,000+
ASCS	40,000	
Local	<u>200,000</u>	
Total	\$ 821,500	<u>\$ 801,000</u>

Funding support through the Department of Water and Natural Resources has been forthcoming early and has been an important factor in obtaining funding from other sources in the past.

Black Hills Hydrology Study

The 1982 State Legislature authorized the Black Hills Hydrology Study as part of the State Water Resources Management System. The study area includes all or parts of Butte, Custer, Fall River, Lawrence, Meade and Pennington counties. The objective of the study is to provide the necessary hydrologic information to encourage development of municipal, domestic, industrial, rural water, and private irrigation systems while at the same time providing protection to existing water users and to spring and stream flows. The hydrologic evaluation will consist of establishing a basic data network, acquiring and evaluating necessary data, and developing a digital model to serve as a management tool to predict the effect of development on the groundwater and surface water systems of the study area.

The U.S. Geological Survey and the South Dakota Geological Survey, in cooperation with the former Black Hills Conservancy Subdistrict and the Black Hills Council of Local Governments, began the study in the summer of 1981. The initial work consisted of conducting literature searches, beginning an inventory of field data, conducting a pilot study of drilling and data acquisition in two specific basins, and describing the study to governmental units and the general public. In 1984, USGS completed a preliminary hydrologic model of the Black Hills area which verified the need for additional data to complete the comprehensive study. To finance the state's share of the first-year effort of the seven-year, \$7.3 million study, the Legislature appropriated \$300,000 from the Water Facilities Construction Fund. The unspent balance of this appropriation reverted back into the fund at the end of FY 1985 due to inadequate local funding.

Although the project became inactive at the end of 1984, the West Dakota Water Development District has been investigating alternate methods to complete the study. The U.S. Geological Survey and West Dakota Water Development District have committed to a multi-year study effort to include streamflow monitoring, precipitation monitoring and digital modeling. During the first year, an evaluation will be made whether to further develop an existing digital model or to develop a more site specific digital model for a limited geographical area. This joint study effort will increase the knowledge of the groundwater sources within the the Rapid Creek Basin and specifically within the Rapid City area.

CENDAK Irrigation Project

The CENDAK Irrigation Project was authorized by the State Legislature as part of the State Water Resources Management System in 1982. The project will use Missouri River water to irrigate up to 474,000 acres in Hughes, Hyde, Hand, Spink, Beadle and Faulk counties. In addition, water will be available for municipal and rural domestic use, recreation, fish and

wildlife enhancement and stream-flow augmentation purposes. Partially constructed features of the uncompleted Oahe Irrigation Project, including the Oahe pumping plant and the Pierre canal, are expected to be used in the construction of the CENDAK project. Total project cost is approximately \$750 million for a non-federal project or \$1.12 billion for a traditional federally funded project.

The CENDAK Water Supply System, Inc., a six-county group of interested landowners established in 1981, has raised over \$300,000 in local interest fees to partially fund a general feasibility investigation of the project. A total of \$1.3 million in study loans has been made to CENDAK, Inc. by the South Dakota Board of Water and Natural Resources. These funds have been used to support project investigation and to conduct the project analysis and environmental assessment required by the federal reclamation program. To date, the U.S. Congress has appropriated \$5 million to fund the Bureau of Reclamation's involvement in the project study.

In July, 1983, CENDAK, Inc., the State of South Dakota, and the Bureau of Reclamation completed a draft Plan Formulation Report which examined several project alternatives and concluded that full development of the 474,000 acre project was feasible. A supplement to the Plan Formulation Report was completed in July, 1984 addressing the development of the CENDAK project on a two-stage basis. Under this proposal, Stage I would consist of 300,000 acres and adequate canal capacity to serve State II lands. Stage II would consist of the remaining 174,000 acres including those lands which require further drainage analysis.

In October, 1986, the Bureau of Reclamation completed the Regional Director's Proposed CENDAK Planning Report/Draft Environmental Statement. This report represents the conclusion of the general investigation phase of the CENDAK project. The report included an alternative financing proposal submitted by CENDAK, Inc. The alternative financing proposal was based on the issuance of local project bonds supported by Pick-Sloan hydropower revenue (irrigation aid) and the irrigators repayment capability. It would have provided that the irrigation district design, construct and operate the full 474,000 acre project.

As part of this proposal, the CENDAK sponsors have estimated a non-federal construction proposal which would cost \$750 million as opposed to a traditional federal project at a cost of \$1.12 billion. The lesser costs would be accomplished by: 1) in by selective use of less costly compacted earth lined canals instead of concrete lining; 2) changes in the capacity of some motors and in ancillary equipment on turnout pumping plants; and 3) lesser allowances for contingencies and engineering and construction management overhead for locally constructed works.

The alternative financing proposal was opposed by public power interests and the Office of Management and Budget. Public power representatives said the proposal would result in an increase in power rates and would require Congressional action at a time when special interests are trying

to privatize hydropower facilities. The Office of Management and Budget rejected the alternative financing proposal primarily on the basis that CENDAK as a project could not be "economically justified under federal standard planning procedures and current interest rates".

The state/federal CENDAK Drainage Steering Committee, which has the responsibility for evaluation and recommendation of CENDAK drainage requirements, will file their final report by the end of 1987. An interim report of the Drainage Committee indicates that: 1) Extensive use of the glacial aquifers in the area overlain by unweathered till is not a viable option; 2) Less than half of the proposed irrigated acreage will not require artificial drainage; 3) The impacts to the underlying aquifer system will not occur because the nearly impermeable unweathered till lying above the aquifer will not allow irrigation water to enter the aquifer.

In 1987, the Bureau of Reclamation reassessed their role and priorities in regard to water project development. The key conclusion of the assessment was that the Bureau's mission must change from one based on federally supported construction to one based on effective and environmentally sensitive resource management. According to the assessment, capital-intensive construction projects involving significant federal expenditures such as CENDAK will receive little emphasis. As a result of the assessment, the Missouri Basin Regional Director of the Bureau of Reclamation, Bill Martin, announced at a Board of Water and Natural Resources meeting in Pierre on October 29, 1987, that the Bureau is proposing to finalize the CENDAK Planning Report/Draft Environmental Statement as a concluding report for use at a later date, and that the Bureau will not take any further action on the CENDAK project in the near future.

Dakota Lakes Irrigation Research Farm

Dakota Lakes is a nonprofit corporation formed to establish an irrigation research farm to provide information on reducing irrigation energy costs, developing new crops and improving varieties of existing crops. More efficient and economical irrigation operations will help stabilize the agricultural economy, which would improve the tax base and result in a more stable agribusiness environment.

The Dakota Lakes Research Farm would be located in an area with soils similar to the more heavily irrigated areas of South Dakota. The project would involve acquisition of 160 acres of land to be used for an irrigation research farm, development of a water delivery system to the land, and construction of a machinery storage facility on the land to include office and field laboratory space. The land will be leased to the South Dakota State University Agricultural Experiment Station, and the Ag Experiment Station will operate the farm in coordination with the Dakota Lakes corporation. This project was approved for inclusion into the SWRMS list. Due to lack of funding no significant progress has been made in 1987.

Forest City Irrigation Project

The Forest City Irrigation Project was authorized by the State Legislature as part of the State Water Resources Management System in 1981. Prior to that authorization, the U.S. Department of Agriculture Soil Conservation Service studied the Forest City irrigation system. The proposed project initially consisted of approximately 8,000 acres of land to be irrigated with water diverted from Lake Oahe through a pipe distribution system at an estimated cost of nearly \$8 million.

Continuing local interest resulted in the formation of a non-profit corporation called the Forest City Development Corporation in the spring of 1984. The purpose of the corporation was to facilitate the preparation of an updated preliminary plan and cost estimate for the project area. Based on contacts with interested area landowners, approximately 26,000 acres of southwest Potter County were designated to be included in the study area. The corporation raised approximately \$4,000 in landowner fees and received a \$25,000 grant from the former Oahe Conservancy Subdistrict to pay for the preliminary plan and cost estimate. The Forest City Development Corporation contracted with DeWild, Grant and Reckert and Associates for a reconnaissance engineering study report which was completed in November, 1984. The report examined four basic system alternatives.

The corporation has filed a Notice of Intent to file an application for a Bureau of Reclamation Small Projects Loan. The corporation also sees two other items that are critical to formation of a feasible project: 1) financial assistance from the State of South Dakota in the form of a low interest loan to cover the costs not covered by the Small Projects Loan; and 2) Pick-Sloan power for the project's energy needs.

The Forest City Development Corporation successfully formed the West Potter Water Project District in March 1986. Since then the West Potter District has been attempting to introduce legislation authorizing integration of the District into the Pick-Sloan program including the delivery of Pick-Sloan pumping power for its existing irrigation systems.

Garrison Extension Study

The 1981 State Legislature authorized the Garrison Extension Study as part of the State Water Resources Management System. A conceptual plan for the Garrison Extension Project was developed with the goal of designing a project that would turn the potential negative aspects of North Dakota's Garrison Diversion Unit into a project that could provide flood control, deliver additional high quality water for irrigation, industrial and municipal uses in South Dakota and improve recreational opportunities in the James River basin.

In March, 1981, Governor Janklow appointed a five-member Garrison Study Management Board to assess the Garrison Extension concept. The early meetings of the study board were held to discuss the idea of using additional flows in the James River provided from North Dakota's Garrison

Diversion Unit together with storage features constructed in South Dakota to provide water for agricultural, municipal, industrial and recreational use. With assistance from the U.S. Bureau of Reclamation, the study board initiated an appraisal level investigation in October, 1981 and completed it in January, 1982.

Throughout the course of the study, local input has been provided by the former Oahe and Lower James Conservancy Subdistricts and is now being provided by the James River Water Development District. Wildlife review has been provided by the Department of Game, Fish and Parks and the U.S. Fish and Wildlife Service. The balance of the study effort was completed by the Department of Water and Natural Resources and the Bureau of Reclamation. The final report on the appraisal level study was completed in March, 1983. Public meetings were held, and in August, 1983, the S.D. Garrison Study Management Board made its final recommendations. Those recommendations were refined and project costs were incorporated into a preliminary findings report in December, 1983.

During 1984 the Bureau of Reclamation, under sponsorship of the former Oahe Conservancy Subdistrict, advanced the feasibility study on the Garrison Extension project. Soil classification and environmental analysis were completed during the summer of 1984. Preliminary investigations on potential storage sites as well as economic analysis of the project were also completed.

To resolve the controversy of North Dakota's Garrison Division Unit Project, Congress established a twelve member commission to study the North Dakota project and to recommend possible modifications. The Commission presented its recommendations in late December of 1984. Legislation to authorize the Commission's recommendations was drafted and introduced; however, the State of North Dakota and the Audubon Society, the principal critic of the project, were unable to reach an agreement on the intent of the Commission's recommendations and the legislation was tabled in committee. The North Dakota congressional delegation redrafted the legislation and reintroduced it in 1985.

This legislation (H.R. 1116) was successfully amended and passed into law in April 1986. The bill authorizes a 130,940 acre project, prohibits construction of the Lonetree Dam and Reservoir, authorizes construction of the Syketon canal, authorizes \$200 million for a North Dakota state municipal and industrial water supply system, requires acre-for-acre mitigation, establishes a new national wildlife refuge, authorizes use of federal hydropower for the state water supply system, requires farmers who grow surplus crops to pay 10% of project costs and prohibits construction of irrigation features in the James River basin before FY 1991 and completion of a comprehensive EIS on irrigation in the basin.

Further progress of the South Dakota study depends on completion of the comprehensive EIS for the basic North Dakota Garrison Project by Bureau of Reclamation. The Bureau of Reclamation established the James River Technical Team in 1983 to:

1. Develop recommendations to resolve issues related to the GDU about North Dakota and South Dakota water rights.
2. Develop recommendations to resolve the issue of operation of the Sand Lake National Wildlife Refuge impoundments.
3. Review alternative operation strategies for Jamestown and Pipestem Reservoirs with the GDU and recommend a preferred operation strategy.
4. Construct a predictive model to assist in the resolution of the issues addressed above.

Satisfactory resolution of these items is necessary before the project can proceed. The Technical Team, of which South Dakota is a member, has constructed mathematical models to predict flows and water quality at numerous points along the James River for alternative Garrison project configurations and operational plans. These models are being used to study project alternatives which meet South Dakota water supply needs and enhance the Sand Lake National Wildlife Refuge. The Technical Team has also approved release of a draft report on alternative operation studies for Jamestown and Pipestem Reservoirs which should be available to the public in January, 1988. Studies are also progressing on the effects of the Garrison Project on vegetation, fish, wildlife, flooding, and channel stability in South Dakota.

Gregory County Pumped Storage Project

The Gregory County Hydroelectric Pumped Storage Facility was authorized by the 1981 State Legislature as part of the State Water Resources Management System. This project will use off-peak electricity to pump water from Lake Francis Case to an 80,000 acre-foot reservoir on the river bluff over 700 feet above the lake. Water from the reservoir will be released back to the lake through turbines to generate 2,360 megawatts of peak-hour electricity. Project features will consist of a 1,870 acre upper reservoir with an active storage of 80,000 acre-feet, an underground conduit 9,360 feet long and 30 feet in diameter, and a powerhouse with six 393 megawatt reversible pump turbine units. Maximum discharge into Lake Francis Case during generation periods will be 46,800 cubic feet per second with an average gross head 724 feet. The unit also has the potential to provide water for rural, municipal, and agricultural use in the immediate vicinity.

