

CHAPTER 6 - EASTERN DAKOTAS SUBBASIN

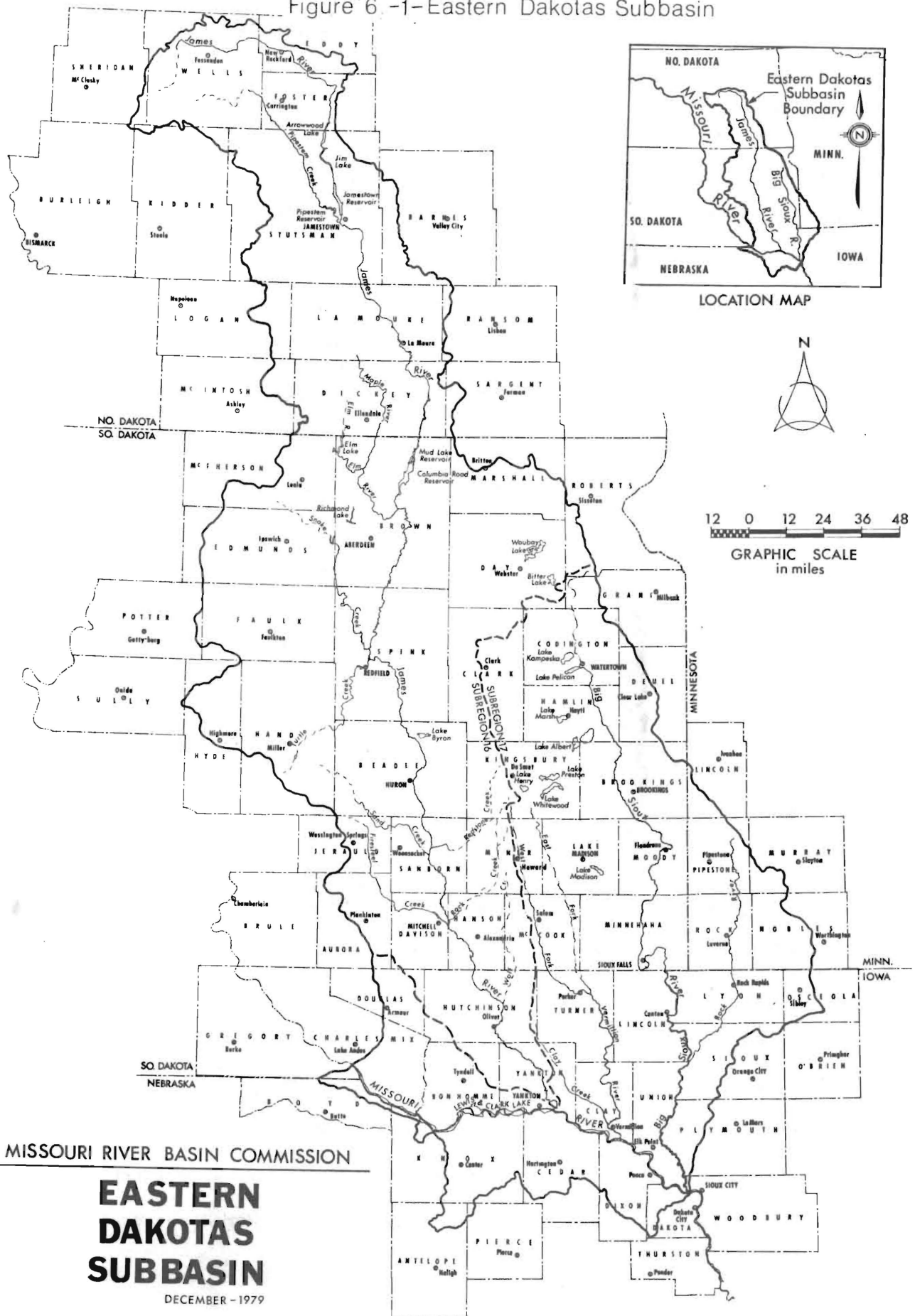
SUBBASIN DESCRIPTION

The Eastern Dakotas Subbasin is a 22.7 million acre area lying in the northeastern section of the Missouri River Basin. Figure 6-1 shows that the subbasin includes all of the land drained by the Missouri River and its tributaries from Fort Randall Dam near the South Dakota-Nebraska border downstream to Sioux City, Iowa, excluding the drainages of the Niobrara River and Ponca Creek. The subbasin lies mainly in North Dakota and South Dakota but also includes portions of Minnesota, Nebraska, and Iowa. The subbasin extends about 300 miles in a north-south direction; the maximum east-west extent is 150 miles. Principal rivers include the James, Big Sioux, and Vermillion.

