To
Governor George S. MIckelson
and the
Sixty-Second Session, Legislative Assembly
1987

1987 STATE WATER PLAN
and
1986 ANNUAL REPORT

Board of Water and Natural Resources
January 1987

SOUTH Dakota Department of
Water & Natural Resources
Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

Governor George S. Mickelson
and Members of the Legislature
Sixty-second Legislative Session 1987

Transmitted herewith is the 1987 State Water Plan and the 1986 Annual Report of the Board of Water and Natural Resources. The State Water PLan outlines the projects in the State Water Facilities Plan and gives the Board's recommendations concerning projects for the State Water Resources Management System. The Annual Report describes the past year's water development activities throughout the state.

Significant progress was made in 1986 on the state's water development projects. Gregory County Pumped Storage, James River Flood Control and Lake Herman Dredging projects received authorizations from the United States Congress. The integration of Hilltop and Gray Goose Irrigation Districts as units of the Pick-Sloan program was an important advancement. Congress has continued to fund the Belle Fourche Rehabilitation Project and the construction of WEB rural water system. The Lake Andes-Wagner project has completed its hearings and prospects for approval look bright. The West River/Lyman-Jones Rural Water System has started its hearing process with favorable attention. CENDAK's planning report/draft environmental statement is complete so Congress may now act on the project's authorization legislation.

The Department and Board continued to assist projects through the state's financial programs. Together with local project sponsors approximately $45.9 million of state, local and federal funds were obtained to advance the smaller projects in the State Water Facilities Plan.

The Board of Water and Natural Resources with assistance from Department staff, water development districts, planning and development districts and local officials developed the 1987 State Water Plan. As established, the water planning process placed a substantial responsibility on local water development district officials to review and determine project priorities. The 1987 plan and the past year's annual report are detailed in the accompanying report.

Sincerely,

John J. Smith, Secretary
Department of Water and Natural Resources

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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 1987 State Water Plan and the 1986 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 1986.

PART I

1987 STATE WATER PLAN

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 one base component and 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 development, 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 development. The Board recognizes that water development 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 1987 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.

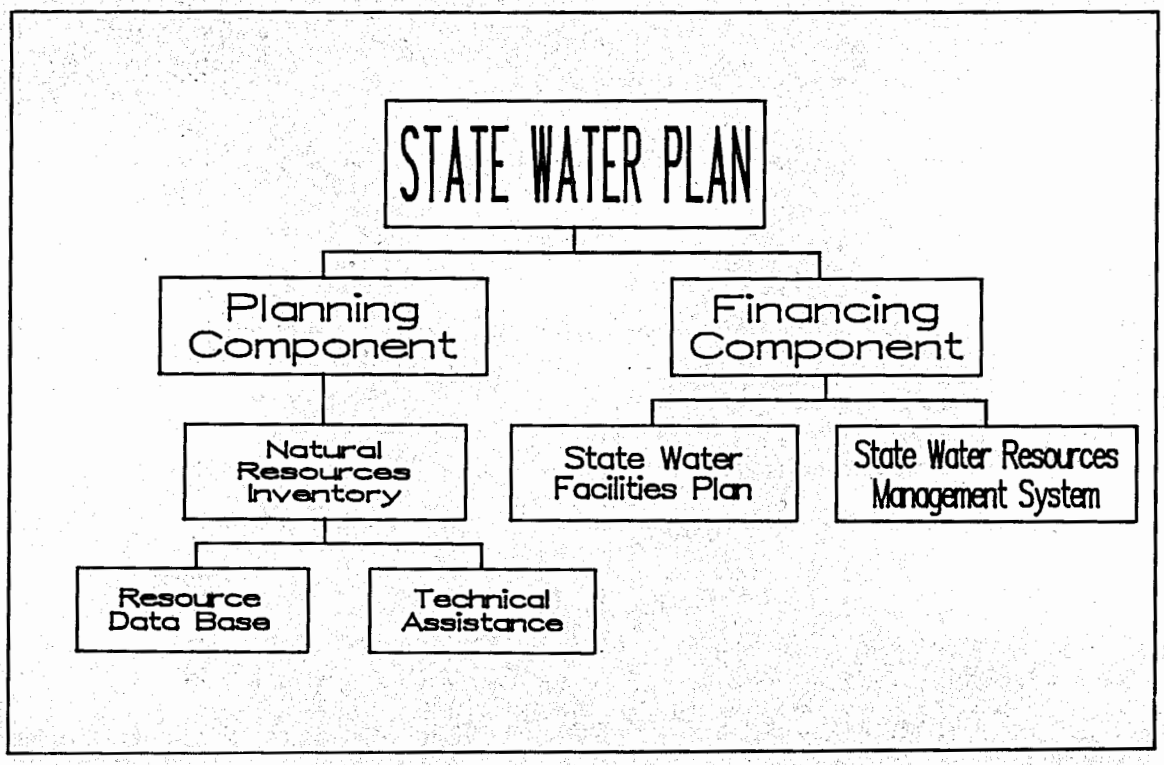


Figure 1

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.

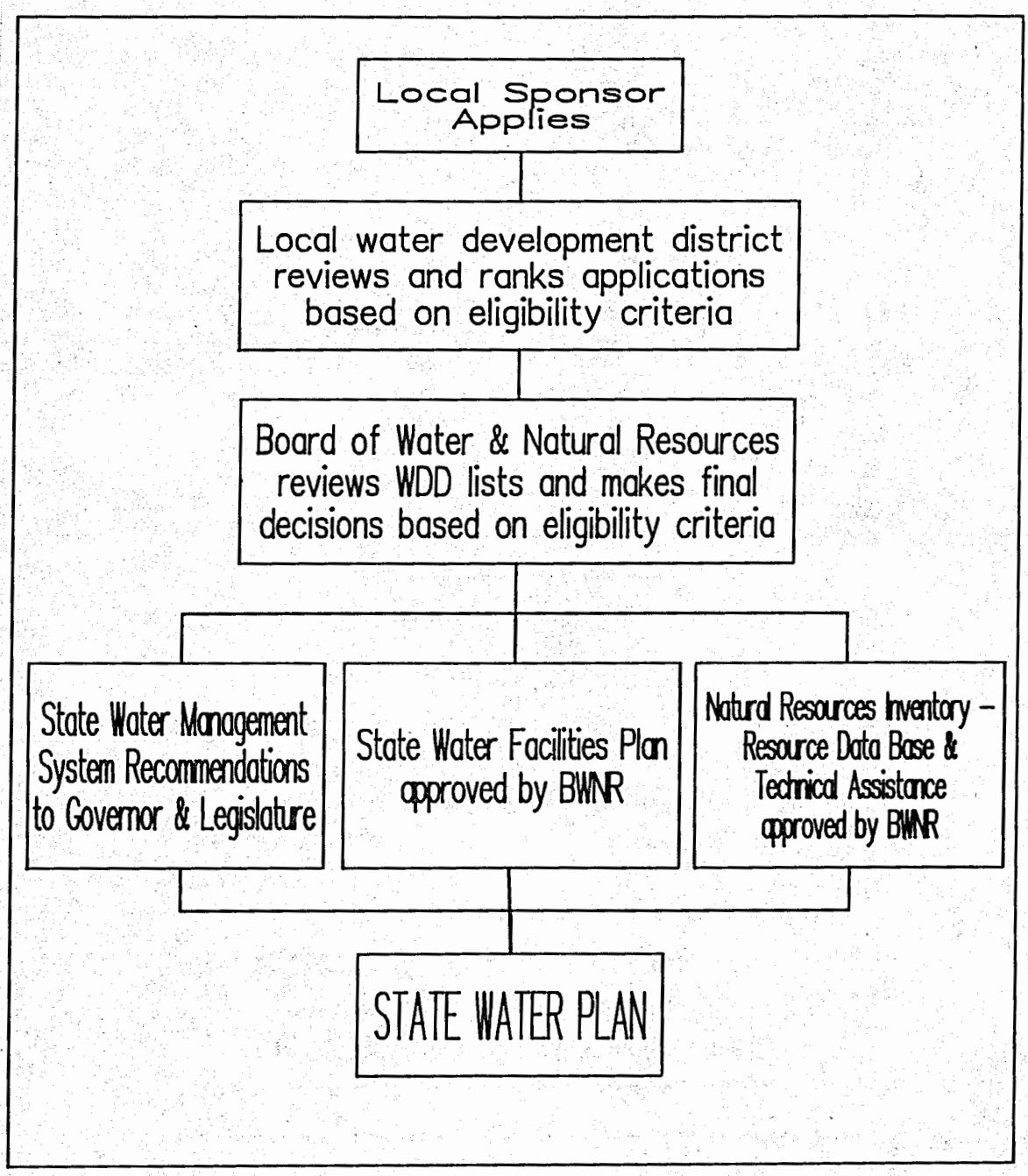


Figure 2

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 non-financial 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. The Resource Data Base is extensive and will not be printed herein in its entirety. However, the Board of Water and Natural Resources has approved certain additions to the Resource Data Base Table 1 and has adopted the Technical Assistance for 1987 list as shown in Table 2.