The U.S. Army Corps of Engineers, in June 1982, completed an interim report and final environmental impact statement for the Gregory County project. The Corps' report recommends that the Gregory County Hydroelectric Pumped Storage Facility be constructed in two stages of 1,180 megawatts per stage at an estimated cost of \$791 million each. The proposed project development schedule calls for construction of Stage I to begin in 1989, and to be completed (on-line) in 1995. Stage II construction would be initiated dependent on future growth rates and energy demands. The project report was returned without action by the

Assistant Secretary of the Army for Civil Works to the Omaha District of the Corps of Engineers. The Corps did not recommend the project for Congressional authorization based on the policy that federal hydropower development should occur only when non-federal development is impractical.

Federal legislation was introduced during the 1985 session of Congress to construct the Gregory County project. As passed in 1986, the legislation (P.L. 99-662) authorized \$1.39 billion in federal funding for the project. Of this \$1.39 billion authorization, \$100 million is for construction of the water supply and irrigation features. According to the Act, the Secretary of the Interior must certify the feasibility of these additional features in a feasibility report before construction of the hydropower unit can begin.

The Act further required that 50% of the costs of the feasibility study were to be paid with nonfederal funds, but up to half of these funds could be provided for with in-kind services. The U.S. Bureau of Reclamation estimated the cost of the feasibility study at \$800,000.

The 1987 State Legislature passed legislation providing a \$150,000 study loan to the Gregory County project. The study loan is being used to initiate the feasibility studies for irrigation and water supply development. The water supply component includes the potential for developing rural, municipal, and industrial water supplies, enhancing wildlife areas, and promoting rural economic development. Federal funding was not included in their fiscal year 1988 appropriations bill for this feasibility study. The Gregory County Pumped Storage Site Water Corporation has entered into two contracts utilizing state and local funds for reconnaissance level studies on the irrigation and multipurpose water supply features and are proceeding at this level until federal funds become available.

James River Improvement Program

The 1984 State Legislature authorized the James River Improvement Program as part of the State Water Resources Management System. The program is a combination of projects along the James River which are intended to provide flood control as well as municipal, industrial, agricultural, recreational and wildlife benefits. Total cost for all projects in the program is \$75 million. As part of this effort, federal legislation (P.L. 99-662) was approved in 1986 authorizing \$20 million for flood control and stream flow improvements on the James River. Under the Act, a feasibility environmental impact statement report is due by September 1989. Individual components of the program have been actively pursued by the appropriate local and state governmental entities. Those components currently underway are outlined below.

The 1984 State Legislature appropriated \$1 million to begin the channel restoration program. The Department of Water and Natural Resources (DWNR) used \$600,000 of the appropriation to purchase two hydraulic dredges and support equipment, a \$475,000 grant was provided to the James

River Watershed District for operational expenses related to a five mile channel restoration demonstration program and \$150,000 was reserved for channel restoration in the lower James. The first dredge was delivered to the demonstration site in southern Brown County, near Warner, in mid-November of 1984. The disposal site was prepared, the dredge assembled, operators trained and an environmental monitoring program was developed and initiated. Since 1985, the James River Watershed, in cooperation with the Department of Water and Natural Resources, has proceeded with dredging activities in the demonstration area. In addition to pumping the dredged material directly into disposal ponds, a large spray gun, similar to those used for irrigation, was used to spray the dredged material into a disposal pond and also onto adjacent riparian land. All dredging, reclamation, and associated research activities have been concluded.

All dredging activity has been done solely to generate information for the environmental impact statement (EIS). The draft EIS on the riverside restoration program was published in September 1987 without a preferred alternative. The James River Water Development District held hearings at six locations along the James River between October 14 and November 5 to elicit public input into the selection of a project to proceed with. Under consideration were the four alternatives presented in the draft EIS plus various mixtures of the components of the four alternatives: No Action; Limited Channel Cleanout; Channel Restoration and Flood Bypasses.

The District adopted a three stage approach to river restoration as a result of the public input. The three stages are: Limited Channel Cleanout, Tributary Drainage Control and Bank Stabilization. The Limited Channel Cleanout includes: a comprehensive tree and debris removal, sandbar removal at selected locations in the southern portion of the river, modification of select dams, selective dredging of the Third Street dam at Huron and procurement of recreational access and wildlife habitat sites. The Tributary Drainage Control plan is a long range plan for the implementation of dams to control drainage on tributaries. The Bank Stabilization Program that will reduce the bank degradation that is occurring along the James River. The cost to implement Stage 1 of this project is \$4.91 million.

The Lake Byron Association, through the Beadle County Board of Commissioners, obtained a \$248,000 Community Development Block Grant to construct a \$423,000 pump station on the James River in 1984. This pumping station will move flood flows from the river to Lake Byron in an effort to stabilize the level of the lake. A water right for the flood flows was obtained by the lake association in December, 1984. Matching funds for construction of the pumping station were provided by the City of Huron and Beadle County. The project began construction in the summer of 1986 and was completed in the fall of 1987.

During 1984 the Board of Water and Natural Resources provided a \$150,000 loan to the BHC Development Corporation to complete a feasibility study on a ring dike storage reservoir in Brown County. The corporation is exploring the feasibility of pumping flood flows into a storage reservoir

for use in irrigation development and limited flood control. A draft feasibility report was completed in January of 1985 and the final report was submitted to the Bureau of Reclamation in July of 1986 for review and approval.

The Lower James Water Project District has been working on channel restoration projects since its formation in 1985. During that year a grant of \$150,000 was authorized by the Board of Water and Natural Resources out of the 1984 \$1 million appropriation for channel restoration. Through the City of Olivet a \$45,000 CDBG grant and a \$30,000 Lower James Conservancy Subdistrict grant were received for removal of flow obstructions. The district has formulated a comprehensive work plan and began by removing old railroad pilings near the Izaak Walton Dam north of Yankton. Logjam removal and bank stabilization work to begin in 1987. Stabilization of the bank at five sites was finished in 1987. Debris removal will continue into 1988.

Lake Andes-Wagner Irrigation Unit

In 1975, the State Legislature authorized the Lake Andes-Wagner Irrigation Project as part of the State Water Resources Management System. Located in Charles Mix County, the project will use Missouri River water pumped from Lake Francis Case to irrigate approximately 45,000 acres.

During the 1970's, the Lake Andes-Wagner Irrigation District approved an \$850,000 bond issue to complete a project master plan and feasibility study assessing the potential for nonfederal irrigation development. The 1977 study identified 78,759 irrigable acres in the District with an estimated development cost of \$48.3 million. With the additional costs covering interest during design and construction, possible cost overruns and bond reserve funds, the total bond issue required for project construction was estimated to be \$84.7 million. After holding informational meetings, District landowners, on July 27, 1978, rejected the proposed \$84.7 million revenue bond issue for construction of the project.

In 1981, the Lake Andes Irrigation District, the Department of Water and Natural Resources and the Bureau of Reclamation began a re-analysis of the privately sponsored feasibility study at the request of a number of landowners. Initially, the study identified 13,500 acres of irrigable land but this was later expanded to 26,700 acres identified as irrigable. The study was expanded again to an area east of Choteau Creek where an additional 15,000 acres was added to the project.

Study funds for the new 45,000 acre project were provided in part, by the local sponsor through a \$600,000 loan from the South Dakota Water Facilities Construction Fund. The preconstruction surveying and geological and archeological activities have been performed by contracts between the Irrigation District and private consultants. Likewise, the land classification east of Choteau Creek was accomplished by contract between the District and the Bureau of Reclamation. The State of South

Dakota has taken an active role in the study process, contributing services in the area of public involvement and study coordination as well as grant and loan monies.

The Regional Director's Report/Draft Environmental Statement was completed in May, 1985. This report was submitted to the Commissioner of the Bureau of Reclamation, issued for further public review and released as the Commissioner's Final Planning Report/Final Environmental Statement in September, 1985. Congressional authorization legislation has been introduced and field hearings were held in October and November of 1985 by both the House and Senate, and a House hearing was held in Washington, D.C. in July, 1987.

In 1986, the South Dakota Legislature authorized the Marty II project as a part of the State Water Resources Management System. Marty II is generally located within the same area as the proposed Lake Andes-Wagner project. While these two projects will seek authorization jointly, they will be physically independent of each other.

In 1987, the State of South Dakota and the Lake Andes-Wagner Irrigation District submitted a nonfederal cost sharing proposal to the Bureau of Reclamation and the House and Senate authorization committees. The cost sharing proposal totals \$45,950,000 for state and local share, which is approximately 29% of the total project cost of \$157,650,000.

Under the cost sharing proposal, the State of South Dakota and the project sponsors would establish a sinking fund to cover the cost of the ring dike (\$3.5 million) and the closed subsurface drainage system (\$36 million). The irrigation district has agreed to administer the design and construction of the unit distribution system and this will result in a federal savings of \$6.4 million.

The project sponsors are pursuing federal authorization legislation, and Congressional hearings were held in December, 1987, but no further action was taken prior to adjournment.

Lake Herman Restoration Project

Lake Herman is a natural lake located two miles west of the City of Madison in Lake County. This 1,350 acre lake has a mean depth of 5.5 feet and a maximum depth of 7 feet. Several unnamed tributaries drain the lake's 42,000 acre watershed with Silver Creek providing the outflow.

The original purpose of the Lake Herman Restoration Project was to alleviate the degradation of water quality in Lake Herman from non-point sources through the application of best management practices in the watershed and the construction of sediment control structures on the main tributaries of the lake. Three sediment control structures have been completed and 87% of the watershed has been treated with conservation practices. Riprapping of a major portion of the shoreline was completed in the early summer of 1982. In 1983, the U.S. Soil Conservation Service

in conjunction with the Conservation District implemented stream bank erosion control in the north tributary adjacent to the lake.

In-lake restoration in the form of dredging was begun by the City of Madison in July, 1985. This constitutes the beginning of the final phase of the Lake Herman restoration effort. Dredging was started in the northeast bay of the lake with the intention of clearing silt in spawning areas. The spoil ponds are located approximately one-half mile east of the lake in an abandoned gravel pit. So far, almost 35 acres in the bay have been dredged to the original bottom. The operation has proceeded from north to south toward Lake Herman State Park and the main boat launch. On the average, 1,200 cubic yards of sediment were being removed daily. The operation was discontinued for the 1986 season in November.

Spring start-up began April 1987 in the swimming beach area of the Lake Herman State Park. Dredging operations provided from the immediate beach area out to the middle of the bay. Approximately 20 acres of lake was dredged until shut down in November. Dredging in 1988 will be conducted in two possible areas: the Herman Slough which is located within the Park boundaries or the southeast bay of the lake.

To date, \$1,961,000 has been made available for the dredging and watershed treatment portion of the project. The following outlines the main funding sources:

EPA	\$ 801,000
ACP	165,000
CDBG	245,000
STATE	325,087
LOCAL	324,913
OWRC	100,000
	<u>\$1,961,000</u>

In addition to the funding listed above, the 1986 federal Omnibus Water Resources Act (P.L. 99-662) authorized an additional \$5 million for the restoration of Lake Herman.

Lyman Jones/West River Rural Water Systems

The Lyman-Jones Water Development Association, Inc., was organized as a non-profit corporation in 1971. The sole purpose of the organization has been to develop the Lyman-Jones Rural Water System. Originally, a water source on Lake Sharpe was proposed for the system. The present proposal for a Lake Oahe water source, shared with the West River Rural Water System, is more cost effective.

West River Rural Water System, Inc., was organized as a non-profit corporation in 1981. Initial development of the West River system was sponsored by the West River Conservancy Subdistrict. The proposed West River Aqueduct would have been particularly beneficial to the West River Rural Water System as a water source. The cancellation of the ETSI

project has resulted in a revision of the West River Rural Water System Project.

The two projects are now cooperating under the leadership of the West River Water Development District whose boundaries are nearly contiguous to the boundaries of the combined water systems. The water systems are cooperating because combined source and treatment facilities are more economical and because the water systems share common goals for water development.

The proposed water source is Lake Oahe near Ft. Pierre. Negotiations were begun in 1984 with the U.S. Army Corps of Engineers to obtain water within the powerhouse at the Oahe Dam. Use of the powerhouse source, as compared to construction of a new intake, will provide significant cost and operational advantages. The Corps has agreed to the concept of tapping into the dam by the systems. Written verification is expected soon. From the Oahe powerhouse, raw water pipeline will be run across the dam face over to the treatment plant by Ft. Pierre.

The Lyman Jones/West River Rural Water Systems were authorized by the 1981 State Legislature as part of the State Water Resources Management System. The systems would serve approximately 720 rural households, 405 taps and up to 13 communities in seven counties. The area covered by these systems lies in western South Dakota between the White and Cheyenne Rivers, and consists of Stanley, Haakon, northern Jackson, eastern Pennington, Jones, Lyman and a portion of Mellette counties.

With \$100,000 Water Facilities Construction Fund loans provided by the state to each system, engineering design reports were completed in 1982. In 1987 the Lyman Jones/West River Rural Water System was awarded \$50,000 to look into incorporation of the Ogalala Sioux rural water system into one component to be called the Lyman Jones/West River/Ogalala Sioux rural water system. The preliminary appraisal report has subsequently been completed and the Ogalala Sioux system was included as part of the total system to be authorized at Congressional hearings. The total estimated cost of the projects is \$100 million. Public meetings were held in 1982 to sign up potential users and interest in the projects remains high.