The main topographic feature of the subbasin is its flatness. The James River has the flattest gradient of any river of its length in North America. Substantial areas do not contribute to surface runoff; precipitation evaporates before it runs off. The gradient of the James averages about 0.05 feet per mile through the nearly 2,000 square mile Dakota Lake Plain area in northern South Dakota. It takes water nearly twice as long to reach the Missouri River mouth from the uppermost point of this subbasin than it does from anywhere else in the Missouri Basin.

Agricultural ecosystems, including small grains, row crops, and pasture lands, dominate the landscape in much of this subbasin. However, in some hilly, rocky pothole areas, native ecosystems of mixed-grass and tall-grass prairies exist. Woodland areas occur as shelterbelts around farmsteads; as wildlife plantings; along some portions the Missouri, James, Big Sioux, and Vermillion Rivers; and near some natural lakes. These limited areas provide key habitats for white-tail deer, eastern cottontail, fox, tree squirrels, raccoon, songbirds, birds of prey, wood duck, and ring-necked pheasant.

Figure 6 -1- Eastern Dakotas Subbasin



MISSOURI RIVER BASIN COMMISSION

**EASTERN
DAKOTAS
SUBBASIN**

DECEMBER - 1979

Nationally significant wetlands occur in the northern portion of the subbasin. These wetlands produce large quantities of waterfowl, especially ducks and provide needed rest stops for migrating species. The bald eagle, an endangered species, lives along the bluffs of the Missouri River.

The human population of the subbasin, estimated at 642,000, is projected to grow only 2 percent before 2000, making it the slowest growing subbasin in the Missouri Basin. With fewer people needed to farm the land due to automation and steadily higher farmland values, it is becoming increasingly difficult for people to get started farming. This problem is causing population out-migration, especially of young adults, resulting in an increasingly older average age. The subbasin's only designated Standard Metropolitan Statistical Area, Sioux Falls, South Dakota, is the exception to this trend. From 1960 to 1975, this area grew by 16 percent to 100,100 residents.

Personal income presently trails the national average by about 20 percent and is projected to continue that pattern. Agriculture is the dominant economic activity. Livestock production sales currently comprise three-fourths of all agricultural receipts. Wheat is the primary crop grown in the north, while corn production is dominant in the south.

Water supplies are quite limited in the subbasin. This shortage is illustrated by backlogs of pending and deferred requests for appropriation permits. Surface water is generally intermittent during the year with long periods of little or no water available, except in the lower reaches of the James and Big Sioux Rivers. As the supply of surface water decreases, the quality of the remaining water almost always worsens. The quality of ground water varies among aquifers and within many aquifers. Irrigation is the major use of water, followed by manufacturing, livestock, and municipal systems.

All surface water in the five States is legally considered public property and is allocated only for beneficial uses by the regulatory agency in each State. North Dakota, South Dakota, and Nebraska allocate by the prior appropriation system. Minnesota and Iowa have a permit system based on riparian philosophy. Beneficial water uses as defined in each State are shown below; uses with higher priority are listed above uses of lower priority under each State heading. South Dakota beneficial uses have not been specifically defined but are referred to in the State Code. Iowa and Minnesota have established protected minimum flows for fish, wildlife, water quality enhancement, and other related purposes. Nebraska law makes no mention of these water uses.