TABLE 1

Resource Data Base

Project Sponsor	Project Description
Alexandria	Rehab of water distribution system
Belle Fourche	Storm sewer along 1 block of 6th Ave
Belle Fourche	Seventh Avenue water line
Box Elder Creek Flood Control	Flood control in Box Elder Creek
Brant Lake Improvement Assoc	Shoreline stabilization
Brennan Reservoir	Develop reservoir SE on Rapid Crk
Canyon Lake Equalization Res.	Rehabilitation of lake
Centerville	Sewer separation project
Clay RWS	Water treatment plant modifications
Cyclone Ditch Irrigation Dist.	Rehab concrete lining of Cyclone Ditch
Deadwood	Denver Street storage facility
Edgemont	Geothermal project
Huron	Storm pump station installation
Ipswich	New storage tank, water mains
Lake Campbell	Dredging & watershed improvements
Lake Poinsett	Water level control improvements
Mellette County RWS	New system construction
Ramona	WW lift pump replacement
Rapid City	Water for regional airport
Rapid City	Small Scale hydro power project
Rapid Creek Reservoir	Reservoir
Sturgis	Industrial park water system expansion
Swan Lake	Lake restoration
Vermillion	Bridge & low-head hydropower dam on Mo. River
Warner	Water storage & distribution system improvements

TABLE 2

Technical Assistance List

Project Sponsor	Project Description
Bancroft	Distribution system rehab
Big Sioux River Cleanout	Big Sioux cleanout improving outflows of Kampeska
Big Sioux-Central/So Brkgs Cnty	Improve flow capacity - central/southern Brkgs
Burke Lake	Lake restoration
Canton	Sewer line rehab along Hwy 18 & east
Centennial Lake	Dredge existing slough in Ft Pierre
Crow Creek Development Project	Crow Creek area development
Custer	5 yr prgm to rehab system
Deadwood	Water distribution system rehab in east
Fish Lake	Lake restoration
Forestburg	Well failure, wellfield imprvmts & distribution
Geddes	WW system rehabilitation
Hill City	Water system rehabilitation - phase 2
Howard	New water source
James River at Huron	Study of dredging James R. at Huron
James River Economic Dev Proj.	Study of using Pick-Sloan revs to finance econ dev
James River Restoration	Cleanup along Jim River by local districts
Lake Byre	Restoration of Lake Byre dam
Lake Pelican	Shoreline stabilization & sediment traps
Lake Poinsett	Feasibility study of dredging Big Sioux River
Lake Redfield	Lake restoration
Lane	Water storage settling basin rehabilitation
Lemmon	Storage & phase 2 of 5 yr rehab plan of distr sys
Leola	Water distribution rehab
Lesterville	Drainage problem around roads, RR & lagoons
Letcher	Rehab water tower readying for Davison RWS
Loomis Drainage	Rehab of tile drain system in unincorp. Loomis
Menno	Water main rehabilitation
Mission Hill	Sewage lagoon riprap
Onida	Two new water storage reservoirs
Platte	Water system rehab - phase 1 of 15
Ravine Lake	Diagnostic/feasibility study
Tulare	Distribution system rehab
Vermillion	WW interceptor replacement in lower Vermillion
Vermillion	Mo. River intake for water supply & lines
Wall Lake	Lake restoration
Ward	New water source & distribution system

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 121 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. The Board of Water and Natural Resources projected that during the next two years state funds, together with local and federal funds, could provide approximately $32 million for new water development projects.

Based upon the water development district recommendations and the eligibility criteria, the Board included projects totaling over $26 million in the State Water Facilities Plan (see Table 3). Eight of these projects were included in the plan to support their efforts in obtaining federal or local funds.

TABLE 3

STATE WATER FACILITIES PLAN

Project Sponsor	Project Description	Total Cost	Stipulations
Aberdeen	Water transmission line from well to plant	$1,478,400	
Alcester	New water source	382,500	
Arlington	Replace ww treatment facility with ponds	425,000	
Armour	WW treatment facility improvement	279,676	
Aurora-Brule RWS	Water storage reservoirs in service area #2	420,000	
Bancroft	New water storage	40,550	
Brookings-Deuel RWS	New well near Clear Lake	82,520	
B-Y Water District	Phase III in cent. & west. Hutchinson County	6,533,000	
B-Y Water District	Phase III in NE Hutchinson County	1,117,000	
Camelot Water Association	Hookup to Pierre & distribution system		Support for fed or local funds
Chamberlain	WW treatment facility improvements	120,200	
Clark	Water & WW replace & expansion by Hwy 212	510,000	
Clark	Water & ww expansion in NE part of town	186,000	
Crooks Sanitary District	New WW treatment facility	385,000	
Custer	New well, storage & transmission line	611,564	
Davison Rural Water System	System expansion & office building	92,500	Limited to system expansion
Douglas Comm. Rural Water	New system construction		Support for fed or local funds
Elkton	New water source & facility	137,869	Ltd to orig cost of RWS hookup
Garretson	Five new wells & transmission lines	242,972	
Geddes	WW treatment facility	226,200	
Hecla	New storage tank & pumping system		Support for fed or local funds
Hill City	Water system expansion	74,260	Install water meters
Huron	Third Street dam refurbishment	84,284	
Huron	Waterlines to Swift Independent	250,000	
Huron	Groundwater recharge pilot project		Support for fed or local funds
Iroquois	New water source, treatmt & distribution rehab		Support for fed or local funds
Kingbrook RWS	Improvements, expansion of facility & system	575,000	
Lake Poinsett Sanitary Dist	New ww collection system & treatment plant	927,000	
Lennox	New well, storage & lines for So Lincoln RWS	733,200	
Leola Lake	Restoration-shoreline stabilization & aeration	10,130	
Mina Lake Sanitary District	Replace ww treatment facility with ponds	107,470	
Minnehaha Comm. Water Corp.	Expansion of wellfield & treatment plant	2,240,000	
Pickstown	Replacement of water intake line	91,000	
Pierre	New well & line to city	145,000	
Pierre	Additional ww treatment facilities	500,000	
Rapid Valley Sanitary Dist	WW collection system expansion	150,000	
Redfield	New well field, treatment & storage facilities	1,083,500	
Rosebud RWS	System construction		Support for fed or local funds
Rosholt	WW treatment facility expansion	252,125	
Salem	WW treatment facility improvements		Support for fed or local funds
Seneca	Replace WW collection system	185,400	
Sioux Falls	North Reservoir Addition - Phase I	1,325,000	
Sioux Falls	Water supply & ground storage	632,025	
Sioux Rural Water System	Improvements to Hamlin County portion of sys		Support for fed or local funds
South Lincoln RWS	Additional members to present system	135,000	
Spearfish	New well & 2 storage reservoirs	715,500	
Stockade Lake	Lake restoration - phase 1	200,000	
Tea	WW treatment facility expansion	416,500	
TM Rural Water District	Member expansion within district	137,500	
Tripp County Water User Dist	Water storage tank	265,000	
Tulare	New water source	290,577	Ltd to orig cost of RWS hookup
Valley Springs	Water & ww extension to industrial site	86,000	
Wessington Springs	New water storage reservoir	165,000	
Westport	New water distribution sys hookup to WEB	75,600	
White River	Two additional cells to sewage lagoon	289,000	
Willow Lake	New WW treatment facility	401,000	
Yankton	Water improvements to NW & NC portion	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 S.D. Water Resources Management Act, as amended, and the state water planning process, the Board of Water and Natural Resources on December 11 and 12, 1986 took action to recommend three new projects to the State Water Resources Management System and to maintain all projects currently within the System.