Authorization legislation was introduced in 1985, reintroduced in 1987, and has been through initial subcommittee hearings. The Senate field hearing in August 1986 was attended by approximately 400 people in support of the projects. Support for the project has been received from the Dacotah Chapter of the Sierra Club, the Audubon Society, United Family Farmers, South Dakota Water Congress and the Upper Missouri Water Users Association. Hearings on the project again were held on the project in December, 1987, but no further action was taken prior to adjournment.

Marty II Unit

The Marty II Unit was authorized by the 1986 State Legislature as part of the State Water Resources Management System. The proposed project will

irrigate approximately 3,000 acres in Charles Mix County. All of the land to be irrigated is either owned outright by the Yankton Sioux Indian Tribe or is allotted land, i.e., held in joint ownership by a number of tribal members. A preliminary report on the Marty II Unit was completed in January, 1983 by a private engineering firm. The results of the preliminary report indicate that the Marty II Unit is technically feasible and economically beneficial.

In addition, during 1987, the U.S. Bureau of Reclamation conducted technical assistance evaluations of the Marty II project at the request of the state. These evaluations included a review of project design, costs, and land classification.

While the Marty II Unit is generally located within the same area as the proposed Lake Andes-Wagner project, these two projects will be physically independent of each other. They will, however, seek Congressional authorization jointly. A final planning report and environmental impact statement must also be completed for the project.

Project investigations have been initiated by the U.S. Bureau of Reclamation. This summer preliminary land classifications and drainage field work were begun. This initial work will be followed by development of a planning report and environmental impact statement within the next twelve months.

Missouri River National Recreational River Project

The Missouri River National Recreational River Project was authorized as part of the State Water Resources Management System by the 1981 State Legislature. The segment of the Missouri River between Gavins Point Dam and Ponca State Park, Nebraska, was designated a national recreational river in the 1978 amendment (P.L. 95-625) to the Wild and Scenic Rivers Act (P.L. 90-524). The project involves preservation of visual, cultural and fish and wildlife resources; recreation development; and bank protection. Union, Clay, and Yankton counties in South Dakota are affected, as are Cedar and Dixon counties in Nebraska.

By virtue of designation as a national recreational river, a need has been recognized to protect for present and future generations the outstanding scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values of this river segment. Construction of bank stabilization and other control structures will be necessary to achieve this protection. Fiscal year 1980 and 1981 appropriations allowed the U.S. Army Corps of Engineers to begin inventory studies, but lack of continued funding has prevented completion of the work. In late 1987, Congress was moving towards appropriation of money for bank stabilization without a local cost share requirement for this river reach.

Missouri River Recreation and Fishery Development Plan

In October 1981, the State of South Dakota, through its Department of Game, Fish and Parks, requested the Corps of Engineers to cost-share in the development of recreation and fishery resources at the Missouri River main stem lakes in South Dakota. The proposal sought to improve recreation opportunities for its citizens and to achieve economic development through tourism based on recreation fishing.

The authority for implementing this plan is contained in the Flood Control Act of 1944 (P.L. 534) and the Federal Water Projects Act of 1965 (P.L. 89-72). The 1944 Act authorized the provision of facilities in reserved public use while a policy decision made the 1965 Act applicable to Missouri main stem reservoirs.

Cost-shared recreation facilities provided at the 22 existing and 5 new areas include boat ramps and docks; camping and picnic facilities; vault and flush-type toilets; access and camp roads; parking areas; potable water; fish-cleaning stations; playgrounds; changehouses and shelters; utilities; and maintenance yards. The state will also provide additional roads and upgrade some existing roads on off-project lands to provide better access to the recreation areas.

Fishery developments at 20 locations are in five basic categories: (1) artificial reefs; (2) rearing subimpoundments; (3) hatchery expansion; (4) enhancement of spawning and imprint stations for salmon; and (5) protected spawning habitat areas.

The exact design and function of these improvements may vary from one location to another. The spawning and imprint stations for the salmon fishery will be used for salmon and other species. Individual parks and fisheries projects have also been completed are in the process of being enhanced.

Significant progress was made during the past several years toward completing the Missouri River Recreational Development Program. American Creek Spawning Station at Chamberlain, Oahe Subimpoundment and Spring Creek Subimpoundment were completed, put into full operation and are returning fingerlings back into our reservoirs. Some of the species introduced from these facilities include walleye, paddlefish, brown trout, and chinook salmon. The Whitelocks Bay Spawning and Imprint Station, which began showing benefits in 1984, had its best year in 1987 with over 900 salmon spawned providing 700,000 eggs. In addition to the chinook salmon, over 40 brown trout producing 40,000 eggs were spawned at Whitlocks in 1987. Approximately 20,000 chinooks, 500,000 walleye, 100,000 white bass and 20,000 northern pike, as well as additional species, were harvested in the Missouri River Developments, and the economic value of these recreational pursuits is estimated to exceed 50 million dollars. The Division is also continuing with plans to construct a warmwater wintering area for forage species at Turgeon Wells on Lake Francis Case, build a fish trap and aeration system at Lake Pocasse,

build additional rearing ponds and fishing piers, and reconstruct a fish rearing pond at Blue Blanket to further benefit the fishery.

Four major projects awarded through the South Dakota Transportation Commission during 1985 have been completed. These projects include the road and campground at Lewis and Clark Recreation Area in Yankton County and two contracts for the nine boat ramps on Lake Oahe. The last scheduled Department of Transportation project in this program, Dodge Draw in Potter County, was completed in 1986. No significant action was taken in 1987.

Riverside Irrigators

This proposal attempts to secure low cost Pick-Sloan hydroelectric power for existing ground and surface water irrigators in the counties along the Missouri River corridor. Pick-Sloan power rates for these irrigators would (1) reduce the cost of pumping irrigation water and (2) fix pumping costs at a constant mill rate. Because electricity costs are a major irrigation expense, accomplishing these tasks may make the difference on whether an irrigator can continue operating or be forced out of business. There are approximately 120,000 acres of existing irrigation in the Missouri River corridor, and this irrigation can account for as many as 500 jobs in the State and can increase farm and nonfarm income by over \$50 million.

The original 1944 Pick-Sloan program promised nearly 1 million acres of new irrigation and low cost hydropower to pump the irrigation water. As most South Dakotans know the state has yet to receive Pick-Sloan benefits, even though the state sacrificed 500,000 acres of land flooded by the Pick-Sloan Missouri River dams, and even though the downstream states have received all the benefits promised to them. This proposal would provide at least a small amount of Pick-Sloan related benefits to South Dakota.

Designation of Pick-Sloan pumping authority for Missouri River corridor irrigators would require Congressional action. Congress has already authorized Pick-Sloan power rates for the Hilltop and Gray Goose Irrigation projects. This proposal would make the same arrangement available to other irrigators in the Missouri River area.

Slip-Up Creek Project

The Slip-Up Creek Project was authorized by the 1981 State Legislature as part of the State Water Resources Management System. The proposed plan of development for the Slip-Up Creek project includes a dam, reservoir, and pumping plant on Slip-Up Creek; a pumping plant on the Big Sioux River; and pipelines connecting the river pumping plant to the reservoir and to the city's water treatment plant.

Surface water from the Big Sioux River would be pumped by the low-lift pumps of the Big Sioux pumping plant through the Sioux diversion pipeline

to the reservoir for storage. The pumping plant would be located immediately upstream from an existing Corps of Engineers' diversion headworks weir on the Big Sioux River diversion channel about two miles north of the municipal water treatment plant. When needed, water stored in Slip-Up Creek reservoir would be pumped by the Slip-Up Creek pumping plant back through the Sioux diversion pipeline and then through the Sioux Falls pipeline to the municipal water treatment plant. The Big Sioux pumping plant would also divert Big Sioux water directly to the treatment plant when available.

Slip-Up Creek reservoir and adjacent land would also be developed for recreation and fish and wildlife activities, providing a water recreation area near Sioux Falls.

The Sioux Falls Unit's feasibility report has been completed by the U.S. Bureau of Reclamation, and is now ready for federal project construction authorization and funding. The cost of constructing Slip-Up Creek is estimated at approximately \$45 million. In 1985, Sioux Falls hired a private engineering firm to evaluate and develop recommendations regarding the city's water supply alternatives. The engineering firm has completed its report and recommended development of the Slip-Up Creek reservoir alternative. After a public meeting in March 1986, the city passed a resolution providing the following: 1) continue developing the Sioux Falls aquifer; 2) continue planning for a reservoir in the Slip-Up Creek Valley; and 3) initiate a water education and conservation program. In 1987 Sioux Falls began construction of a well field expansion project as a water supply alternative included in the Slip-Up Creek project.

Turkey-Clay Watershed

The Turkey-Clay Watershed is located in parts of Clay, Turner, Yankton and Hutchinson counties with a project area of 252 square miles. The project will consist of construction of 10.2 miles of main channel, 55.3 miles of laterals, nine flood water retarding structures, two stabilization structures, and 14 sediment basins. Upon completion of the project, it is estimated that flood damages will be reduced by 72% and that sediment leaving the watershed will be reduced by nearly 50%.

The environmental impact statement and design studies have been completed by the U.S. Soil Conservation Service. Estimated project costs are \$10.4 million of which approximately \$8.5 million could be funded through Public Law 83-566, the Small Watershed Program. Further federal funding will be delayed until the watershed approves a financial plan.

In March, 1984 a referendum on the proposed financial plan for the Turkey-Clay Watershed project was held and defeated when the proposal failed to receive the required 60% favorable vote. The watershed directors revised the proposed financial plan and took steps to hold another referendum. However, a group of landowners in the watershed sought an injunction to prevent the second referendum on the grounds that specific project plans had not been approved by the S.D. Board of Water and Natural Resources. The circuit court ruled that the watershed had

not violated state law but did require the watershed to have project plans approved before the referendum. On September 7, 1984, the Board of Water and Natural Resources approved the project plans.

The watershed board spent most of 1985 reviewing and reformulating the proposed financial plan. After holding the required hearings, the plan was referred to the voters once again on September 24, 1985. The revised plan failed to receive a 60% favorable vote.

In 1984 the Legislature appropriated \$100,000 from the Water Facilities Construction Fund for a loan to the Turkey-Clay Watershed District. Because of the need for further planning, the 1986 Legislature provided the Board of Water and Natural Resources with the authority to grant up to \$30,000 of the 1984 appropriation for engineering and planning. In 1987, the Turkey-Clay Watershed District requested and received \$30,000 of this appropriation to pay for engineering costs on the project.

Vermillion River Basin Flood Control

Flooding in the Vermillion River Basin has become much more severe in the last 30-40 years than in past years. Area residents feel that much of this problem is due to the widespread drainage of wetlands in the river uplands. Instead of reducing flood flows and storing runoff from snowmelt and precipitation event, these drained wetland discharged water into the river, resulting in an increase in the severity, frequency and duration of floods.

The Vermillion Water Project District has been active in lobbying Congress to appropriate funds for a reconnaissance and feasibility study of the Vermillion River and its tributaries. The appropriation has been included in one version of a flood control bill but has not been passed by both houses of Congress.

Water for Energy Transport (WET) System

The Water for Energy Transport System was authorized by the 1981 State Legislature as part of the State Water Resources Management System. The WET system proposes to transport treated wastewater from nine Black Hills municipalities and industries to Wyoming, via pipeline, to be used in a coal slurry pipeline that would carry low sulfur coal to power plants in the mid-south region. The WET system is considered a viable concept for the following reasons: (1) municipal wastewater is being treated and discharged into surface water courses without any means of a tangible cost recovery; (2) several communities are facing exorbitant costs to update their waste treatment plants to meet EPA/State requirements; (3) local water supplies are limited relative to future demands, especially in energy developing areas of Wyoming. At least three slurry pipeline companies have expressed an interest in the WET system.

During 1981, the WET system was advanced as an alternative source to the Madison Aquifer as a water supply for the ETSI coal slurry pipeline. Project costs for WET were updated and several meetings were held with

the interests involved to resolve possible problems over the rights of downstream water users to the effluent. The major thrust of activities concerning the WET system in 1983 was directed at identifying additional storage locations. A primary site, located on Rapid Creek, would potentially be known as Brennan Reservoir. The U.S. Army Corps of Engineers conducted additional studies to locate potential sites on other Black Hills streams. The ultimate goal is storage of an additional 100,000 acre-feet of water.

In 1984, a final report was completed on the project. The report estimated construction costs for the WET system of \$149 million with operation and maintenance cost of \$47 million annually. The Water for Energy Transport (WET) System has been developed to the point that an industrial user needs to express a strong interest with a Letter of Intent to enter negotiations before any additional specific work is completed. The project sponsor (Black Hills Council of Local Governments) anticipates completing a Concept Report Update in 1987. An important spin off of the WET System effort is the identification of potential on-stream and off-stream reservoir sites. One site in particular has been targeted by the West Dakota Water Development District for further evaluation. A tentative scope of work for the study was proposed for the reservoir and an interstate water delivery system. Before the scope of work can be finalized and adopted, an analysis of potential water quality of the proposed reservoir had to be undertaken. The analysis was completed and the only identifiable concern was the current phosphorus loading in Rapid Creek. The analysis recommended that the cost of phosphorus removal become part of the cost of the entire system. Now that the water quality question has been analyzed, it is anticipated that the proposed scope of work will be finalized and a feasibility study initiated.