IOWA

Natural uses (domestic and livestock)
Artificial uses (municipal, industrial, and irrigation)

NEBRASKA

Domestic
Irrigation
Power and manufacturing

MINNESOTA

(No definition of beneficial uses or their priority)

NORTH DAKOTA

Domestic
Municipal
Livestock
Irrigation
Industrial
Fish, wildlife, and recreation

SOUTH DAKOTA

Domestic

Others uses such as municipal, industrial, irrigation, water quality management, fish, wildlife, and recreation receive equal consideration

PROBLEMS AND OPPORTUNITIES

The major problems in the Eastern Dakotas Subbasin are limited availability of good quality drinking water, rural flooding, loss of wetlands, limited supply of water for irrigation, erosion, and nonpoint source pollution.

Sufficient quantity of surface water for all uses is not readily accessible in the subbasin. Also, availability and quality of ground water are generally unknown. The cities of Sioux Falls, Huron, Aberdeen, Redfield, and Mitchell, South Dakota, and Worthington, Minnesota, are expected to need additional water supply in the future. At the present time, nearly all community water systems in the subbasin fail to meet the quality standards set by the Safe Drinking Water Act. The range of problems may include total dissolved solids, total hardness, iron, manganese, and sulfate.

Ground water is the source of most of the rural domestic water in the subbasin. The quantity of water from these sources has generally been sufficient; however, conflicts between rural domestic supply and large ground water withdrawals for irrigation are emerging in the southern portion of eastern South Dakota and throughout the James River Basin. In addition, the quality of water from these sources is a problem. In most rural households, drinking water does not meet standards established in the Safe Drinking Water Act. This is due to the poor quality characteristics of available ground water and from continued quality degradation from both point and nonpoint sources of pollutants in the area.

Opportunities exist to build rural water systems using high quality surface water, especially from the Missouri River, and possibly ground water.

As more rural water supply systems are built or as existing systems increase their service areas, cooperation between systems could reduce costs and the need for additional facilities and water.

On the average, one major flood has occurred along the James River every 15 years. In North Dakota, Jamestown and Pipestem Reservoirs have essentially curtailed major flood damage at Jamestown and downstream to the South Dakota State line. However, the James valley in South Dakota experiences major rural flooding problems. The slope of the James River is much less than that of its tributaries. Thus, flood waters are discharged into the James valley faster than they can be carried away. Very large discharges may cause the flow in the James to reverse, sometimes flowing upstream for several days.

Low stream gradient, silt build-up, and trapped debris near inadequate bridge and culvert openings restrict channel capacity and aggravate flooding in the Lake Plain area in northern South Dakota. Along this reach of the James from Columbia, South Dakota, to near Redfield, South Dakota, 30,000 acres are subject to prolonged flooding. For most of this reach, a 5-year event floods the entire valley, and the valley remains flooded for two or three months. This area acts as a natural reservoir that prolongs flooding downstream but limits the peak flows. For example, along the James from Foster Creek to the Missouri River, 40,500 acres are flooded in a 10-year flood and 46,000 in a 100-year flood.

The Big Sioux River has caused flooding problems at Brookings, South Dakota, that are compounded by Six Mile Creek runoff; at Flandreau, and Trent, South Dakota, where damages occur almost every year; Dell Rapids, South Dakota, with six floods in 25 years; and Castlewood, Bruce, Watertown, Dempster, and Estelline, South Dakota. Along the Big Sioux River, rural flood damages occur on 34,800 acres upstream of Sioux Falls and 24,600 acres downstream.

Land use changes are causing reductions in wetland acreages throughout the subbasin. Wetlands are being converted to cropland, causing a two percent decline in wetlands annually in some portions of North Dakota. This loss is of special concern in North Dakota and northern South Dakota because the region is very important as a breeding area for migratory waterfowl, especially ducks. Drainage of wetlands may also reduce flood storage capability, nutrient retention, and ground water recharge.

There is considerable interest in expanding the acres of irrigated land because land suitable for irrigation exists in many portions of the subbasin. However, water is not readily accessible from present surface sources in the subbasin. Opportunities do exist to divert water from the Missouri River because most of this subbasin is at a lower elevation than Oahe Reservoir on the Missouri River.