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

TABLE 4

STATE WATER RESOURCES MANAGEMENT SYSTEM

Project	Project Description
Belle Fourche Irrigation Project	Rehabilitation of Belle Fourche project
Big Sioux Hydrology Study	Hydrologic study of Big Sioux Aquifer
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
Forest City Irrigation Project	Irrigation project in Potter county
Garrison Extension Study	Study of effects of Garrison unit in ND
Gregory County Pumped Storage Project	Hydroelectric generation & irrigation
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
Slip-Up Creek	Reservoir on Big Sioux River near Sioux Falls
Turkey Clay Watershed	Flood control & watershed mgmt project
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

The three new projects being recommended for inclusion in the System are as follows:

- Big Sioux River Basin Study and Improvement Project.

  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 Kampeska 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 Sioux Falls.

  An eventual solution to flooding problems in the basin would involve major efforts, but almost nothing can be done until basic technical information is available, specific project proposals are analyzed, and sponsoring entities are organized and coordinated with State and federal efforts. This proposal is a first step in that direction.

  If approved by the Governor and the State Legislature, the individual components of the project will be actively pursued by the pertinent local and state government entities.

- 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.

- Pick-Sloan Riverside Irrigation

  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.

Recommendation for Appropriations

The Board has determined that the following recommendations for Legislative appropriations should be made:

Dakota Lakes Irrigation Research Farm	$200,000
Lake Andes-Wagner Irrigation Unit	50,000
West River/Lyman-Jones RWS	50,000
Total	$300,000

PART II

1986 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:

- Board of Water and Natural Resources Report
- 1986 Water Development Legislation
- SWRMS - Progress Report
- SWFP - Progress Report
- Lake Restoration - Progress Report
- 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 1986 toward accomplishing the state's water development goal and objectives. Recognizing the different water development needs across the state, the Board has encouraged lake restoration and flood control in the east, riverside irrigation and hydropower generation in the central, and the development of rural water systems in the west. 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 remain functional in 1986 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 two 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. To date, the following three water project districts have been formed:

* the Lower James Water Project District in Hutchinson and Yankton Counties is doing channel restoration in the lower James River;

* the Lake Kampeska Water Project District in Codington County is working to find ways to reduce flooding in the lake as well as restoration work; and

* the Vermillion Basin Water Project District in Clay, Turner and Yankton Counties is working to reduce flooding in the lower Vermillion River basin.

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.

In August 1986, the Board of Water and Natural Resources adopted policies and guidelines for the Lake and River Dredging Program. Included in the guidelines are provisions for a "wear element replacement fund". This fund was established to allow the fees collected for major repairs on the dredges to be accumulated. (Fees were established for each dredge on a 50/50 match basis.)

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

1986 Water Development Legislation

This section gives a brief summary of the federal and state legislation passed during 1986.

Federal Legislation

Several major bills that directly impact South Dakota water resources projects have been approved. The 1986 Omnibus Water Resources Act (S.3661 H.R. 6) authorized construction of the Gregory County Hydroelectric Project, the James River Flood Control Project, and the Lake Herman Dredging Project. As well, one Omnibus Act amendment authorized the integration of the Hilltop and Gray Goose Irrigation Districts as units of the Pick-Sloan program to obtain Pick-Sloan power for irrigation pumping. CENDAK, Lake Andes-Wagner, and West River/Lyman-Jones project authorization measures remain pending Congressional action.

One of the last hearings on the Lake Andes-Wagner Irrigation Project was held by the Senate Subcommittee on Water and Power. Although no action has been taken yet, prospects for obtaining approval next year look bright.

The West River/Lyman-Jones Rural Water System has started its hearing process. The Senate Subcommittee on Water and Power heard limited testimony on the project during the Lake Andes-Wagner hearing. On the House side, a field hearing was held by the Committee on Interior and

Insular Affairs during August. Many people testified in support of the rural water system, and favorable attention by Congress is expected in the future.

The CENDAK planning report/draft environmental statement has been completed and is subject to 90 day public review/federal report processing. Bureau of Reclamation hearings were held December 2 and 3 on the environmental aspects of the project.

Although the Clean Water Act was vetoed, the Act is expected to be reintroduced and acted on by Congress early in 1987. Other bills that received positive action are:

- S.51 (H.R. 2817) - Comprehensive Environmental Response Act Amendment to sustain the superfund hazardous waste clean-up program.
- S.124 (H.R. 1650) - Safe Drinking Water Act to require EPA regulations on contaminants and establish a well-head protection program.
- H.R. 1116 - Garrison Diversion Unit authorizing construction for 130,940 acres and prohibiting construction of irrigation features in James River basin before FY 1991 and before a comprehensive EIS of irrigation development on the basin.