The future of the project will continue to be linked with the development of the coal industry of Wyoming and its concomitant water needs.

WEB Pipeline Project

The WEB Pipeline Project was authorized by the 1981 State Legislature for inclusion in the State Water Resources Management System. The project is a domestic water pipeline that will supply treated Missouri River water for rural domestic, livestock and municipal users in portions of nine counties in north central South Dakota. The project area includes all or parts of Walworth, Edmunds, Brown, Spink, Day, Campbell, McPherson, Faulk, Potter and Hand counties. Domestic drinking water via a system of buried pipelines will be provided to 3,000 farm livestock hookups and 44 small towns with a total population of 30,000 people. The public water supplies in most of WEB cities, towns and rural systems that currently have public water supply systems violate two or more of the federal Safe Drinking Water Act maximum contaminant levels.

The WEB system includes a raw water intake and a pumping station along the east shore of Lake Oahe on the Missouri River, a 3.8 mile raw water transmission pipeline, a water treatment plant, a water pumping station,

a main storage reservoir, 115 miles of main transmission pipeline, 3,400 miles of distribution pipeline and 17 reservoirs and storage tanks. The system is being integrated as a single system with service lines tapping both main transmission lines and distribution lines. The total estimated cost of the WEB project is approximately \$105 million.

The WEB project was federally authorized in the Rural Development Policy Act of 1980 receiving an appropriation of \$1.9 million for federal fiscal year 1981. However, the U.S. House Appropriations Subcommittee on Interior subsequently rescinded this appropriation for WEB. Following this action, the South Dakota Congressional delegation introduced a bill to reauthorize WEB and restore construction funds as well as providing language to effectuate a resolution to the Oahe Unit authorization issue. The bill passed and an appropriation of \$1.9 million was provided to WEB. The WEB project also received \$16 million, \$10 million, \$18.5 million, \$17.2 million and \$16.4 million appropriations in 1983, 1984, 1985, 1986, and 1987 respectively. These appropriations and all future federal appropriations for WEB are provided on at least a 75% grant basis, with the remaining percentage on a loan basis at an interest rate of 5%. The state has provided \$600,000 in loans for construction of the system. Of this \$600,000, \$300,000 reverted on July 1, 1986, upon the decision of the WEB board. The remaining \$300,000 reverted in June 30, 1987. In addition, the South Dakota Conservancy District, in December 1983, issued \$17.23 million of interim financing notes for the purpose of reducing interest costs during the project construction period. In 1987 WEB received approximately \$1.3 million from a bond defeasance issue which when combined with outstanding interest will yield a total investment of \$1.6 million for project use.

Construction is now 70% complete with over 1,170 farms and households and 13 towns are now being served by WEB.

West River Aqueduct

A study report was presented to the 1977 State Legislature proposing to include the West River Aqueduct Project in the State Water Resources Management System. As proposed, the project would have delivered 20,000 acre/feet of Missouri River water to Energy Transportation Systems, Inc. (ETSI) for use in a coal slurry pipeline and 10,000 acre/feet to rural communities and rural water systems in western South Dakota. The Legislature enacted legislation to clear the way for the construction of the West River Aqueduct project; however, Governor Richard Kneip vetoed the bill.

In 1981 the West River Aqueduct was included in the project in his presentation of the "Big Ten" list of projects most vital to the State of South Dakota. An agreement in principle was reached between the state and ETSI whereby ETSI would construct a delivery system and make Missouri River water available to users along the aqueduct. A special session of the State Legislature was convened in mid-September of 1981, and enabling legislation was passed approving the construction of the West River Aqueduct project. By year end, a contract was executed between the Board

of Water and Natural Resources and ETSI detailing the delivery system and payment arrangements previously agreed to in principle.

The West River and Black Hills Conservancy Subdistricts conducted feasibility studies to identify potential projects and users of aqueduct water in western South Dakota. In March 1982, the Board of Water and Natural Resources, in cooperation with the two subdistricts, provided ETSI with the size requirements, locations and number of aqueduct transfer points from which the local projects would draw water.

In August 1982, two suits were filed in U.S. Circuit Court against ETSI, U.S. Interior Secretary James Watt and several other federal officials. One suit was brought by the states of Iowa, Missouri and Nebraska while the other was filed by the Kansas City Southern Railway Company, the Sierra Club, the Colorado Farmers Union, Nebraska and Iowa. The ultimate objective of each suit was to halt the sale of Missouri River water to ETSI. The issue on appeal to the Eighth Circuit was whether the Department of the Interior or the Department of Army had the authority to enter into a water service contract with ETSI to use the stored waters of the Oahe Reservoir. This would determine whether the federal government or the states to dedicate the water stored within their boundaries for beneficial use and allocation. South Dakota was involved as amicus curiae, supporting the position of the federal defendants and ETSI. The Eighth Circuit ruled, in a two-to-one decision, that the lower court was correct in holding that the Bureau of Reclamation did not have authority to contract and held that the agreement between ETSI and the United States was void. On a petition for rehearing filed by the United States and by ETSI, the Eighth Circuit deadlocked at five-to-five and therefore the motion was denied. The United States and ETSI have filed a petition for certiorari with the United States Supreme Court which was heard in 1987. The decision on this action is still pending.

The State of South Dakota subsequently filed a motion to intervene in the case brought by the downstream states; however, the motion was denied. In early 1983, the State filed suit against the Kansas City Southern Railroad and its associated companies charging conspiracy to monopolize Powder River Basin coal traffic and tortious interference with the South Dakota Conservancy District's ETSI contract. Discovery is continuing in this case and the trial is expected to be held early in 1988. To date, the litigation team working on this case has reviewed more than half a million documents and has participated in the depositions of more than 100 witnesses in order to prepare the case for trial. A similar lawsuit was brought by ETSI against five railroads in Beaumont, Texas, in October of 1984 and a sixth railroad was added to ETSI's lawsuit in 1985. Arkansas Power and Light has moved to join the lawsuit in Texas as a party plaintiff. Recently, Houston Lighting and Power has brought its own lawsuit against the six railroads in Houston, Texas, alleging, in addition to the antitrust claims, a violation of the Racketeer Influenced and Corrupt Organizations Act.

In May 1985, Judge Warren K. Urbom of the U.S. District Court in Lincoln, Nebraska granted a permanent injunction blocking South Dakota's proposed

sale of Missouri River water to ETSI. On August 1, 1985, ETSI cancelled its proposed \$3 billion coal slurry pipeline and its plans to buy Missouri River water from South Dakota. As a result, South Dakota only received \$5.2 million of the projected \$1.4 billion in payments from ETSI.

In a related legal matter, on August 16, 1985, South Dakota filed suit against the states of Nebraska, Iowa, and Missouri in the United States Supreme Court. The action grew out of the consistent opposition by the downstream states to this State's reasonable use of Missouri River water. South Dakota is asking the Court to affirm that the Missouri River water stored behind South Dakota's mainstem reservoirs for reclamation and irrigation purposes under the authority of the Flood Control Act of 1944 may be used without interference from the downstream states. The amount of water involved is substantial: under the Flood Control Act, more than 700,000 acres were to have been used for federal irrigation projects. This action was previously dismissed by the Supreme Court, although the court allows for refileing. In September 1986 the State refiled the case, noting that the Department of Justice had earlier indicated to the Court that South Dakota had a justifiable controversy with the downstream states. This matter is being heard by the U.S. Supreme Court.

Whetstone Irrigation Unit

The Whetstone Irrigation project was authorized by the 1977 State Legislature as part of the State Water Resources Management System. The 1977 State Legislature also approved bonding authority in the amount of \$15 million for the project.

The landowners in the Whetstone pipeline project area formed an irrigation district and elected directors for the district. The irrigation district has 10,870 acres of irrigable land within its boundaries. A reconnaissance level study was completed during 1978, with an update in May, 1980. This study concluded that under present conditions the Whetstone project is not feasible although local interest remains strong.

Landowners in the Whetstone project area do have an opportunity to have their lands considered for irrigation as part of the Gregory County Pumped Storage project. This study began in the fall of 1987.

State Water Facilities Plan--Progress Report

In December 1987, the Board of Water and Natural Resources reviewed over 83 water projects for possible inclusion in the 1987 State Water Plan. From this group, the Board selected 52 projects to be included in the State Water Facilities Plan. The State Water Facilities Plan represents those priority projects which can be implemented using the discretionary authority of the Board of Water and Natural Resources.

In 1987, four rural and municipal projects received \$356,420 in state funding with two lake restoration projects receiving state funds in 1987, with the balance being implemented using previous state and federal awards.

Of the projects in the State Water Facilities Plan, 15% received direct state funding. In addition to the state funding, federal and local funds were used to complete the projects' financial packages. These other financing sources include the Farmers Home Administration, the Environmental Protection Agency, water development districts and local bond issues. The tables on the following pages display the funding progress of each of the projects in the 1987 State Water Facilities Plan.

TABLE 4
1987
RURAL WATER SYSTEMS

PROJECT TITLE	CDBG	CONSOLIDATED WATER FACILITIES GRANT	TOTAL PROJECT COST
Aurora/Brule			\$ 420,000
Brookings Deuel			82,520
B-Y	\$410,000		6,533,000
B-Y			1,117,000
Davison			92,500
Douglas			1,443,000
Kingbrook	196,800		575,000
Rosebud			6,202,000
Sioux			300,000
T-M			137,500
Tripp	159,000		265,000
TOTAL	\$765,800	\$ 0	\$17,900,720

TABLE 5
1987
MUNICIPAL WATER PROJECTS

PROJECT TITLE	CDBG	CONSOLIDATED WATER FACILITIES GRANT	TOTAL PROJECT COST
Aberdeen-Transmission Line	\$ 200,000		\$1,478,400
Alcester-New Water Source	200,000		382,500
Arlington-WW Treatment Facility			425,000
Armour-WW Treatment Improvements			279,676
Bancroft-New Water Strpage			40,550
Camelot Water Assn-Hookup to Pierre			139,000
Chamberlain-WW Treatment Facility			120,200
Clark-Water Expansion by Hwy 212			510,000
Clark-Water Expansion in NE		\$ 51,850	186,000
Crooks Sanitary Dist.-WW Treatment Fac.			385,000
Custer-NEW Well and Transmission	240,000		611,564
Elkton-New Water Source			137,869
Garretson-New Wells and Transmission			242,972
Geddes-WW Treatment Facility			226,200
*Hecla-Storage and Pumping System	42,000		213,665
*Hill City-System Expansion	15,000		74,260
Huron-Third Street Dam			84,284
Huron-Lines to Swift			250,000
Iroquois-Source and District Improvement	231,000		469,267
Lake Poinsett San. Dist.-WW System			927,000
Mina Lake San. Dist.-WW Treatment Facility			107,470
Minnehaha Comm. Water Corp.-System Expansion			2,240,000
Pickstown-Line Replacement			91,000
Pierre-New Well			145,000
Pierre-Add WW Treatment			500,000
Rapid Valley San. Dist.-System Expansion		50,000	150,000
Redfield-New Well Field			1,083,500
Rosholt-WW Expansion			252,175
Salem-WW Treatment Imp.			533,000
Seneca-WW System	46,350		185,400
Sioux Falls-North Res.		100,000	632,025
*Spearfish-New Well and Res.	75,000		715,000
Tea-WW Treatment Expansion	50,000		416,500
Tulare-New Water Source			290,577
Valley Springs-Water Extension		43,500	86,000
Wessington Springs-Water Storage			165,000
Westport-Additional Cells			289,000
Willow Lake-WW Treatment Fac.			401,000
Yankton-Water Imp.			537,119
TOTAL	\$1,099,350	\$293,689	\$17,404,223

* Represents previous allocations for active projects.

TABLE 6
1987
MUNICIPAL WASTEWATER PROJECTS

PROJECT TITLE	CDBG	CONSOLIDATED WATER FACILITIES GRANT	EPA	TOTAL PROJECT COST
Arlington-Replace Treatment Facility				\$ 550,000
Armour-Lagoon Improvement				427,000
Centerville-Sewer Separation	\$ 26,000			103,000
Crooks Sanitary Dist.- New Treatment Facility				435,000
Freeman-Sewer Interceptor & Lines	350,000			700,000
Hitchcock-Treatment Facility & System Extension			\$299,562	380,000
Hoven-Treatment Facility Expansion				325,100
Milbank-Lift Station Pumps for New Industry				2,074,000
*Mitchell-Sewer Main to Industrial Park				
Ramona-Lift Station Replacement				74,000
Reliance-System Expansion				258,000
Vermillion-Interceptor Replacement				250,000
Wagner-New Treatment Facility				262,000
Wall-System Expansion				154,100
Webster-System Expansion				131,000
White River-Lagoon Expansion				75,000
Willow Lake-New Treatment Facility				401,140
Woonsocket-Stabilization Pond Expansion	20,000		115,000	210,000
TOTAL	\$396,000		\$414,562	\$6,809,940

*State funds for these projects have been committed and are included to support efforts in obtaining federal or local funds.