Farm management practices are contributing to soil erosion and surface water quality problems. Water quality problems in the subbasin are caused mainly by nonpoint source pollution. Runoff from native range and cropland, especially in the southern portion of the subbasin and from cropland, with fertilizers, herbicides, and pesticides attached to the sediment causes almost all of the water quality problems in the subbasin. The levels of total solids, nitrogen, and phosphates in most streams and rivers are relatively high. This leads to severe eutrophication of many lakes and reduces the possible uses of surface water. Inadequate Federal, State, and local funds have been appropriated to implement all five States' nonpoint source pollutant management programs. "Best management practices" of farmlands are recommended in these programs and would alleviate water quality problems, but funding is needed to help landowners implement these practices.

PLANNING OBJECTIVES

Each of the five States in the subbasin has prepared or is preparing a State water plan. In addition, it is an expressed goal of the North Dakota State Water Commission to integrate the Missouri River Basin Commission regional water planning process into North Dakota's water planning process, where possible.

Irrigation objectives reflect east-to-west precipitation differences. It is the objective of the States of North Dakota, South Dakota, and Nebraska to develop irrigation potential in their States to provide an adequate supply of water for irrigation projects. Iowa and Minnesota planning objectives are tempered by the qualification that water permits for irrigation should be issued on a case-by-case basis only after all impacts of the proposed irrigation are known and judged to be more beneficial than harmful. Iowa encourages private funding of individual farm irrigation system development; furthermore, the policy dictates public funds should only be used when increased food and fiber production is considered in the general public interest.

All subbasin States want to minimize intrastate flood damage. North Dakota is most specific in its objective to protect agricultural areas from the 25-year flood and limit flooding in urban areas in any year to one percent. Minnesota stresses the use of nonstructural measures.

Protection of the productivity of soils, control of erosion, and reduction of sediment loading in streams and lakes are objectives of all five of the subbasin States. The States agree that incentives should be provided to implement nonpoint source pollutant control programs, including land treatment, bank stabilization, and other "best management practices."

An objective of each of the five States is to meet municipal, industrial, domestic, and livestock water supply and quality needs wherever feasible.

South Dakota and Nebraska objectives generally support all methods of providing water to the user. Iowa and Minnesota qualify that support somewhat by requiring water users to adopt water conservation measures.

Development of hydropower production facilities is generally encouraged in North Dakota; however, possible adverse environmental impacts and loss of additional Missouri River bottomlands cause great concern for installing additional hydropower capacity at Garrison Dam. South Dakota supports possible diversion and use of Missouri River water that may limit hydropower generation. Minnesota opposes any actions that will severely impair hydropower generation in the Missouri River or its delivery to current Minnesota users.

Preservation of key natural areas and maintenance of fish and wildlife habitat are objectives in all five States. Most States feel that these areas should be maintained through temporary leases and easements rather than by title purchases and permanent easements.

PLAN OVERVIEW

The plan for the Eastern Dakotas Subbasin includes the programs listed below under Recommended Programs - Eastern Dakotas, the programs recommended basinwide in chapter 2, and the statewide programs recommended for South Dakota, North Dakota, Iowa, Minnesota, and Nebraska, also shown in chapter 2. There are conclusions and additional recommendations for the Eastern Dakotas Subbasin. A Commission Comprehensive Study of the James River Basin was completed in early 1980, and its results are incorporated into the plan for this subbasin.

As pointed out above, drinking water problems affect most of the residents of the subbasin. Three programs should address most of these problems. A study led by the Army Corps of Engineers, the Eastern South Dakota and Upper Big Sioux River Study, is designed to examine all drinking water problems in

eastern South Dakota. When completed in FY 1983, this study should present alternatives and recommended approaches for satisfying many of the municipal and rural domestic water supply needs for the study area. A Water and Power Resources Service study, the Garrison Diversion Unit M&I Water Supply Facilities Study, should help many North Dakota communities solve drinking water problems. The Farmers Home Administration's program to assist development of rural water systems, the basinwide program named, "Rural Water and Waste Disposal Systems" is also a key program in this subbasin.