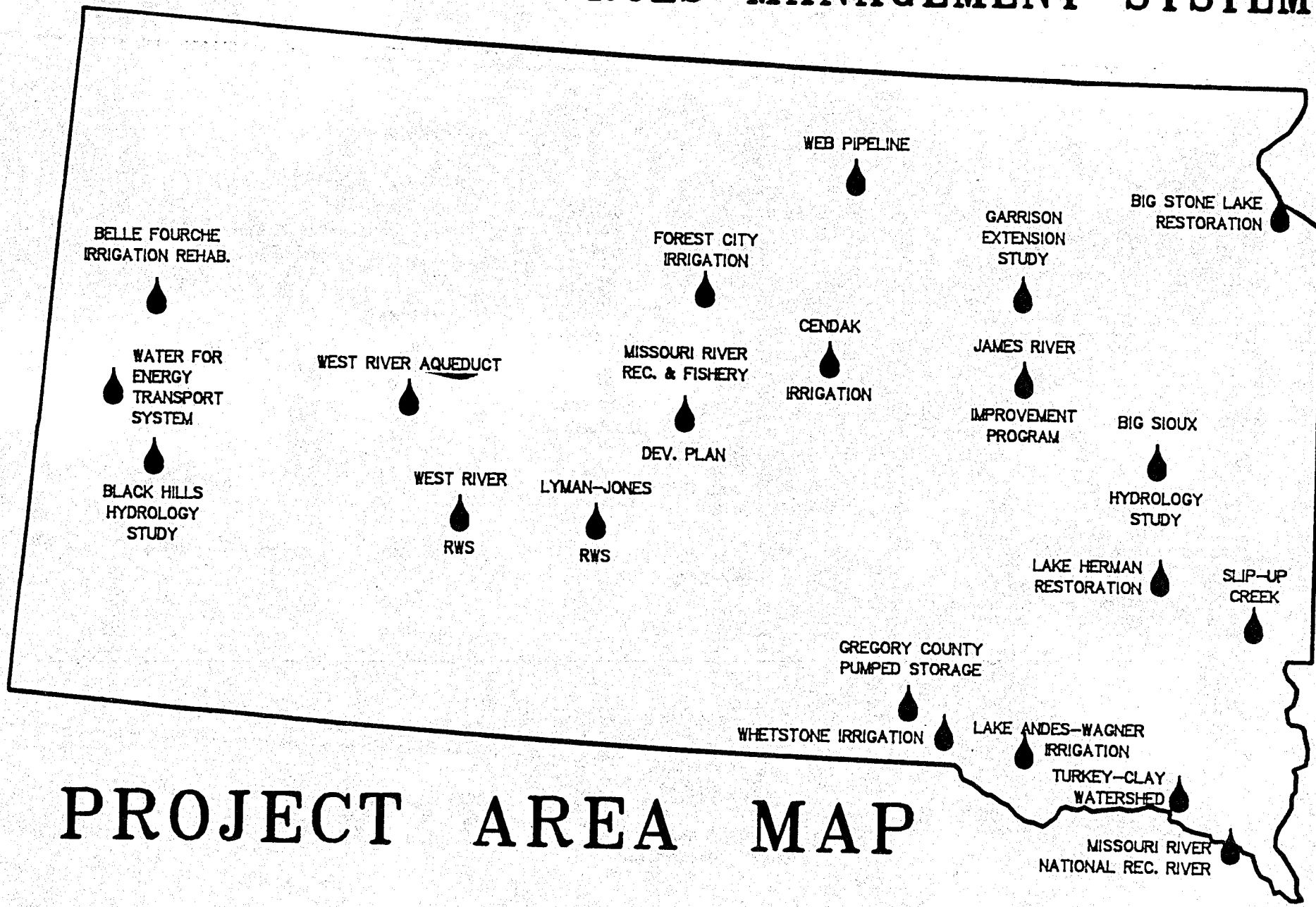
State Legislation

The 1986 Legislature passed several bills of importance to water development in South Dakota. Primary emphasis centered around the bills (H.B. 1323 and H.B. 1243) reallocating unused funds already in the Water Facilities Construction Fund. Under H.B. 1323 authority was given to spend $353,900 for equipment to be used on lake restoration projects and the James River Restoration Program. In addition, the bill authorized $1,000,000 for grants under the Consolidated Water Facilities Construction Program. H.B. 1243 authorized $1,046,100 to be spent on the purchase of a dredge and associated equipment for lake restoration projects.

The Legislature also passed a bill establishing the Consolidated Water Facilities Construction Program. 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. The program provides grants and loans to projects on the current State Water Facilities Plan. As previously mentioned, the Legislature authorized $1.0 million in grant funds for the program. Administration of the program was placed with the Board of Water and Natural Resources.

Other legislation passed during the 1986 Legislature Session included revisions to irrigation district election procedures, the appropriation of $50,000 to continue the Hydrologic Unit Studies program, changing the

STATE WATER RESOURCES MANAGEMENT SYSTEM



PROJECT AREA MAP

Figure 3

name of the CENDAK Water Development District to the Mid Dakota Water Development District, and minor revisions to water development districts, sanitary districts, watershed districts and water project districts.

State Water Resources Management System--Progress Report

This section reports the progress of the authorized projects in the 1986 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 and $3.9 million was appropriated in FY 1987 for continual rehabilitation efforts. The rehabilitation effort will take approximately 8 to 10 years to complete.

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.

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 Salmonsen Creek streambank erosion control, and construction of structures is expected to begin in 1987 and 1988. Several sites for erosion control on access roads to the lake have been selected and engineered with bid letting expected in the spring of 1987. Finally, preliminary work on sediment removal from Lake Farley has been completed.

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.

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

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. 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 about 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 $1.12 billion.

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 Stage II lands. Stage II would consist of the remaining 174,000 acres including those lands which require further drainage analysis. Stage I development would proceed according to previously agreed schedules, while concurrent drainage investigations are conducted for Stage II lands. Stage II would be constructed upon certification by the U.S. Interior Secretary that such lands are suitable for irrigation, or in lieu of this option, non-federal interests could construct Stage II facilities utilizing the additional canal capacity built into Stage I features.

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 U.S. Congress must now take action on CENDAK project authorization legislation, while the Bureau of Reclamation, the State, and CENDAK, Inc. conduct advanced planning investigations over the next few years. These advanced planning studies are required as part of the federal process prior to actual construction activities.

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. The District is attempting to introduce legislation authorizing 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.

The continued study of South Dakota's Garrison Extension project during 1986 has been limited to completion of the hydrology model and a topographic survey of channel capacity of the James River in South Dakota. Further progress of the South Dakota study depends on completion of the comprehensive EIS by Bureau of Reclamation.

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 megawitt 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 (S. 366) 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.

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 (S. 366/H.R. 6) 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 activity has been done solely to generate information for the environmental impact statement (EIS); no specific projects have been defined. The draft EIS on the riverside restoration program will be published in 1987.

With the exception of reclaiming the disposal ponds, all dredging and related activites in the demonstration area has been completed. The dredge was pulled out of the river in December 1986 and was delivered to Lake Campbell near Brookings for a restoration project.

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 have been committed by the City of Huron and Beadle County. The project received the necessary permits from the Corps of Engineers and began construction in the summer of 1986. The project is expected to be 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 this year started removing old railroad pilings near the Izaak Walton Dam north of Yankton. Environmental clearances were recently received on the CDBG grant which will allow logjam removal and bank stabilization work to begin in 1987.

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 analysis were provided in part, by the local sponsor through a $500,000 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.

Federal authorizing legislation for this project was first introduced in November, 1983. In July the state and project sponsors testified in favor of authorization before the House Committee on Energy and Water.

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 then 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. Final authorization hearings took place in July of 1986 in Washington, D.C. It is expected that authorization will be received in 1987 with construction scheduled to begin in 1988.

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. Start-up is anticipated in early spring 1987 in the state park's main swimming/boating areas 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
	$1,961,000

In addition to the funding listed above, the 1986 Federal Omnibus Water Resources Act authorized an additional $5 million for the restoration of Lake Herman.

Lyman-Jones Rural Water System

The Lyman-Jones Rural Water System was authorized by the 1981 State Legislature as part of the State Water Resources Management System. The system will serve the communities of Reliance, Kennebec, Presho, Vivian, Draper, Murdo, Okaton, White River, and Fort Pierre, as well as approximately 400 farm and ranch homes, 200 pasture taps, and the National Grasslands. The project area covers most of Lyman and Jones counties and a portion of Stanley County. The total estimated cost of the project is $22,000,000.

With the cancellation of the ETSI contract, the scope of the project has dramatically changed. The Lyman-Jones system has now joined in a cooperative effort with the West River Rural Water System to provide potable water in Western South Dakota. The projects' combined efforts are outlined more fully in this report under the title "West River/Lyman-Jones Rural Water System."

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.

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. In addition, the Yankton Sioux Indian Tribe also owns a small portion of the land (1,700 acres) to be served as part of the 45,000 acre Lake Andes-Wagner 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 two years.

In order for the Marty II unit to become part of the Pick-Sloan program, it will be necessary for the U.S. Congress to authorize and appropriate funds for project construction. This is basically the same development process the State and Bureau of Reclamation are currently following for other SWRMS projects such as Lake Andes-Wagner and CENDAK.

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.

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, (Public Law 534), and the Federal Water Projects Act of 1965, (Public Law 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) the establishment 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 are nearly complete with projects varying from a walleye rearing pond at Blueblanket near Mobridge to a new state park at Platte Creek.

The approved $7 million cost-share contract with the Corps of Engineers for the Missouri River Recreation Development Project obligates the federal government to contribute $3.5 million matching an equal expenditure by the state on cost-sharing facilities. The state has proposed an amendment to this contract in the amount of $2.2 million to cover the scheduled 1985 improvements along Lewis and Clark Lake. Expenditures on the project through August 31, 1984, qualifying the state for reimbursement from the Corps of Engineers total over $3.1 million. An additional $2.8 million of state funds approved for the project are not subject to cost sharing.

Significant progress was made during 1985 toward completing the Missouri River Recreational Development Program. American Creek Spawning Station at Chamberlain and Oahe Subimpoundment were completed and put into full operation. Some of the species introduced from these facilities include walleye, paddlefish, and cutthroat trout. The fish ladder was extended at Whitlocks Bay Spawning and Imprint Station and a significant run of chinook salmon occurred the fall of 1984 and 1985. The Wildlife Division also has awarded a contract for the Spring Creek Subimpoundment and plans are to have it completed and operational in the spring of 1986. The Division plans to construct a warmwater wintering area for forage species at Turgeon Wells on Lake Francis Case and build a fish trap and aeration system at Lake Poccasse to complete the final stages of the fisheries improvements in 1986/87.