TABLE 7
1987
LAKE RESTORATION PROJECTS

PROJECT TITLE	CDBG	CONSOLIDATED WATER FACILITIES GRANT	LAKE AND RIVER DREDGING GRANT	TOTAL PROJECT COST
Brant Lake-Shoreline Stabilization		\$ 60,600		\$101,000
*Eagle Butte Brueschke Dam		\$ 37,510		68,000
Lake Campbell- Restoration			117,000	234,000
Lake Mitchell- Restoration			255,000	510,000
Lake Poinsett- Flood Control		54,480		95,800
Leola Lake Restoration			28,000	51,530
*Redfield Dam		28,200		47,000
Stockade Lake- Restoration				473,703
Swan Lake Restoration	31,000			62,000
TOTAL	\$31,000	\$180,790	\$400,000	\$1,633,033

*1987 Awards

TABLE 8
1987
FLOOD CONTROL/EROSION CONTROL/WATERSHEDS

PROJECT TITLE	STATE	FEDERAL	TOTAL
James River Improvement			\$1,178,000
TOTAL	\$0	\$0	\$1,178,000

*Completed in December 1987.

Lake Restoration -- Progress Report

The Board of Water and Natural Resources and the Department of Water and Natural Resources, Division of Water Resources Management is currently participating in a variety of lake restoration projects ranging from major implementation activities, such as whole lake dredging, to preliminary contacts with lake associations interested in restoring their lakes. In an effort to provide a quick, general status of individual projects and prepare reports commensurate with the volume of activity on each project, three project activity levels have been defined. The levels do not define how much activity can be devoted to a project, but rather how much activity has been devoted.

The three levels that have been selected are defined as follows:

Level III

- * Ongoing implementation projects.
- * Projects that are funded and/or ready to begin implementation during the next construction cycle.

Level II

- * Projects that are currently in the Diagnostic/Feasibility study process.
- * Projects that have completed Diagnostic/Feasibility studies and implementation is pending final design and funding.
- * Projects that are undergoing specific studies to address critical problems.

Level I

- * New projects that have requested technical assistance to begin restoration and have been provided preliminary information. Further action pending.
- * Projects that are completed and are being monitored to determine effectiveness.
- * Projects that will be closed out pending final reports.

The projects on the following pages are summaries of the individual lake restoration projects in which the Board and the DWR are currently participants. Summaries are in alphabetical order by level.

Level III Lakes

Brant Lake

Brant Lake is a 1,000 acre, moderately shallow, eutrophic lake located in southeastern Lake County near the town of Chester. It has a direct watershed of approximately 7,700 acres, 93% of which is cropland with the remaining 7% pastureland or other uses. In addition to the direct runoff from the adjacent watershed, Brant Lake also receives the overflow from Lakes Herman and Madison since it is the last in a three lake chain. The lake's outlet is Skunk Creek which flows out of the county toward the southeast and eventually connects with the Big Sioux River near Sioux Falls.

Brant Lake is a state owned lake with approximately 3,000 feet of public access area maintained by the South Dakota Department of Game Fish and Parks. The lake is classified for the following beneficial uses: 1) Warm water semipermanent fish life propagation; 2) Immersion recreation; 3) Limited contact recreation; and 4) Wildlife propagation and stock watering.

In a 1979 study conducted by the DWR, it was concluded that algal blooms may cause some recreational impairments and that shoreline erosion was estimated to be slight. Since then significant changes have occurred in the status of the lake. Recent (1985) surveys have shown that over 7,000 feet of shoreline is exhibiting moderate to severe erosion and that algal blooms have increased significantly. The primary cause appears to be the excessive water levels the lake has experienced over the last four years. These high water levels have caused the severe shoreline erosion and subsequent deposition of nutrients leading to the excessive algal blooms. Another contributor to the problem may be the limited capacity of the outlet spillway and channel.

In the spring of 1985, the Brant Lake Development Association contacted the DWR. Since that time the Department has provided technical assistance in surveying the shoreline to determine the magnitude of the problem and preparing plans to stabilize the critical shoreline areas. As a result of this survey and planning, the association prepared a project with a budget within its financial capabilities and submitted the project for State Water Plan approval. In 1986 the DWR awarded Brant Lake Improvement Association a WFCF grant for \$60,600. In 1987, the DWR approved its plans and specifications to begin drawdown on the grant.

Lake Campbell

Lake Campbell is a 1,000 acre lake located south and west of Brookings in Moody and Brookings Counties. Lake Campbell is fed from a 103,762 acre watershed which feeds Battle Creek and eventually drains into Lake Campbell. The watershed has been under study for several years by the DWR, South Dakota State University, and the Soil Conservation Service. A non-point sources model has been developed by South Dakota State University while the SCS has undertaken a Best Management Practice

program throughout the watershed. In October 1986, the BWNR entered into a contract with the Lake Campbell Improvement Association to dredge 471,000 cubic yards of material from the south end of the lake. The BWNR awarded a \$117,000 grant to the Association with the condition that the Association provides an equal sum in either cash or in-kind match. In December 1986, the South Dakota National Guard delivered the dredge "Restoration" from the James River to Lake Campbell. Dredging began in the spring of 1987 at the south end of the lake. Sediment is being pumped to an abandoned gravel pit located about a mile south of the lake. During the summer, the dredge experienced a series of mechanical breakdowns and the project fell behind schedule. Once all the problems were corrected, dredging has continued on a 24 hour a day basis. The dredge was dry docked in November. Next season, dredging will continue in the south end of the lake and then be taken to the north end later in the year.

LaBolt Lake

LaBolt Lake is located in Grant County 11 miles south and 2 miles west of Milbank. It is a 7 acre lake constructed in 1936-37 by the WPA as a recreational facility. The lake served area residents well until continual heavy silting rendered the lake useless in the early 1970's. The 8.3 square mile watershed which feeds the lake is 75% pasture and natural grass.

In July 1985, the BWNR entered into an agreement with the LaBolt Parks and Recreation Board to award a \$50,000 grant for dredging as part of the overall restoration plan to reclaim the lake as a recreational facility. This grant was matched by a \$10,000 grant from the East Dakota Water Development District and \$2,500 from the LaBolt Parks and Recreation Board as matching funds for the dredging effort. Dredging began on the lake in July and was completed in November 1985. Grant County donated labor, machinery and fuel to construct a sediment retention structure upstream of the lake in order to prevent future siltation. The County also provided labor, equipment and fuel to construct the holding ponds for the dredged sediment and restored these once dredging was completed. Area II Minnesota River Basin Project, Inc. and the Minnesota Soil and Water Conservation Board donated \$30,000 to install a drawdown tube and to repair the existing spillway of the dam. Other groups and individuals providing in-kind services and materials to the restoration effort were Aid Association for Lutherans which donated \$2,300 for materials for a new picnic shelter; Pete's Lumber which donated \$500 in materials for repair of the bathhouse; Whetstone Sportsman Club which donated 7 picnic tables costing \$875; the South Dakota National Guard which donated \$1,500 worth of transportation to return the dredge to Pierre; countless hours of local citizen's time who painted the old picnic shelter, restored and painted the outdoor toilets and generally refurbished the park; and the South Dakota Department of Game, Fish and Parks which stocked the lake with 2,000 pan sized trout and 300 bluegills and intends to continue stocking the lake in the future.

Leola Lake

Leola Lake is a 20 acre lake located on the northeast edge of the town of Leola in central McPherson County. Leola was built as a WPA project in 1936-37 and has served as a popular recreational area for Leola and a 15 mile radius. The lake is fed by an artesian well which produces about 70 gpm, and has a drainage area of about 6,400 acres. The McPherson County Soil Conservation Service has adopted an excellent soil conservation program for the existing watershed, and consequently most watershed land not in pasture or native grass has grassed waterways where minimum or no till planting methods are practiced. This, coupled with the use of an upstream dam as a sediment trap, will help keep the lake from resiltting once dredging activity is completed as part of the restoration effort.

In May 1986, the BWR entered into an agreement with the Leola Development Corporation for a \$25,400 grant to dredge 48,000 cubic yards of sediment from Leola Lake. The grant was contingent upon Leola Development Corporation providing an equal amount in either hard cash or in-kind match. Dredging activity began in June 1986. The BWR amended the Leola contract in November for an additional \$2,600 bringing the total grant award to \$28,000 and in December further amended the agreement to extend the contract from December 31, 1986 to July 31, 1987, because an early winter storm shut down operations two weeks before completion. The dredge "Muckraker" has been extracted from Leola Lake and winterized; upon ice-out in the spring, the dredge was relaunched and the project was completed in June 1987. About 56,000 cubic yards of sediment have been removed from Leola Lake. In addition to the \$5,000 from the Leola Development Corporation; the City of Leola has provided one tender (labor), a front end loader, and a truck to haul pipe; McPherson County has provided trucks to haul pipe, maintenance of the dredge (welding, etc.), a caterpillar to launch the dredge, and equipment to construct the holding pond for the removed sediment; and members of the Leola Development Corporation have also donated labor to the project.

Leola was recently added to the State Water Plan for shoreline stabilization (rip-rap) and construction of an air entrainment fountain to add DO (dissolved oxygen) to the artesian water feeding the lake. The Department of Game, Fish and Parks plans to stock the lake with fish once the restoration project is complete. Once restoration efforts are complete, Leola Lake will again serve as a fishing, swimming and picnicking area for residents of Leola and the surrounding 15 mile radius.

Lake Mitchell

Lake Mitchell is located in Davison County on the north edge of the City of Mitchell. Lake Mitchell Dam was constructed in 1928 on Firesteel Creek to serve as the water supply for the City of Mitchell. The lake has not only served as a water supply, but a boating, fishing, swimming, and picnicking recreational facility for the city and a large surrounding area. The surface area of Lake Mitchell is 671 acres and is fed by Firesteel Creek with a drainage area of 229,911 acres. Silt entering the

lake from the watershed has been accumulating in the west end since the dam was closed in 1928. Over the years this siltation has reduced the capacity of the lake to store water for the city and has impaired the lake as a recreation facility.

Mitchell's dredging project will remove 850,000 cubic yards of silt from the lake by the close of the 1987 dredging season. In September 1986, the BWNR entered into a contract with the City of Mitchell awarding it a \$255,000 grant for dredging Lake Mitchell provided that the city match the amount in either hard cash or in-kind match. Subsequently, the city deposited \$255,000 in a dredging account as its match for the contract.

The 1986 Legislature made an appropriation for a large 14" lake dredge and associated equipment. This dredge "Dakotah" was purchased and delivered to Lake Mitchell in October 1986. Dredging activity officially began on Lake Mitchell November 3, 1986, with approximately 22,000 cubic yards of material being removed before shut down from cold weather. The "Dakotah" was extracted from Lake Mitchell and winterized for the season, and was relaunched in April 1987 to continue dredging operations.

Dredging continued all spring until freeze up in November. Several areas of the west end of the lake have been dredged including small areas of cattails. In excess of 400,000 cu. yds. of material have been dredged this year. The dredge was dry docked at the same location as last winter. The completion date will be the end of July 1988. It is projected that up to one million yards of material will be removed from the lake.

Lake Poinsett

Lake Poinsett is a 7,868 acre lake located in Hamlin County, northwest of Brookings. The lake has an average depth of 9.5 feet and a maximum depth of 19.5 feet. The watershed encompasses over 198,000 acres of land. The state has classified Lake Poinsett for warm water semipermanent fish life propagation, immersion and limited contact recreation, wildlife propagation, and stock watering.

Lake Poinsett experienced severe flooding this spring with a surface water elevation nearly six feet over the established ordinary high water mark of 1650.5 feet msl. This elevation is the highest recorded water surface elevation in Lake Poinsett's history. An estimated \$2,000,000 worth of damage was incurred to businesses and permanent residential homes around the lake.

The DWNR, the Corps of Engineers, and state and federal emergency and disaster agencies have been working with the home owners and landowners around Lake Poinsett to identify potential projects that could relieve flooding problems in the future. The DWNR has evaluated many possibilities such as building a new outlet, cleaning out the existing outlet, removing roads and bridges, dredging the Big Sioux, etc. A hydrologic evaluation of Lake Poinsett revealed that it receives flood water from two major sources, the Big Sioux River and the chain of lakes

to the west of Poinsett. No acceptable method could be found to reduce inflows from the chain of lakes west of Poinsett. Two potential projects to reduce flood waters from the Big Sioux River are being pursued by the Lake Poinsett Development Association. One project involves putting some type of control structure on the outlet of Lake Poinsett to stop Big Sioux River water from running up the outlet into Lake Poinsett. The other project involves an existing diversion canal from the Big Sioux River to Dry Lake. Dry Lake and Lake Poinsett are connected and form basically one lake. This past spring Big Sioux River flows were so high that water ran over the control gates and into Poinsett via Dry Lake. The proposal is to extend the control gates in the diversion canal to prevent the Big Sioux River from overtopping the gates. The BWNR awarded the Lake Poinsett Area Development Corporation a \$54,480 Consolidated Water Facilities Construction grant for the control gate extension work provided that all necessary permits are obtained, local match money is in place, and an operating plan is approved by the Department of Game, Fish and Parks and the DWNR.

Future work will involve a cross sectional survey of the 5 - 10 mile stretch on the Big Sioux River to determine if dredging would lower the Big Sioux River sufficiently to reduce inflows of Big Sioux water into Lake Poinsett and to provide increased outflows through the outlet.

Ravine Lake

Ravine Lake is an 83 acre man-made impoundment located within the city limits of Huron. The lake has a maximum depth of 13 feet, a mean depth of 6.7 feet and drains a watershed of 77,000 acres. Beneficial use classifications include: warm water semipermanent fish life propagation, immersion recreation, limited contact recreation, and wildlife propagation and stock watering.