As in several other subbasins, many Soil Conservation Service small watershed projects are recommended for this subbasin. In general, however, rural flooding problems remain unaddressed. Most structural flood control alternatives such as dams, levees, and large-scale channelization are economically, environmentally, or socially unacceptable. Nonstructural flood damage reduction measures such as decreasing use of the flood plain for cropland may be needed. Other alternatives that may help to minimize the problem are a continuing program of channel clearing and snag removal, and a program to prevent sediment deposition in stream channels. However, adequate funding for these programs is not readily available.

Irrigation development can serve the dual role of raising crop productivity and providing a significant economic stimulus to an area whose economic growth rate has lagged behind the national average. Water for irrigation is available from Missouri River reservoirs, and there is irrigable land available in the subbasin at a lower elevation than the reservoirs. Therefore, there are many large-scale, publicly funded irrigation project possibilities. The Water and Power Resources Service will examine some of this irrigation potential in northeastern Nebraska and southeastern South Dakota with the Crofton Unit Study and the Lower James-Fort Randall Diversion Unit

Study. Construction of the Garrison Diversion Unit, is a program of great importance to this subbasin. This proposal would use Missouri River water to irrigate 250,000 acres in North Dakota, of which about 60,000 acres lie in this subbasin. The remaining acres lie outside of the Missouri River Basin.

Soil Conservation Service studies will examine erosion problems relative to existing land uses to determine necessary conservation measures. The Rural Clean Water Program, a basinwide program which will be administered by the Agricultural Stabilization and Conservation Service, should be an integral program in this subbasin. When funded, the program will help landowners implement conservation practices and address most major erosion and nonpoint source pollution problems.

The problem of loss of wetlands will be addressed by the Agricultural Stabilization and Conservation Service's Water Bank Program, a basinwide program. The State of North Dakota supports this program instead of the Fish and Wildlife Service's Small Wetlands Acquisition Program which was excluded from the plan. The water bank program maintains wetlands through nonbinding 10-year leases while the acquisition program seeks to purchase or obtain a permanent easement on the wetland.

RECOMMENDED PROGRAMS - EASTERN DAKOTAS

NAME, LEAD AGENCY, AND FUNCTIONS ADDRESSED DESCRIPTION

COMPREHENSIVE PLANNING AND SUPPORT ACTIVITIES

- 1-SOUTH CENTRAL DAKOTA RC&D PROJECT, SOUTH DAKOTA
USDA/Soil Conservation Service
Comprehensive
.....
Ongoing project in Wells, Foster, Griggs, Dickey, Stutsman, Logan, Barnes, LaMoure, and McIntosh Counties; a plan of technical and financial assistance for the area was developed in 1979.
- 2-RANDALL RC&D PROJECT, SOUTH DAKOTA
USDA/Soil Conservation Service
Comprehensive
Also in Western Dakotas Subbasin
.....
Ongoing project in Gregory, Charles Mix, Douglas, Bon Homme, Brule, and Buffalo Counties that will provide technical and financial assistance.
- 3-LOWER JAMES RC&D PROJECT, SOUTH DAKOTA
USDA/Soil Conservation Service
Comprehensive
.....
Ongoing project in Jerauld, Sanborn, Hutchinson, Aurora, Davison, Hanson, and Yankton Counties; project is implementing a plan of technical and financial assistance that was developed in 1975.
- 4-WATER MANAGEMENT STUDY UPSTREAM OF GAVINS POINT
DOI/Water and Power Resources Service
Comprehensive
Also in Upper Missouri, Yellowstone & W. Dakotas Subbasins
.....
Ongoing special study of water supply and use; scheduled to be completed in FY81 at a total cost of \$871,000, \$136,000 of which is programmed to be spent in FY 81.
- 5-NEBRASKA RIVER BASINS SPECIAL STUDY
USDA/Soil Conservation Service
Also in W. Dakotas, Platte-Niobrara, and M. Missouri Subbasins
.....
New start special study beginning FY 80 and ending rural water, flooding in Mo. tribs and White-Hat basins; prime farmland mapping in Platte critical habitat areas; FY 79-FY 84 cost is \$1,334,000.
- 6-FLOOD PLAIN MANAGEMENT PROGRAM FOR THE MISSOURI RIVER
Missouri River Basin Commission
Flooding and Land Conservation & Management
Also in Middle Missouri and Lower Missouri Subbasins
.....
New start special study beginning in FY 81; Missouri River mainstem from near Sioux City, Iowa, to the mouth near St. Louis, Missouri; study cost \$400,000.