Four major projects were awarded through the S.D. Transportation Commission during 1985 including the road and campground at Lewis and Clark Recreation Area in Yankton County and two contracts for the extension of nine boat ramps on Lake Oahe. The last scheduled Department of Transportation project in this program, Dodge Draw in Potter County, was advertised and awarded in September 1985. Additionally, the visitor center at Lewis and Clark Lake is in operation. Only two projects in the Missouri River program are left to be contracted through the Division of Parks and Recreation. Both projects involve new restrooms and shower facilities at Lewis and Clark Recreation Area. These projects are scheduled for completion prior to the beginning of next year's park season.

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.

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 will be funded through Public Law 83-566, the Small Watershed Program. Further federal funding will be

delayed until the watershed approves a financial plan. Strong state support will be necessary to assure federal funding.

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.

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 is available according to the Legislative appropriation until June 30, 1987 when the funds will also revert. 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.

Construction is complete on the intake structure, pumping plant, raw water transmission pipeline, treatment plant and phases 1 and 2 of the rural distribution system. 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 Governor Bill Janklow included the project in his presentation of the "Big Ten" 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. 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.

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 S.D. Conservancy District's ETSI contract. Discovery is continuing in this case and the trial is expected to be held during the fall of 1987. 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 refiling. 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 now awaiting action by the U.S. Supreme Court.

West River/Lyman-Jones 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 West River/Lyman-Jones 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. The total estimated cost of the projects is $59 million. Public meetings were held in 1982 to sign up potential users and interest in the projects remains high.

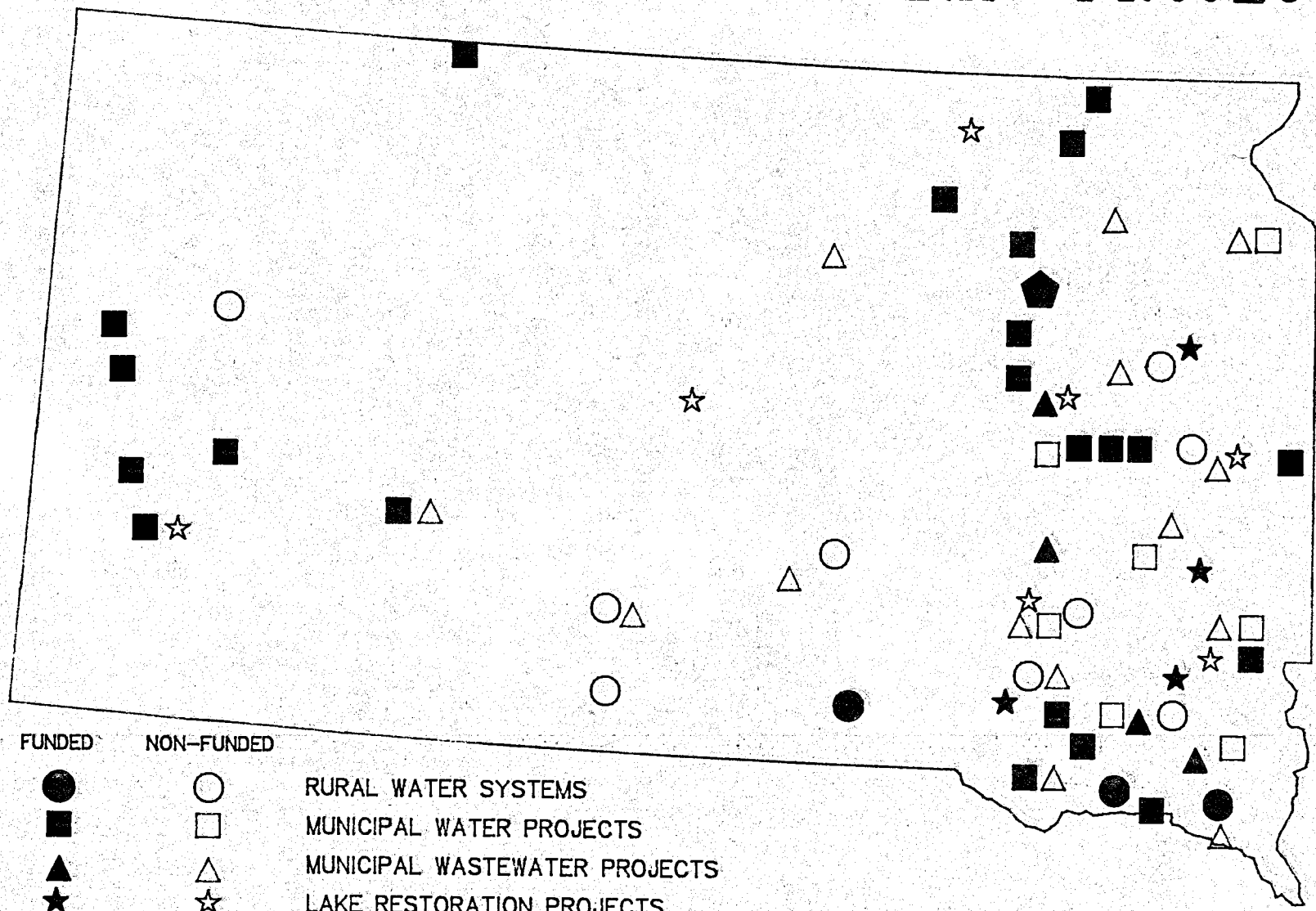
Authorization legislation (S.1471/H.R. 3079) was introduced in 1985 and has been through initial subcommittee hearings. The Senate field hearing in August 1986 was attended by approximately 400 people in support of the projects. The House Subcommittee hearing in July 1986 was held in Washington, D.C. and gave its approval of the project in September 1986. Support for the project has been received from the Dacotah Chapter of the Sierra Club, the Audubon Society, United Family Farmers, S.D. Water Congress and the Upper Missouri Water Users Association. With this active support and the positive action from the House Subcommittee, a good possibility exists of authorization during 1987.

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.

STATE WATER FACILITIES PLAN PROJECTS



FUNDED	NON-FUNDED	
●	○	RURAL WATER SYSTEMS
■	□	MUNICIPAL WATER PROJECTS
▲	△	MUNICIPAL WASTEWATER PROJECTS
★	☆	LAKE RESTORATION PROJECTS
⬟	NA	FLOOD CONTROL/EROSION CONTROL/WATERSHEDS

Figure 4

State Water Facilities Plan--Progress Report

In December 1985, the Board of Water and Natural Resources reviewed over 120 water projects for possible inclusion in the 1986 State Water Plan. From this group, the Board selected 70 projects to be included in the State Water Facilities Plan. Four additional projects were included during the year as amendments. 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 1986, 34 rural and municipal projects received direct state funding. In addition, the two regional studies were completed using state and federal funds. Seven of the lake restoration projects received state funds in 1986, with the balance being implemented using previous state and federal awards.

Of the projects in the State Water Facilities Plan, 46% 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 progress of each of the projects in the 1986 State Water Facilities Plan.

TABLE 5

RURAL WATER SYSTEMS

PROJECT TITLE	CDBG	CONSOLIDATED WATER FACILITIES GRANT	TOTAL PROJECT COST
Aurora/Brule			$ 345,000
Butte Meade			272,300
B-Y		$101,000	1,598,000
Clay	$100,000		255,100
Davison*			3,470,466
Douglas			1,443,000
Kingbrook			575,000
Mellette			3,750,000
Rosebud			6,202,000
Sioux			300,000
T-M*			8,495,000
Tripp	80,000		170,000
Tripp			1,700,000
TOTAL	$180,000	$101,000	$28,575,866