In August 1985, the City of Huron contacted the DWNR with a request to restore Ravine Lake. Staff members from the DWNR conducted a preliminary survey of the lake and watershed shortly thereafter to identify potential problem areas and monitoring sites. Following the survey, the City applied for and was approved for inclusion on the Natural Resources Inventory-Technical Assistance section of the State Water Plan. DWNR staff then continued in their technical assistance role by providing a preliminary diagnostic/feasibility study plan to the city. After a thorough review and negotiations with the state, the plan was finalized and a contract was signed to initiate a portion of the study.

Currently the city has completed data collection for the agricultural nonpoint Source section of the study on the watershed. DWNR staff are in the process of evaluating the data to determine critical areas in the subwatershed.

Recently, the city requested assistance in beginning the water quality portion of the study. This will entail establishing the in-lake and tributary monitoring sites, setting up the sample collection equipment and training a local technician in the collection process. The process

will continue into 1988, after which the data collected will be evaluated by the Division staff. A final report will be provided after completion of the evaluation. In 1987 Ravine Lake was awarded a \$5,000 loan to begin work on cattail removal.

Stockade Lake

Stockade Lake is a 130 acre impoundment located four miles east of the City of Custer just within the western boundary of Custer State Park. Its mean depth is 19 feet and maximum depth is 42 feet. French Creek, the main tributary to and outlet from the lake, drains a 42,880 acre watershed. The beneficial use classifications are as follows: cold water marginal fish life propagation, immersion recreation, limited contact recreation and wildlife propagation and stock watering.

In 1980, the DWR conducted a program of water sampling and analysis to determine the causes of water quality degradation to Stockade Lake. Personnel from Custer State Park collected the samples through a contract with the Department. The study concluded that the Custer Waste Water Treatment Plant was the major cause of excessive nutrient loads entering the lake. These loads caused massive macrophyte and algal growths throughout Stockade Lake. The City of Custer has recently completed construction on a new wastewater treatment plant which will no longer discharge effluent to French Creek. However, the nutrients currently in the lake are resuspended twice a year during the spring and fall turnover so the degradation problem still exists.

To correct this problem, the DWR has worked with the Department of Game, Fish and Parks to develop a dredging program that will remove most of the sediment from the lake. Dredging was felt to be the most cost effective restoration alternative to eliminate the nutrients in Stockade Lake. Personnel from both departments have inspected and surveyed disposal sites near the lake that will be used to deposit sediment. Costs for this activity have been formulated and are budgeted at \$257,000. The dredge and related equipment was transported to Stockade Lake from Leola Lake in July by the South Dakota National Guard. It took approximately two weeks to set the equipment up and begin dredging activities. The French Creek inlet of the lake is being dredged first with the sediment transported to disposal ponds located just to the west of Stockade Lake. Dredging will continue until freeze up in November. The dredge will be removed from the lake and winterized until start up next spring. The project will be completed in the fall of 1988. Renovation of the dam will also begin in 1988.

Swan Lake

Swan Lake is a natural lake located in Turner County, three miles north of the City of Viborg. This 180 acre lake has a mean depth of 4.5 feet and maximum depth of 6 feet. The lake is supplied with water from a diversion on Turkey Ridge Creek. The drainage area of Swan Lake covers

81,913 acres. Beneficial use classifications are as follows: warm water semi-permanent fish life propagation, immersion recreation, limited contact recreation and wildlife propagation and stock watering.

In October 1985, personnel from the DWNR met with members of the Swan Lake Improvement Association to discuss the state lake restoration program. Subsequently, the lake was inspected to identify cost effective restoration alternatives. The major concern to the Association was the deteriorated condition of the inlet structure on Turkey Ridge Creek.

A report was submitted to the Association from the DWNR outlining a viable restoration plan including costs. Specifically, the report outlined the need to repair the inlet, replace an inlet culvert under a lakeshore road with a culvert and riser pipe, riprap shoreline areas and, ultimately, dredge the lake. The total package would cost approximately \$935,000.

The Swan Lake Improvement Association reviewed the report and prioritized its needs. In June 1986, Turner County, on behalf of the Association, was awarded a Community Development Block Grant in the amount of \$31,000 to be matched with \$31,000 in local funds to begin restoration on Swan Lake. The project consists of controlling bank erosion and lake sedimentation by reconstructing the inlet structure, riprapping shoreline areas, raising the level of a lake access road and building a sediment basin between the inlet structure and the lake. Work on these projects will begin in the spring of 1988.

Level II Lakes

Lake Byre

Lake Byre was a 125 acre man-made lake located in Lyman County near the Town of Kennebec. The lake had a maximum depth of 26 feet, a mean depth of 7.1 feet and drained a 22,400 acre watershed. The beneficial uses of the lake were: domestic water supply, warm water permanent fish life propagation, immersion recreation, limited contact recreation and wildlife propagation and stock watering.

Prior to May 1986, Lake Byre was the sole water supply source for Kennebec. On that date an intense rainfall in the watershed above the lake caused the dam to overtop and finally fail. In response to this and other disasters, Lyman County received a Presidential Major Disaster Declaration for flood damages.

The DWNR, South Dakota Emergency and Disaster Service, Federal Emergency Management Administration (FEMA) and the U.S. Army Corps of Engineers have provided technical assistance to the town to reestablish a permanent water supply. After the failure, a well was developed to temporarily supply water to the town. The DWNR has been monitoring the water quality of the well and assisted Kennebec in the process of developing a permanent, satisfactory water supply. The Department has recommended

that Byre Dam be reconstructed to meet state and federal dam safety regulations and that FEMA provide the funding necessary to do the construction. Approval of the recommendation is still pending.

Lake Kampeska

Lake Kampeska is a 4,800 acre lake located in Codington County near Watertown. The lake has a maximum depth of 14.5 feet and an average depth of 10 feet. The watershed encompasses over 210,000 acres of diversified lands. It has been classified by the state for domestic water supply, warm water permanent fish life propagation, immersion and limited contact recreation, wildlife propagation, and stock watering.

The DWR has worked extensively with Lake Kampeska since the serious flooding this past spring. The Department has worked jointly with the U.S. Army Corps of Engineers to identify areas that may contribute to flooding in the Kampeska area. Currently, the City of Watertown, in conjunction with the East Dakota Water Development District and the Department, has signed a contract with the Corps of Engineers to conduct Phase I of a study to determine the feasibility of constructing a flood and pollution control basin north of Watertown. Results of the study are expected in 1988. Currently, cleanout of the inlet/outlet and flood retention dams are being considered.

The landowners and homeowners around Lake Kampeska have worked with the Department to form a water project district. Following an election at the end of October, the Lake Kampeska Water Project District was established and is working to find ways to reduce flooding in the future.

Legion Lake

Legion Lake is an 8.8 acre man-made lake located in Custer State Park in the Black Hills. The lake has a maximum depth of 20 feet and a watershed of approximately 5,632 acres. It has been classified by the state for cold water marginal fish life propagation, immersion recreation, limited contact recreation and wildlife propagation and stock watering. The main drainage in and out of the lake is Galena Creek.

During the past 24 months the DWR in conjunction with the Department of Game Fish and Parks has conducted a biological survey to document the effect of rotenone on Legion lake phytoplankton and zooplankton communities. The survey also studied the effect on planktonic biota of a reduced fish population and the subsequent influence of these altered aquatic communities on selected water quality parameters. The biomanipulation process was begun in September 1985 and a biological sampling program was initiated at the same time and were collected through September 1986. The water quality sampling program that began in 1983 was also continued.

Preliminary results published by the DWR in November, 1986 indicate a positive effect on the zooplankton and potentially the phytoplankton communities. The one contradiction that warrants further investigation,

however, is the predicted decrease in the phytoplankton population which usually occurs when the zooplankton increases was not evident. The report was sent in to EPA and an answer is still pending.

Mina Lake

Mina Lake is a man-made impoundment located in Edmunds County approximately 15 miles west of the City of Aberdeen. The lake encompasses 800 surface acres and drains a 153,600 acre watershed. Average depth of the lake is 9 feet with a maximum depth of 27 feet. The lake is classified for the beneficial uses of: warm water permanent fish life propagation, immersion recreation, limited contact recreation and wildlife propagation and stock watering.

Within the last 24 months a partial sewage collection system was installed around the lake with additional hookups pending. However, other sources of pollution appear to be affecting the quality of the lake. As recently as the spring of 1987, high coliform bacteria counts near the swimming beach have caused a closure of the beach. These violations prompted an in-lake survey by the DWR in the late spring. Results of the survey were inconclusive in that a specific source of the bacteria was not identified. However, elevated counts occurring early each week indicated that bacteria may have been released from sediments disturbed by weekend recreation activities. Speculation is that the source of the bacteria is non-point source runoff.

In order to answer the remaining questions, a complete diagnostic/feasibility study will be required. Recent contacts with members of the local sanitary district have indicated a willingness to begin this process. Assuming a continued willingness, a study plan will be prepared in the near future for consideration by the district.

Lake Pelican

Lake Pelican is a 2,800 acre natural lake located in Codington County adjacent to the City of Watertown. The lake has a maximum depth of 8 feet, an average depth of 5.5 feet and drains a 15,700 acre watershed. Beneficial use classifications include: warm water semipermanent fish life propagation, immersion recreation, limited contact recreation and wildlife propagation and stock watering.

Technical assistance by the DWR to Lake Pelican began as far back as 1980 under the federal 208 water quality assessment program. At that time a monitoring program was established to determine sources of the problems being experienced. Since then, the local lake association, with continued technical assistance from the Department, has prepared a preliminary project plan to reduce siltation from the watershed and the shoreline. Included in the plans are general shoreline stabilization and a series of lowhead structures in the drainage area to reduce runoff velocity and promote silt deposition.

To expedite implementation of the proposed project, the lake association is currently in the process of forming a water project district. The formation of a district by the association will lend considerable credibility to the project and provide for a source of funding. Technical assistance will be provided by the Department to support the district's efforts to finalize its plans and secure financing. The initial vote on formation failed and will be resubmitted to a vote in 1988.

Additionally, the Department of Game, Fish and Parks is working with various local organization and DWNR to prepare a plan for renovation of the public use area located adjacent to the southwest shoreline. A preliminary plan is expected in January 1988, after which a public hearing will be held to solicit input.

Lake Redfield

Lake Redfield is a man-made impoundment located on the west side of the City of Redfield. The 170 acre lake has a mean depth of 6 feet and a maximum depth of 12 feet. The watershed is comprised of 1,414 square miles. The main tributary for the lake is Turtle Creek. Beneficial use classifications are: warm water marginal fish life propagation, immersion recreation, limited contact recreation and wildlife propagation and stock watering.

The DWNR became involved with the restoration of Lake Redfield in mid 1976 with the initiation of a preliminary water sampling effort. The intent was to pinpoint problem areas using minimal sample collection. Since that time, the Department has contracted with the city to conduct further water sampling and analysis. Preliminary indications from this sampling effort revealed that the lake degradation problems stemmed from excessive sediment loads from the watershed. This sedimentation is causing abundant cattail growth and decreasing the lake's volume.

In 1985, the city and the James River Water Development District requested that the DWNR provide additional technical assistance to formulate a viable, cost effective restoration project for Lake Redfield. The DWNR have since prepared a Diagnostic/Feasibility study plan to determine the critical areas in the watershed as well as the water quality in the lake and have recently conducted a sediment survey on 52 acres of the lake. From this initial survey, the estimated costs for mechanical, hydraulic sediment and cattail removal have been calculated and submitted to the city for review. Further study and subsequent restoration efforts will be contingent upon commitments from the city and resolution of the problems with the structure impounding Lake Redfield. \$28,200 was awarded in 1987 for Redfield Dam to meet acceptable standards.

Richmond Lake

Richmond Lake is a 830 acre man-made impoundment located in Brown County approximately 10 miles northwest of the City of Aberdeen. The lake has a

maximum depth of 29 feet, a mean depth of 15 feet and drains a watershed of 103,000 acres. Beneficial use classifications for the lake are: warm water permanent fish life propagation, immersion recreation, limited contact recreation and wildlife propagation and stock watering.

In 1986 and 1987, Richmond Lake was plagued by a series of excessive fecal coliform levels causing closure of the state park's swimming beach. Concern by the residents prompted a request for action to solve the problem. A meeting was held in May 1986, with the DWR and the Department of Game, Fish and Parks to discuss the issue and plan a course of action.

In June 1986, a staff limnologist from the DWR conducted a preliminary survey in an attempt to find an immediate solution. As with Mina Lake, no distinct source of the problem was apparent. Subsequent investigation indicated that non-point source runoff may have deposited coliform bacteria in the sediments, and the bacteria were released when the sediments were disturbed. It was determined that a diagnostic/feasibility study would be necessary to confirm the indications.

Currently the Richmond Lake Association, through a contract with DWR, is in the process of conducting a Diagnostic/Feasibility for the lake. The process was begun in the Spring of 1987 and is expected to be completed by fall 1988. Other participants in the project include the Department of Game, Fish and Parks, the City of Aberdeen and Northern State College.

Lake Thompson

Lake Thompson is located in Kingsbury County, southeast of DeSmet. The "lake" is best described as unique in that up until three years ago it was merely a slough. Today, Lake Thompson is South Dakota's largest natural lake covering over 16,000 acres and ranging in depths of over 25 feet. At no time in recorded history has Lake Thompson flowed through its outlet and down the East Fork of the Vermillion River as it is currently doing. The rise of the lake has been a phenomenal, disastrous occurrence resulting in millions of dollars worth of damages.