FLOODING

- 7-ROCKY RUN CREEK AND OAK CREEK DRAIN
North Dakota State Water Commission
Flooding
.....
New start construction project possibly beginning in FY 80; project would increase channel capacity by removing sediment and vegetation and by reconstructing some farm machinery and road crossings.

- 8-ROSS WATERSHED PROJECT, IOWA
USDA/Soil Conservation Service
Flooding and Land Conservation & Management
.....
Watershed in Plymouth County is recommended for planning; project would have 11 grade stabilization structures and cost \$600,000.

- 9-CHAMPEPEDAN WATERSHED PROJECT, MINNESOTA
USDA/Soil Conservation Service
Flooding and Land Conservation & Management
.....
Watershed in Murray, Nobles, and Rock Counties is recommended for planning; project would have 2 flood detention structures, some land treatment, and cost \$1,750,000.

- 10-TURKEY-CLAY CREEK WATERSHED PROJECT, SOUTH DAKOTA
USDA/Soil Conservation Service
Flooding and Land Conservation & Management
.....
Planning is scheduled to begin in FY 81; project in Clay, Yankton, and Turner Counties includes 10 flood detention & 2 grade stabilizing structures, land treatment and channel work; cost is \$7,100,000.

- 11-SIX MILE CREEK WATERSHED PROJECT, SOUTH DAKOTA
USDA/Soil Conservation Service
Flooding, Land Conservation & Management, and Recreation
.....
Planning is scheduled to begin in FY 82; project in Brookings and Deuel Counties includes multiple purpose structures, land treatment, and channel work at a cost of \$1,100,000

- 12-AOWA CREEK WATERSHED PROJECT, NEBRASKA
USDA/Soil Conservation Service
Flooding, Land Conservation & Management, and Recreation
.....
Project in Dixon County is under construction and is expected to be completed in FY 86; structures include 55 grade stabilization, 8 flood detention, and 2 multipurpose; total cost \$4,200,000.

- 13-MISSION HILL WATERSHED PROJECT, SOUTH DAKOTA
USDA/Soil Conservation Service
Flooding and Land Conservation & Management
.....
Project in Yankton County has been approved for construction. Measures include land treatment, channel work, and 1 flood detention structure. Estimated cost is \$330,000.

14-SPRING-BULL CREEK WATERSHED PROJECT, SOUTH DAKOTA
USDA/Soil Conservation Service
Flooding and Land Conservation & Management

Project in Charles Mix Co. is under construction and is expected to be completed in FY 81; structures include 3 flood detention and 2 grade stabilization; cost of \$1 million.

15-UNION CREEK WATERSHED PROJECT, SOUTH DAKOTA
USDA/Soil Conservation Service
Flooding and Land Conservation & Management

Project in Union County is under construction and is expected to be completed in FY 82; structures include 4 flood detention and 13 grade stabilization; cost of \$745,000.

16-HURLEY CREEK WATERSHED PROJECT, SOUTH DAKOTA
USDA/Soil Conservation Service
Flooding and Land Conservation & Management

Project in Turner County is approved for construction and is expected to be completed in FY 85; land treatment, channel work, and 1 flood detention structure are included; cost of \$589,000.

17-BRULE CREEK WATERSHED PROJECT, SOUTH DAKOTA
USDA/Soil Conservation Service
Flooding and Land Conservation & Management

Project in Lincoln and Union Counties is under construction. Completion is expected in FY 86; includes land treatment, channel work, 17 flood and 3 grade structures; cost is \$2 million.

18-UPPER CROW CREEK WATERSHED PROJECT, SOUTH DAKOTA
USDA/Soil Conservation Service
Flooding and Land Conservation & Management

Project in Marshall County should be reevaluated in FY 81 or as soon as possible.