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

TABLE 6

MUNICIPAL WATER PROJECTS

PROJECT TITLE	CDBG	CONSOLIDATED WATER FACILITIES GRANT	TOTAL PROJECT COST
Belle Fourche-Relocate facility	$ 25,000		$ 118,800
Columbia-New System & Storage	76,000		127,339
Custer-Supply, Storage & System			627,550
Dell Rapids-Connect to RWS	1,300,000		2,240,000
Delmont-New Storage	60,000		160,000
DeSmet-System Expansion	20,000		52,000
Elkton-New Water Source			137,869
Hecla-New Storage & System	42,000		213,665
Hill City-System Expansion	15,000		41,215
Howard-New Water Source			75,000
Huron-Lines for Swift Independent			250,000
Ipswich-New Storage & System	133,400		266,757
Iroquois-New Source, Treatment Facility & System	231,000		462,000
Lake Andes-System Improvements			56,000
Lake Preston-New Well	50,000		139,800
Lemmon-New Well, Storage & System	100,000		255,300
Lemmon-System Improvements	41,300		143,100
Lennox-New Well, Storage & System			733,200
Menno-System Improvements			15,590
Milbank-New Water Source & System			2,074,000
Minnehaha County Water Supply Needs Projects			3,000,000
*Mitchell-Industrial Park/Airport Water Lines			
Rapid City-System Expansion to Airport		$250,000	614,000
Redfield-New Well, Storage & Treatment Facilities			1,083,500
Scotland-System Improvements	20,000		90,720
*Sioux Falls-New Wells & Storage			
Spearfish-New Well & Storage	75,000		715,000
Tulare-New Water Source & System			292,497
Wagner-System Improvements	10,000		50,000
Wall-New Well		77,500	155,000
Warner-New Storage & System	25,000	100,000	246,370
Yankton-Lines for Alumax	50,000		139,350
TOTAL	$2,273,700	$427,500	$15,575,622

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

TABLE 7

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 8

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
Capitol Lake-Restoration				291,400
**Lake Byron-Restoration				
**Lake Campbell-Restoration			$117,000	234,000
Lake Corsica-Dam Spillway Repairs	26,000			44,000
**Lake Mitchell-Restoration			255,000	510,000
Lake Poinsett-Flood Control		54,480		95,800
Leola Lake-Restoration			28,000	51,530
Stockade Lake-Restoration				473,703
Swan Lake-Restoration	31,000			62,000
Wall Lake-Restoration				570,000
TOTAL	$57,000	$115,080	$400,000	$2,483,433

**These projects were included to support efforts in obtaining federal or state funds which are restricted to lake restoration projects or special studies.

TABLE 9

FLOOD CONTROL/EROSION CONTROL/WATERSHEDS

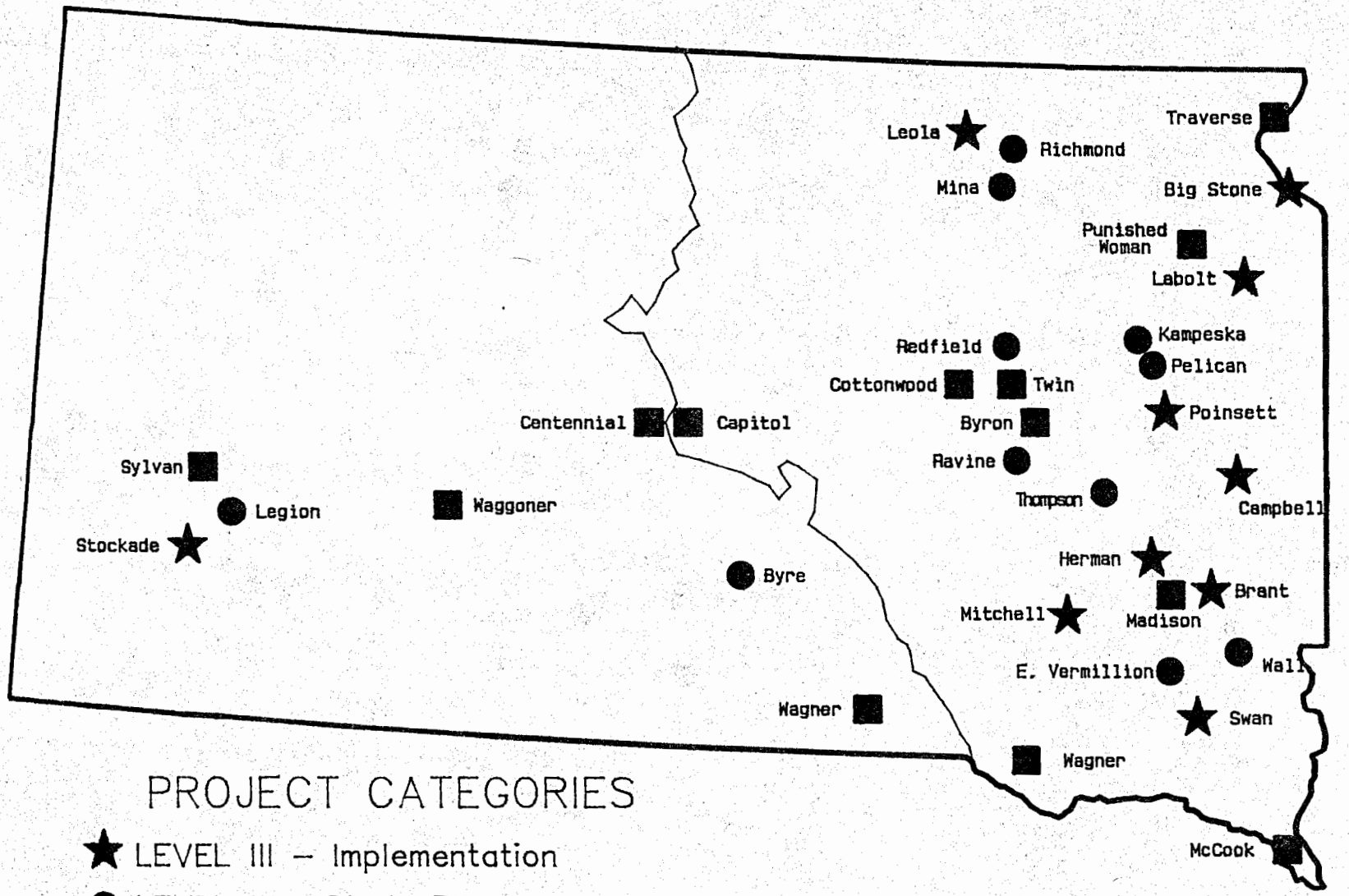
PROJECT TITLE	STATE	FEDERAL	TOTAL
James River Improvement			$1,178,000
TOTAL	$0	$0	$1,178,000

TABLE 10

REGIONAL STUDIES

PROJECT TITLE	STATE	FEDERAL	TOTAL
Eastern and Western S.D. Supply Studies	$ 42,900		$ 416,952
TOTAL	$ 42,900	$0	$ 416,952

LAKE RESTORATION PROJECTS



PROJECT CATEGORIES

★ LEVEL III – Implementation

● LEVEL II – Study Phase

■ LEVEL I – Technical Assistance

Figure 5

Lake Restoration -- Progress Report

The Board of Water and Natural Resources and the Department of Water and Natural Resources, Division of Project and Community Development 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 Department 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 Department of Water and Natural Resources, 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 Department of Water and Natural Resources. 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.

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 Department of Water and Natural Resources, 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 Board of Water and Natural Resources 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 Board 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. The dredge was unloaded and assembled at the launch site at the lake, dredging activities will begin in the spring of 1987.

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 Board of Water and Natural Resources 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 S.D. 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 S.D. 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.

Of the $62,500 cash appropriated by the Board, East Dakota Water Development District and LaBolt, $674 remains unspent. A breakdown of expenditures follows:

Personal Services (Labor)	$31,776
Employee Benefits	2,428
Travel (Per Diem)	4,918
Fuel	7,341
Supplies	3,062
Misc.	8,806
Dragline	3,495
Total	$61,826

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 resilting once dredging activity is completed as part of the restoration effort.

In May 1986, the Board of Water and Natural Resources 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 Board of Water and Natural Resources 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 will be relaunched and the project completed. So far, about 50,000 cubic yards of sediment have been removed from Leola Lake with about 6,000 additional cubic yards to be removed. 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.

Of the $33,000 cash appropriated by all involved parties, $130 remains unspent. A breakdown of expenditures follows:

Personal Services (Labor)	$19,177
Employee Benefits	1,442
Travel (Per Diem)	2,779
Contractual Services	3,818
Hardware Supply	764
Vehicle Maintenance & Repairs	187
Gas	1,540
Lubricants	309
Fuel	2,854
Total	$32,870

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 Board of Water and Natural Resources entered into a contract with the City of Mitchell a warding 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" has been extracted from Lake Mitchell and winterized for the season, and will be relaunched at ice-out next spring to continue dredging operations.