The DWR has been extensively involved in the monitoring of lake levels. Additionally, DWR has modelled the lake to estimate inflows and outflows.

Alternatives considered for lowering water levels on Lake Thompson have included pumping, cutting a new outlet and lowering the existing outlet. In 1987, the alternatives were determined to be too expensive, and other alternatives will have to be explored.

Wall Lake

Wall Lake is a natural lake located in Minnehaha County approximately 12 west of the City of Sioux Falls. The lake covers 205 acres, has a maximum depth of 13 feet and a mean depth of 8.6 feet. The watershed

surrounding the lake contains approximately 3,500 acres. Beneficial uses include: warm water semimarginal fish life propagation, immersion recreation, limited contact recreation and wildlife propagation and stock watering.

Wall Lake and its surrounding watershed have been a subject of concern for Minnehaha County and the State since about 1978. At that time a preliminary watershed and in-lake survey was conducted to develop an implementation plan for the restoration of the lake. This early survey indicated that the watershed was not in need of extensive treatment and that efforts should be concentrated in-lake. Using this information, an application for federal funding was prepared to implement a sediment removal project. Subsequent investigations during the grant review process revealed that contradictions existed in the preliminary data. Since the time of the original surveys and evaluations, several other investigations have been completed shedding new light on the potential problem sources.

In 1983, the DWR in conjunction with Augustana Research Institute, conducted an in-lake survey to determine the rate of nutrient release from the sediments. General conclusions were that the sediments were acting as a sink rather than releasing nutrients, in direct conflict with earlier studies. Further, in 1985, the Department, in conjunction with Minnehaha County and East Dakota Water Development District, conducted a septic tank survey to determine if sewage leachate was a problem. Although leachate from septic tanks did not turn out to be a serious problem, the survey pinpointed excessive nutrient inflow problems at the main tributaries leading to the lake.

Currently the County, in conjunction with the DWR, has completed an agricultural non-point source survey to determine the critical loading areas within the watershed and prepared a preliminary plan for the restoration of the lake and watershed. The plan is expected to be finalized in late December, 1987, and ready for implementation in 1988. Elements of the plan include primarily watershed treatment and channel cleanout in the mouths of the main tributaries. Monitoring is also an integral component of the plan to determine project effectiveness.

Level I Lakes

Of the thirteen projects that comprise this level of activity, four projects - Capitol Lake, McCook Lake, Sylvan Lake and Lake Byron - are completed. Tracking continues on these projects for the following reasons:

The Capitol Lake project, which consisted mainly of shoreline erosion control, water level management for aquatic weed control and sediment removal, is being kept open to allow utilization of the unspent federal funds on an existing federally funded lake restoration project. Specifically, the funds have been transferred to the Lake Herman Restoration Project where they will be used to acquire additional

equipment. The Capitol Lake files will be kept open until December 31, 1987.

McCook Lake conducted a state supported dredging project from 1982 to 1984. Dredging continued through 1985 using local funds only. The files are being kept open pending approval of the final report and audit and a disagnostic study was conducted and results are pending.

The Sylvan Lake project, which was a multi-faceted project conducted in conjunction with the Department of Game, Fish and Parks, was actually completed in 1984. Included in the project was sediment removal, shoreline stabilization, sediment control in the watershed and recreation area development. The final report is in draft form and is expected to be completed early in 1987. Approval of the report will officially close the files on the project.

The Lake Byron project was designed to move James River water into the lake to maintain an acceptable water level in the lake. All phases of the project are complete and a final report is pending.

The remaining projects on this level: Lakes Burke, Centennial, Cottonwood, Madison, Punished Woman's, Traverse, Twin, Wagner and Waggoner are included as projects that have requested assistance from the DWNR. Each has been provided preliminary information on how to proceed with a lake restoration project. Some of these lakes will have diagnostic studies conducted on them in the coming year.

Water Development Financing Programs -- Progress Report

The Board of Water and Natural Resources administers the Water Facilities Construction Fund into which all legislative appropriations and funds accruing to the South Dakota Conservancy District are deposited. From this fund, the BWNR is legislatively authorized to administer several programs including the Consolidated Water Facilities Construction Program, the Interim Financing Program, the Lake and River Dredging Program, and all monies appropriated to SWRMS projects. During 1987, the Board and Department awarded over \$356 thousand in grants and loans to water development projects in South Dakota and provided over \$1.2 million to WEB pipeline project from a bond defeasance.

The BWNR also has authority to issue tax-exempt bonds in connection with its water resources management duties. Under SDCL 46A-1-29 to 30, the Board may issue long-term bonds, upon Legislative approval, for the construction of projects within the State Water Resources Management System. As well, the Board has discretionary bonding authority for small bond issues under \$5 million. These means for long-term permanent financing have not yet been used. Under 46A-1-17 to 27, the Board has authority to issue short-term (interim) notes for water resources projects within the State Water Resources Management System and the State Water Facilities Plan.

In addition to the programs the BWNR administers, the DWNR administers one federal water development grant program: the Environmental Protection Agency Wastewater Facilities Construction Program.

The following reports are detailed accounts of all expenditures made in 1987 in each program.

Water Facilities Construction Fund

Legislative appropriations, interest on investments, principal and interest on loans, and funds accruing to the conservancy district pursuant SDCL 46A-1-60 are deposited in this special capital project fund to be used for the projects in the State Water Resources Management System or for ongoing programs. The following balance sheet and related schedules outline the funds' position from its creation in 1982 to the present.

TABLE 9

WATER FACILITIES CONSTRUCTION FUND

BALANCE SHEET

12/31/87

DEPOSITS TO 12/31/87

ETSI PAYMENTS	\$5,263,339
INTEREST EARNED ON WFCF	\$2,298,226
GENERAL FUND APPROPRIATION	\$5,000,000
INTERIM BOND ISSUE DEFEASANCE	\$2,094,126
LOAN REPAYMENTS (P&I)	\$631,792
TRANSFERS IN (TO 6/30/88)	\$267,000

LEGISLATIVE EXPENDITURE AUTHORIZATIONS

STUDY LOAN PROGRAM (SCHEDULE A)	
CONTRACTED	\$2,085,000
RESERVED	\$15,000
TOTAL	\$2,100,000
CONSTRUCTION LOAN PROGRAM (SCHEDULE B)	
CONTRACTED	\$2,655,000
RESERVED	\$370,000
TOTAL	\$3,025,000
CONSOLIDATED PROGRAM (SCHEDULE C)	
CONTRACTED	\$1,000,000
TOTAL	\$1,000,000
LEGISLATIVE LINE ITEM AUTHORIZATIONS (SCHEDULE D)	
CONTRACTED	\$6,641,760
RESERVED	\$2,225,000
TOTAL	\$8,866,760

TOTAL DEPOSITS \$15,555,283

TOTAL AUTHORIZATIONS \$14,991,760
AVAILABLE FOR AUTHORIZATION \$563,523

TOTAL \$15,555,283

TOTAL \$15,555,283

SCHEDULE A
STUDY LOAN PROGRAM

	AMOUNT AUTHORIZED BY BWR	CONTRACTED	RESERVED
BHC	\$150,000	\$150,000	\$0
CENDAK	\$1,300,000	\$1,300,000	\$0
LAKE ANDES/WAGNER	\$250,000	\$250,000	\$0
LYMAN-JONES RWS	\$100,000	\$100,000	\$0
WEST RIVER RWS	\$25,000	\$25,000	\$0
LYMAN JONES RWS	\$25,000	\$25,000	\$0
GREGORY CO. PUMPED STORAGE	\$150,000	\$135,000	\$15,000
TOTAL	\$2,100,000	\$2,085,000	\$15,000

SCHEDULE B
CONSTRUCTION LOAN PROGRAM

	AMOUNT AUTHORIZED BY BWR	CONTRACTED	RESERVED
BDM RWS	\$500,000	\$500,000	\$0
B-Y RWS	\$200,000	\$200,000	\$0
CLARK RWS	\$380,000	\$380,000	\$0
DAVISON RWS	\$200,000	\$200,000	\$0
DEADWOOD	\$400,000	\$400,000	\$100,000
DOUGLAS RWS	\$100,000	\$0	\$0
EAST GREGORY	\$30,000	\$30,000	\$0
KEYSTONE	\$120,000	\$120,000	\$45,000
LAKE ANDES/WAGNER	\$50,000	\$5,000	\$0
LAKE BYRON	\$100,000	\$100,000	\$0
MCINTOSH	\$100,000	\$100,000	\$0
MINNEHAHA RWS	\$120,000	\$120,000	\$0
SOUTH LINCOLN RWS	\$100,000	\$100,000	\$225,000
STOCKADE DAM	\$225,000	\$0	\$0
TM RWS	\$400,000	\$400,000	\$0
TOTAL	\$3,025,000	\$2,655,000	\$370,000

SCHEDULE C
CONSOLIDATED WATER FACILITIES CONSTRUCTION PROGRAM

	AMOUNT AUTHORIZED BY BWR	CONTRACTED	RESERVED
BRANT LAKE	\$60,600	\$60,600	\$0
B-Y RWS	\$101,000	\$101,000	\$0
LAKE POINSETT	\$54,480	\$54,480	\$0
BRUESCHKE DAM	\$37,510	\$37,510	\$0
RAPID CITY	\$250,000	\$250,000	\$0
RAPID VALLEY	\$50,000	\$50,000	\$0
REDFIELD DAM	\$28,200	\$28,200	\$0
SIOUX FALLS	\$100,000	\$100,000	\$0
WALL	\$77,500	\$77,500	\$0
WARNER	\$100,000	\$100,000	\$0
WESTPORT	\$37,510	\$37,510	\$0
UNOBLIGATED			\$0
	=====	=====	
TOTAL	\$1,000,000	\$1,000,000	\$0

SCHEDULE D
LEGISLATIVE LINE ITEM AUTHORIZATIONS

	AMOUNT AUTHORIZED BY LEGISLATURE	CONTRACTED	RESERVED
BIG SIOUX HYDROLOGY STUDY	\$827,425	\$827,425	\$0
BLACK HILLS HYDROLOGY STUDY	\$56,875	\$56,875	\$0
CENDAK PRECONSTRUCTION	\$500,000	\$0	\$500,000
DREDGE PURCHASE/EQUIPMT	\$600,000	\$600,000	\$0
DREDGE EQUIPMENT	\$353,900	\$353,900	\$0
LAKE/RIVER DREDGE PRGH	\$1,500,000	\$1,075,000	\$425,000
LAKE DREDGE & EQUIPMENT	\$1,046,100	\$1,046,100	\$0
GREGORY COUNTY PUMPED STORAGE	\$16,022	\$16,022	\$0
LAKE ANDES-WAGNER	\$300,000	\$300,000	\$0
LAKE ANDES-WAGNER PRECONSTRUCTION	\$1,200,000	\$0	\$1,200,000
ATTORNEY GENERAL - WATER LITIGATION	\$500,000	\$500,000	\$0
TURKEY CLAY WATERSHED	\$100,000	\$0	\$100,000
WEB DEFEASANCE	\$1,266,438	\$1,266,438	\$0
CUSTER STATE PARK	\$400,000	\$400,000	\$0
WDD REVOLVING LOAN FUND	\$200,000	\$200,000	\$0
	=====	=====	
TOTAL	\$8,866,760	\$6,641,760	\$2,225,000

(WERF) DREDGE WEAR ELEMENT REPLACEMENT
STATUS REPORT AS OF 10/31/87

TRANSFERS IN	\$16,187.57
STATE MATCH	\$9,003.50
ACCOUNTS RECEIVABLE/MITCHELL	\$1,842.50
OVERHEAD RECEIVED/MITCHELL	\$8,756.00
ACCOUNTS RECEIVABLE/CAMPBELL	\$0.00
OVERHEAD RECEIVED/CAMPBELL	\$617.50
ACCOUNTS RECEIVABLE/STOCKADE	\$850.00
OVERHEAD RECEIVED/STOCKADE	\$0.00
ACCOUNTS RECEIVABLE/STATE MATCH	\$2,692.50
FREIGHT DAMAGE RECEIVED	\$230.00
TOTAL FUNDS AVAILABLE:	<u>\$40,179.57</u>

	EXPENDITURES THRU 6/30/87	EXPENDITURES 7/87-9/87	EXPENDITURES FOR 10/87	EXPENDITURES TOTAL	
CONTRACTUAL SERVICES	\$93.66	\$7,433.92	\$690.77	\$8,218.35	
SUPPLIES	\$1,354.87	\$12,557.08	\$1,689.70	\$15,601.65	
TOTAL EXPENDITURES:	<u>\$1,448.53</u>	<u>\$19,991.00</u>	<u>\$2,380.47</u>	<u>\$23,820.00</u>	
FUNDS AVAILABLE AS OF 10/31/87					\$16,359.57
LESS ACCOUNTS RECEIVABLE LISTED ABOVE					(\$5,385.00)
MSA CASH BALANCE AS OF 10/31/87 - UNOBLIGATED BALANCE					<u>\$10,974.57</u>

O/S PURCHASE ORDERS

D16832 \$4,134.00

DREDGE AND EQUIPMENT
STATUS REPORT
AS OF 10/31/87

	BUDGET	EXPENDITURES THRU 10/31/87	TRANSFERS	BALANCE REMAINING
APPROPRIATION - HB 1243				<u>\$1,046,100.00</u>
DREDGE	\$800,000.00	(\$322,646.82)	(\$10,652.32)	\$466,700.86
SUPPORT EQUIPMENT	\$246,100.00	(\$189,635.10)	\$0.00	\$56,464.90
TOTAL	<u>\$1,046,100.00</u>	<u>(\$512,281.92)</u>	<u>(\$10,652.32)</u>	<u>\$523,165.76</u>