To date, $110,091 has been spent or encumbered from the $510,000 required for completion of the project. This leaves a remaining balance of $399,909. Expenditures break down as follows:

Personal Services (Labor)	$ 16,025
Benefits	1,210
Travel (Per Diem)	2,167
Construction of Holding Pond*	72,487
Fuel and Related Petroleum Products	9,936
Easement (Encumbered)	750
Misc. Expenses	7,516
Total	$110,091

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 Department of Water and Natural Resources, 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 Department 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 Board of Water and Natural Resources 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 Department of Water and Natural Resources.

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.

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 Department of Water and Natural Resources 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 Department of Water and Natural Resources is working with the Department of Game, Fish and Parks to develop a dredging program that will remove most of the sediment from the lake. Dredging is 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 under review by both agencies. One obstacle that may delay dredging is the recent classification of the Stockade Lake Dam as a high hazard dam. The dam will need to be upgraded before dredging can commence.

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 Department of Water and Natural Resources - Division of Project and Community Development 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 Department 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.

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 Department of Water and Natural Resources, 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 Department of Water and Natural Resources 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.

East Vermillion Lake

East Vermillion Lake is a 550 acre man-made lake located in McCook County, 8 miles south of the Town of Montrose. The lake has an average depth to 12 feet and a watershed of 264,800 acres. The main drainage in and out of the lake is the East Fork of the Vermillion River.

The Department of Water and Natural Resources has conducted a flood analysis on most of the major drainage basins in eastern South Dakota including an analysis of potential flooding from Lake Thompson through the Lake Vermillion impoundment. The purpose for this analysis was to prepare landowners and homeowners in the basin for potentially severe flooding in the spring of 1987. The flood analysis indicated that a wet spring would result in high outflows from Lake Thompson. The runoff in the drainage basin above Lake Vermillion, combined with the outflows from Lake Thompson could cause the Lake Vermillion impoundment to fail. Predictions are that even an average rainfall in the spring of 1987 could result in severe erosion and very high runoff through both of the spillways on the Vermillion Dam.

Lake Kampeska

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 Department of Water and Natural Resources 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, 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 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 18 months the Department of Water and Natural Resources 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 Department 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. Continued monitoring will be required to determine the causative factors and the total effect of the biomanipulation process.

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 18 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 1986, high coliform bacteria counts near the swimming beach have caused a closure of the beach. These violations prompted an in-lake survey by the Department of Water and Natural Resources 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 Department of Water and Natural Resources 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 Board of Water and Natural Resources recently approved the association's petition to hold an election to form a district. The election will be held in February 1987. 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.

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 Department of Water and Natural Resources - Division of Project and Community Development with a request to restore Ravine Lake. Staff members from the Division 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. Division 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 Non-Point Source section of the study on about a third of the watershed. Division staff are in the process of evaluating the data to determine critical areas in the subwatershed. Data collection for the remainder of the watershed should be completed by the second quarter of 1987.

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 begin in the spring of 1987 and continue for approximately one year, after which the data collected will be evaluated by the Division staff. A final report will be provided after completion of the evaluation.

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 Department of Water and Natural Resources 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 Department of Water and Natural Resources - Division of Project and Community Development provide additional technical assistance to formulate a viable, cost effective restoration project for Lake Redfield. Staff members from the Division 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.

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, 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 Department of Water and Natural Resources 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 Department of Water and Natural Resources - Division of Project and Community Development 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. A diagnostic/feasibility study will be necessary to confirm the indications.

The Richmond Lake Association has requested that a study plan be prepared for its review. A meeting will be scheduled in early 1987 to discuss the plan and a timeframe for conducting the study.

Lake Thompson

Lake Thompson is located in Kingsbury County, southeast of DeSmet. The "lake" is best described as unique in that up until 3 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 Department of Water and Natural Resources has been extensively involved in the monitoring of lake levels. Additionally, the Department has modelled the lake to estimate inflows and outflows. The spring of 1987 could be a very critical water period since Lake Thompson is currently flowing through its natural outlet. An average or wet spring could wash out several roads, bridges, culverts and dams downstream of the lake.

Alternatives considered for lowering water levels on Lake Thompson have included pumping, cutting a new outlet and lowering the existing outlet. None of these alternatives will provide an acceptable means of lowering the levels on Lake Thompson.

Wall Lake

all 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 Department of Water and Natural Resources 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 Department, is in the process of implementing an agricultural non-point source survey to determine the critical loading areas within the watershed. This survey will be followed, if necessary, by a water quality survey to determine actual nutrient loadings to the lake. After all the data is compiled, an evaluation will be made to develop alternatives for restoring the lake.

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.

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 Department of Water and Natural Resources - Division of Project and Community Development. Each has been provided preliminary information on how to proceed with a lake restoration project. Any further action will depend on approval of these projects for inclusion on the Natural Resources Inventory - Technical Assistance portion of the State Water Plan.

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 Board 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 1986, the Board and Depaartment awarded over $11.4 million in grants and loans to water development projects in South Dakota.

The Board 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 Board administers, the Department of Water and Natural Resources administers two federal water development grant programs: the Environmental Protection Agency Wastewater Facilities Construction Program and the Housing and Urban Development Community Development Block Grant Program.

The following reports are detailed accounts of all expenditures made in 1986 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 11

WATER FACILITIES CONSTRUCTION FUND

BALANCE SHEET

ACTUAL DEPOSITS TO 12/31/86			LEGISLATIVE EXPENDITURE AUTHORIZATIONS		
ETSI PAYMENTS	$5,263,339		STUDY LOAN PROGRAM (SCHEDULE A)		
INTEREST EARNED ON WFCF	$1,866,217		CONTRACTED	$1,900,000	
GENERAL FUND APPROPRIATION	$5,000,000		RESERVED	$0	
INTERIM BOND ISSUE DEFEASANCE	$786,757		TOTAL		$1,900,000
LOAN REPAYMENTS (P&I)	$611,629		CONSTRUCTION LOAN PROGRAM (SCHEDULE B)		
			CONTRACTED	$2,650,000	
			RESERVED	$100,000	
			TOTAL		$2,750,000
			CONSOLIDATED PROGRAM (SCHEDULE C)		
			CONTRACTED	$643,580	
			RESERVED	$356,420	
			TOTAL		$1,000,000
			LEGISLATIVE LINE ITEM AUTHORIZATIONS (SCHEDULE D)		
			CONTRACTED	$4,975,322	
			RESERVED	$2,525,000	
			TOTAL		$7,500,322
TOTAL ACTUAL DEPOSITS		$13,527,942	TOTAL AUTHORIZATIONS		$13,150,322
			AVAILABLE FOR AUTHORIZATION		$377,620
TOTAL		$13,527,942	TOTAL		$13,527,942

SCHEDULE A
STUDY LOAN PROGRAM

	AMOUNT AUTHORIZED BY BWNR	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	$100,000	$100,000	
TOTAL	$1,900,000	$1,900,000	$0

SCHEDULE B
CONSTRUCTION LOAN PROGRAM

	AMOUNT AUTHORIZED BY BWNR	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	$0
DOUGLAS RWS	$100,000	$0	$100,000
EAST GREGORY	$30,000	$30,000	$0
KEYSTONE	$120,000	$120,000	$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	$0
TM RWS	$400,000	$400,000	$0
TOTAL	$2,750,000	$2,650,000	$100,000

SCHEDULE C
CONSOLIDATED WATER FACILITIES CONSTRUCTION PROGRAM

	AMOUNT AUTHORIZED BY BWNR	CONTRACTED	RESERVED
BRANT LAKE	$60,600	$60,600	$0
B-Y RWS	$101,000	$101,000	$0
LAKE POINSETT	$54,480	$54,480	$0
RAPID CITY	$250,000	$250,000	$0
WALL	$77,500	$77,500	$0
WARNER	$100,000	$100,000	$0
UNOBLIGATED	$356,420	$0	$356,420
TOTAL	$1,000,000	$643,580	$356,420

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 (SCHED D-1)	$600,000	$600,000	$0
DREDGE EQUIPMENT (SCHED D-2)	$353,900	$353,900	$0
LAKE/RIVER DREDGE PRGM (SCHED D-3)	$1,500,000	$1,075,000	$425,000
LAKE DREDGE & EQUIPMENT (SCHED D-4)	$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 RWS	$300,000	$0	$300,000
WDD REVOLVING LOAN FUND	$200,000	$200,000	$0
TOTAL	$7,500,322	$4,975,322	$2,525,000

SCHEDULE D-1
DREDGE PURCHASE/EQUIPMENT

	AUTHORIZATION	EXPENDITURES
1984 LEGISLATIVE AUTHORIZATION	$600,000	
DREDGES (Purchase)		$379,952
DISCHARGE PIPE		$108,968
TENDER BOATS, MOTORS & RELATED EQUIPMENT, TOOLS & PARTS		$95,773
SPARE PARTS (Encumbered)		$10,837
UNOBLIGATED		$4,470
TOTAL	$600,000	$600,000

SCHEDULE D-2
DREDGE EQUIPMENT

	AUTHORIZATION	EXPENDITURES
1986 LEGISLATIVE AUTHORIZATION	$353,900	
LAKE HERMAN ($155,000)		
10" BOOSTER PUMP		$78,650
10" DISCHARGE PIPE		$53,568
PIPE CUTTING SAW		$559
TENDER BOAT		$15,888
MISCELLANEOUS EXPENSES		$1,043
UNOBLIGATED		$5,292
TOTAL FOR LAKE HERMAN EQUIPMENT		$155,000
DIAGNOSTIC EQUIPMENT ($29,400)		
WATER LEVEL RECORDER		$2,140
FLOW METER - MODEL 201D		$1,895
QUARTZ MULTISPEED TIMER		$1,340
TOP-SETTING WADING ROD		$475
KEMMERER WATER SAMPLING BOTTLE		$290
SUSPENSION CABLE KIT		$275
WISCONSIN PLANKTON SAMPLER		$245
FLOAT PULLEY - 18" CIRC.		$176
BEADED FLOAT LINE - 20 FT.		$97
FABRIC CARRYING CASE		$50
FLOW TABLES		$30
ENCUMBERED EQUIPMENT		$21,445
UNOBLIGATED		$942
TOTAL FOR DIAGNOSTIC EQUIPMENT		$29,400
JAMES RIVER SPRAY EQUIP ($150,000)		
8" BOOSTER PUMP		$62,750
SPRAY GUN ASSEMBLY		$78,650
MOUNTING BOOSTER PUMP ON TRUCK		$328
UNOBLIGATED		$8,272
TOTAL JAMES RIVER SPRAY EQUIPMENT		$150,000
UNOBLIGATED		$19,500
TOTAL DREDGE EQUIPMENT	$353,900	$353,900

SCHEDULE D-3
LAKE & RIVER DREDGING PROGRAM

	AMOUNT AUTHORIZED BY BWNR	CONTRACTED	RESERVED
JAMES RIVER WATERSHED DISTRICT	$475,000	$475,000	$0
LABOLT LAKE	$50,000	$50,000	$0
LAKE CAMPBELL	$117,000	$117,000	$0
LAKE MITCHELL	$255,000	$255,000	$0
LEOLA LAKE	$28,000	$28,000	$0
LOWER JAMES WATER PROJECT DISTRICT	$150,000	$150,000	$0
UNOBLIGATED	$425,000	$0	$425,000
TOTAL	$1,500,000	$1,075,000	$425,000

RAVINE LAKE	5,000	5,000
STOCKADE LAKE	129,500	129,500

SCHEDULE D-4
LAKE DREDGE & EQUIPMENT

	AUTHORIZATION	EXPENDITURES
1986 LEGISLATIVE AUTHORIZATION	$1,046,100	
LEASE OF DREDGE (Encumbered)		$796,422
DISCHARGE PIPE		$116,830
TENDER BOAT		$35,000
SHIPMENT OF TENDER BOAT		$2,289
FUSION MACHINE		$23,995
PARTS FOR FUSION MACHINE		$668
SAFETY LIGHTS		$124
WINCH FOR TENDER BOAT & INSTALL		$3,154
ELECTRIC TOOLS		$5,161
FLEX HOSE		$8,666
SAFETY BUOYS		$3,900
LAUNCH EQUIPMENT		$2,560
EQUIPMENT MODIFICATIONS		$3,048
MISCELLANEOUS SUPPLIES		$2,171
FUEL TANK SUPPLIES		$649
WELDING SERVICES		$456
ENCUMBERED MISCELLANEOUS		$939
UNOBLIGATED		$40,068
TOTAL FOR LAKE DREDGE & EQUIPMENT	$1,046,100	$1,046,100

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 1986 funds were distributed to the following projects.

TABLE 12

1986 GRANT AWARDS

Name	Activity	Award Amount	Total Proj. Cost
Alcester	Water source improvement	200,000	382,500
Belle Fourche	Water supply improvement	25,000	118,000
Centerville	Sewer separation project	26,000	103,000
Clay County	Clay Rural Water System	100,000	255,100
Columbia	Water System Improvements	76,000	127,339
Dell Rapids	Rural Water Connection	1,300,000	2,240,000
Delmont	Water Storage Project	60,000	160,000
DeSmet	Water Main Extension	20,000	52,000
Douglas Co.	Lake Corsica Dam Spillway	26,000	44,000
Freeman	Interceptor Sewer Project	350,000	700,000
Gregory Co.	Tripp County RWS	80,000	170,000
Hecla	Water System Improvements	42,000	213,665
Hill City	Water Line Improvements	15,000	41,215
Ipswich	Water Storage/Dist. System	133,400	266,757
Iroquois	Water Source/System Imp.	231,000	462,000
Lake Preston	Water Source/System Imp.	50,000	139,800
Lemmon	Water System Improvements	100,000	255,300
Lemmon	Water System Improvements	43,000	143,100
Lincoln Co.	So. Lincoln Rural Water System	59,400	148,500
Scotland	Water Main Replacement	20,000	90,720
Spearfish	Water Supply and Storage	75,000	715,000
Turner Co.	Swan Lake Restoration	31,000	62,000
Wagner	Water Main Replacement	10,000	50,000
Warner	Water Storage	25,000	246,370
Woonsocket	Wastewater Pond Addition	20,000	210,000
Yankton	Water lines to Alumax	50,000	139,350
	TOTAL	$3,167,900	$7,535,716

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 Board of Water and Natural Resources 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 has had three award cycles and the results are shown below.

TABLE 13

1986 GRANT AWARDS

Name	Activity	Award Amount	Total Proj. Cost
Brant Lake	Shoreline Stabilization	$ 60,600	$ 101,000
B-Y RWS	System in SE Hutchinson County	101,000	1,598,000
Lake Poinsett	Flood Control	54,480	95,800
Rapid City	Water to Regl. Airport	250,000	614,000
Wall	New Well	77,500	155,000
Warner	Storage and System Improvement	100,000	246,370
	TOTAL	$643,580	$2,810,170

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 quality for federal grants under the provisions of the Federal Water Pollution Control Act.

TABLE 14

1986 GRANT AWARDS

Name	Activity	Award Amount
Aberdeen	New Treatment Facility	$1,106,210
Alcester	New Treatment Facility	229,886
Beresford	New Treatment Facility	522,000
Herried	Riprap Treatment Facility	39,105
Hitchcock	New Collection and Treatment Facility	299,562
Lake Madison Sanitary District	Sewage Collection and Treatment Facility	423,905
Pollock	New Treatment Facility	45,650
Sioux Falls	Various Interceptors	1,594,340
Waubay	New Treatment Facility	164,860
	TOTAL	$4,425,518

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. The Conservancy District discussed whether to defease the issue in September of this year. However, the Board agreed that until WEB states that it does not need the funds, the issue will be kept available.

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 15

1986 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