* TRANSFER MADE TO CAPITALIZE WERF ACCOUNT

BUDGETED AMOUNT	\$1,046,100.00
LESS EXPENDITURES/TRANSFERS	(\$522,934.24)
CASH BALANCE AS OF 10/31/87	<u>\$523,165.76</u>

LAKE RESTORATION EQUIPMENT
STATUS REPORT
AS OF 10/31/87

	BUDGET	FY86/87/88 EXPENDITURES	TRANSFERS	OUTSTANDING ENCUMBRANCES	BALANCE REMAINING
APPROPRIATION - HB1323					<u>\$353,900.00</u>
<u>LAKE PROGRAM</u>					
DIAGNOSTIC EQUIPMENT	\$29,400.00	(\$17,783.30)	\$0.00	(\$9,900.00)	\$1,716.70
<u>LAKE HERMAN PROJECT</u>					
EQUIPMENT	\$120,000.00	(\$127,851.22)	\$0.00		(\$7,851.22)
PIPE	\$35,000.00	(\$25,421.13)		\$0.00	\$9,578.87
<u>JAMES RIVER RESTORATION</u>					
SPRAY DISPOSAL EQUIPMENT	\$150,000.00	(\$143,700.19)	(\$5,407.75)	\$0.00	\$892.06
<u>CONTINGENCIES</u>					
OTHER	\$19,500.00	\$0.00	\$0.00	\$0.00	\$19,500.00
TOTAL	<u>\$353,900.00</u>	<u>(\$314,755.84)</u>	<u>(\$5,407.75)</u>	<u>(\$9,900.00)</u>	<u>\$23,836.41</u>

* TRANSFER MADE TO CAPITALIZE WERF ACCOUNT

APPROPRIATION	\$353,900.00	<u>O/S PURCHASE ORDERS</u>
EXPENDITURES/TRANSFERS THRU 10/31/87	(\$320,163.59)	
CASH BALANCE 10/31/87	<u>\$33,736.41</u>	D06069 \$9,900.00
		<u>\$9,900.00</u>

STOCKADE LAKE DREDGING
STATUS REPORT
AS OF 10/31/87

BUDGET	\$128,500.00		
	EXPENDITURES THRU 09/30/87	EXPENDITURES 10/31/87	EXPENDITURES TOTAL
PERSONAL SERVICES	\$23,777.66	\$8,352.92	\$32,130.58
EMPLOYEE BENEFITS	\$1,798.62	\$647.38	\$2,446.00
TRAVEL	\$2,930.55	\$1,197.60	\$4,128.15
CONTRACTUAL SERVICES	\$2,692.58	\$0.00	\$2,692.58
SUPPLIES	<u>\$5,271.19</u>	<u>\$3,104.53</u>	<u>\$8,375.72</u>
TOTAL EXPENDITURES	\$36,470.60	\$13,302.43	\$49,773.03
BALANCE AS OF 10/31/87			<u>\$78,726.97</u>

EXPENDITURE TOTAL AGREES WITH THE CREDIT BALANCE REFLECTED ON THE 10/31/87 MSA CASH REPORT. ALSO INCLUDED IN THE TOTAL EXPENDITURES FIGURE IS \$368.04 FROM F.Y. '87 WHICH IS THE 5/13/87 PAYROLL WHICH IS TO BE CHARGED TO THE STOCKADE LAKE PROGRAM.

LAKE MITCHELL DREDGING
STATUS REPORT
AS OF 10/31/87

BUDGET				\$255,000.00
	EXPENDITURES THRU 09/30/87	EXPENDITURES 10/31/87	EXPENDITURES TOTAL	
PERSONAL SERVICES	\$76,850.96	\$9,083.95	\$85,934.91	
EMPLOYEE BENEFITS	\$5,873.63	\$704.02	\$6,577.65	
TRAVEL	\$5,650.89	\$556.50	\$6,207.39	
CONTRACTUAL SERVICES	\$3,642.00	\$450.25	\$4,092.25	
SUPPLIES	<u>\$509.26</u>	<u>\$48.90</u>	<u>\$558.16</u>	
TOTAL EXPENDITURES	\$92,526.74	\$10,843.62	\$103,370.36	
BALANCE AS OF 10/31/87				<u>\$151,629.64</u>

* MANUAL ADJUSTMENT. JOE HARTFORD SALARY AND BENEFITS FOR MAY 1, 1987 THRU JUNE 12, 1987 CHARGED TO LAKE MITCHELL IN ERROR. SHOULD HAVE BEEN CHARGED TO LAKE CAMPBELL. BOOKS FOR FISCAL YEAR '87 CLOSED.

TOTAL EXPENDITURE COLUMN REFLECTS THIS ADJUSTMENT. (\$1,737.47)

EXPENDITURE FROM OBJ/SUBOBJ 10/31/87 REPORT PLUS 166.09 ON 6/30/87 REPORT AGREE WITH CREDIT FIGURE ON MSA CASH REPORT FOR 10/31/87

LAKE CAMPBELL DREDGING
STATUS REPORT
AS OF 10/31/87

BUDGET				\$117,000.00
	EXPENDITURES THRU 09/30/87	EXPENDITURES 10/31/87	EXPENDITURES TOTAL	
PERSONAL SERVICES	\$46,254.78	\$9,903.07	\$56,157.85	
EMPLOYEE BENEFITS	\$3,544.10	\$767.47	\$4,311.57	
TRAVEL	\$5,160.96	\$1,128.00	\$6,288.96	
CONTRACTUAL SERVICES	\$8,859.51	\$400.00	\$9,259.51	
SUPPLIES	<u>\$5,490.53</u>	<u>\$1,012.00</u>	<u>\$6,502.53</u>	
TOTAL EXPENDITURES	\$69,309.88	\$13,210.54	\$82,520.42	
BALANCE AS OF 10/31/87				<u>\$34,479.58</u>

* MANUAL ADJUSTMENT. JOE HARTFORD SALARY AND BENEFITS FOR MAY 1, 1987 THRU JUNE 12, 1987 CHARGED TO LAKE MITCHELL IN ERROR. SHOULD HAVE BEEN CHARGED TO LAKE CAMPBELL. BOOKS FOR FISCAL YEAR '87 CLOSED.

TOTAL EXPENDITURE COLUMN REFLECTS THIS ADJUSTMENT. (\$1,737.47)

EXPENDITURE FROM OBJ/SUBOBJ 10/31/87 REPORT AGREE WITH CREDIT FIGURE ON MSA CENTER CASH REPORT FOR 10/31/87

JAMES RIVER IMPROVEMENT-DREDGE
STATUS REPORT
AS OF SEPTEMBER 30, 1987

	EXPENSES THRU FY85	FY86 EXPENSES	FY87 EXPENSES	TOTAL EXPENSES	APPROPRIATION BALANCE
APPROPRIATION					\$600,000.00
EXPENDITURES:					
CONTRACTUAL	\$45.00	\$1,341.87	\$268.01	\$1,654.88	
SUPPLIES	\$5,811.92	\$35,640.92	\$17,805.00	\$59,357.84	
ASSETS	\$501,223.92	\$34,966.60	\$2,145.95	\$538,336.47	
INTEREST	\$17.95	\$0.00	\$0.00	\$17.95	
TRANSFER	\$0.00	\$0.00	\$127.50	\$127.50	
	<u>\$507,198.79</u>	<u>\$71,949.39</u>	<u>\$20,346.46</u>	<u>\$599,494.64</u>	
TOTAL EXPENSES AS OF 09/30/87					<u>(\$599,494.64)</u> <u>\$505.36</u> =====

TRANSFER MADE TO CAPITALIZE WERF ACCOUNT

Community Development Block Grants
Water and Wastewater Portion

The program was established to provide grant assistance to cities and counties for community development projects. Funds are targeted to projects which benefit low and moderate income persons and solve serious deficiencies in public facilities which affect the public health, safety or welfare. During 1987 funds were distributed to the following projects.

TABLE 10

1987 GRANT AWARDS

Name	Activity	Award Amount
Aberdeen	7 1/2 in water town line	200,000
Custer	Water source improvement	240,000
Ethan	Hanson RWS hookup	240,000
Gregory County	Tripp Co. Water User Dist.	159,000
Hutchinson County	B-Y Water District	410,000
Kingsbury County	20 mi. water dist. lines	196,800
Tea	WM treatment plant expansion	50,000
TOTAL		\$1,495,800

Consolidated Water Facilities Construction Program

The 1986 State Legislature established the Consolidated Water Facilities Construction Program to provide grants or loans for water development projects included in the State Water Facilities Plan. As well, the Legislature appropriated \$1 million to the program to be given in the form of grants. The loan portion of the program received no funding. The Consolidated Program replaced the construction and study loan programs, the rural water system grant program, and several smaller programs not funded in recent years in an effort to simplify the state's financing process for small water projects.

The BWNR established program rules to govern the program. Under these rules, projects on the current State Water Facilities Plan are eligible to apply for available funds. The application cycle has been set up on a quarterly basis with applications due on the first day of June, September, December and March. A factor system was adopted in the rules to help the Board in its decision making process. The Board exhausted its fund allocations in the second quarter and the results are shown below.

TABLE 11
1987 GRANT AWARDS

Name	Activity	Award Amount	Total Proj. Cost
Clark	water	\$ 51,850	\$ 181,000
Rapid Valley	water	50,000	150,000
Sioux Falls	water	100,000	1,119,000
Valley Springs	water	43,500	107,000
Westport	water	45,360	75,600
<i>Eagle Butte</i> Brueschke Dam	Dam Safety	37,510	68,000
Redfield Dam	✓	28,200	47,000
TOTAL		\$356,420	\$1,747,600

EPA Construction Grants Program
Wastewater Facilities

The program was established to provide grants to municipalities, sewer and sanitary districts, and other political subdivisions to assist them in the planning, design and/or construction of wastewater treatment facilities which qualify for federal grants under the provisions of the Federal Water Pollution Control Act.

TABLE 12
 1987 GRANT AWARDS
 (October 1, 1986 - September 30, 1987)

<u>Name</u>	<u>Activity</u>	<u>Award Amount</u>
University Estates San. District	Collection	\$ 226,563
Sioux Falls	Interceptor	680,534
Huron	Additon to WWTF	1,459,500
Spencer	New WWTF	229,174
Kadoka	Addition to WWTF	351,096
Crooks San. Dist.	Addition to WWTF	174,130
Faith	Addition to WWTF	170,475
Rosholt	New WWTF	187,000
Brandt	New WWTF	202,500
Woonsocket	Addition to WWTF	107,525
Warner	Addition to WWTF	154,150
Arlington	New WWTF	293,930
Viborg	Addition to WWTF	152,625
TOTAL		\$4,389,202

Interim Financing

The South Dakota Conservancy District is authorized by state law to issue tax-exempt bonds in connection with its water resources management duties. Under these laws, the District may borrow money to provide long-term (permanent) financing or short-term (interim) loans to water projects. The District has not yet used its permanent financing authority.

The Interim Financing Program was established to provide low interest financing to municipalities, rural water systems and other eligible sponsors during the construction phase of their projects. The need for upfront financing resulted when FmHA began requiring projects to complete construction before releasing permanent financing. This change meant that project sponsors had to borrow money on the open market to carry them through construction.

To accomplish the program, the South Dakota Conservancy District sells interim notes, backed by a federal loan or grant commitment, to private investors and loans the proceeds to the eligible projects, which usually reinvest the loaned money, thereby reducing the overall costs of interim financing. The interim financing program has been in operation since 1979. The early issues were used primarily for rural water systems with FmHA construction loans. Between 1979 and 1982, the eight rural water systems using the program realized over \$348,000 in savings.

In 1983, the first multiproject issue of \$15,585,000 was authorized by the District wherein 53 specific cities, towns, water user districts, and nonprofit corporations were eligible to borrow funds. The District approved loans for two rural water systems. However, FmHA changed its policy and would not issue the previously agreed to financial commitment letters. This change in policy effectively froze any further activity on this issue. The issue was defeased in 1985, and the proceeds were placed in escrow. The arbitrage of \$786,757 was deposited in the Water Facilities Construction Fund and appropriated for use during 1986. The bonds were paid off November 1, 1986.

An additional \$17,230,000 issue was placed in 1983 for the benefit of WEB Rural Water System. This issue has not been used so far because the Bureau of Reclamation has developed a different financial arrangement with WEB than was anticipated. WEB has been able to directly draw upon the federal appropriation. In 1987 WEB received \$1,266,438 as a result of a bond defeasance.

In November, 1985, a second multiproject issue was placed by the District. This issue made \$9,800,000 available to eligible projects on the current State Water Facilities Plan. Three interim loans have been approved by the Conservancy District: 1) Lake Madison Sanitary District for \$795,000 and 2) B-Y Water User District for \$415,000 and \$1,450,000. Lake Madison expects to start drawdowns in the spring of 1987. B-Y has drawn down funds on the first loan for its most recent construction.

TABLE 13
INTERIM FINANCING

Project Financed	Amount Financed	Period Financed
WEB RWS	\$ 17,230,000	12/15/85-12/15/88
1985 Multi-project	9,800,000	11/15/85-5/15/89