19-LOWER CROW CREEK WATERSHED PROJECT, SOUTH DAKOTA
USDA/Soil Conservation Service
Flooding and Land Conservation & Management

Project in Brown County should be reevaluated possibly in FY 81. Planning on this watershed must be conducted with or following that for Upper Crow Creek Watershed.

FISH AND WILDLIFE

IRRIGATION

20-MODIFICATION OF EXISTING IRRIGATION SYSTEMS
USDA/Soil Conservation Service
Irrigation, Energy, and Land Conservation and Management

Ongoing implementation program aids farmers in modifying existing irrigation systems that have inefficient water delivery methods.

21-CROFTON UNIT STUDY
DOI/Water and Power Resources Service
Irrigation, Flooding, F&W, M&I Rural Supply, and Recreation

New start feasibility study scheduled beginning in FY 82; Near Bow Creek & Mo. River in northwestern Knox & Cedar counties Nebraska; Project would irrigate 60,000-100,000 acres; study cost is \$2 million.

22-LOWER JAMES - FORT RANDALL WATER DIVERSION PROPOSAL STUDY
DOI/Water and Power Resources Service
Irrigation
Also in Western Dakotas Subbasin
.....
Ongoing feasibility study to be completed in FY 83;
Project may divert water from Missouri River into
Lower James & Fort Randall Conservancy subdistricts;
study cost is \$1.1 million.

23-GARRISON DIVERSION UNIT
DOI/Water and Power Resources Service
Irrig., Flood., F&W, M&I Rural Supply, and Water Qual.
.....
Authorized project to use 871,000
acre-feet of water annually to irrigate 250,000
acres in central and eastern North Dakota; total
cost may be \$612 million.

LAND CONSERVATION AND MANAGEMENT

24-WESTERN IOWA RIVERS COOPERATIVE STUDY
USDA/Soil Conservation Service
Land Cons. and Mgt., Flood., Irrig., and Water Qual.
Also in Middle Missouri Subbasin
.....
New start river basin planning study to begin in
FY 82; total cost is expected to be about
\$1.4 million.

25-LOWER JAMES COOPERATIVE RIVER BASIN STUDY
USDA/Soil Conservation Service
Land Conservation & Management, and Irrigation
.....
New start special study beginning FY 80 and ending
FY 81; examination of existing land uses to
determine changes needed to maximize income w/o
degrading soil resources; total cost \$267,000.

26-SHELTERBELT RESTORATION PROGRAM
USDA/Agricultural Stabilization and Conservation Service
Land Conservation and Management, Fish and Wildlife
.....
Ongoing program in conjunction with N. & S. Dakota
game and fish agencies to help private landowners
restore damaged shelterbelts and to prevent losses
of existing shelterbelts.

27-MISSOURI RIVER BANK STABILIZATION DEMONSTRATION PROJECT (Sec 32)
Army Corps of Engineers
Land Conservation & Management
Also in Western Dakotas Subbasin
.....
Ongoing program to provide streambank erosion
control measures at 22 sites below Gavins Point
Dam, 7 sites below Fort Randall Dam, 1 site below
Oahe Dam, and 22 sites below Garrison Dam.

MUNICIPAL, INDUSTRIAL, AND RURAL DOMESTIC WATER SUPPLY

28-EASTERN SOUTH DAKOTA AND UPPER BIG SIOUX RIVER STUDY
Army Corps of Engineers
M&I Rural Supply and Flooding
Also in Western Dakotas Subbasin
.....
Ongoing feasibility study to examine water
supply needs for urban & rural areas in S. Dakota
east of the Mo. River & to coordinate development
efforts; completed in FY 83; cost is \$2.5 million.

NATURAL, HISTORICAL AND CULTURAL

POWER AND ENERGY

29-BOYD COUNTY PUMPED STORAGE POWER PROJECT
Nebraska Public Power District
Energy and Recreation

New start final design and construction of 1336 MW pumped storage power plant, near Lynch in Boyd Co.; two reservoirs of 74,000 & 60,000 acre-ft. will be constructed; project cost is \$616,700,000.

WATER-ASSOCIATED OUTDOOR RECREATION

30-MISSOURI RIVER-NAT'L REC. RIVER MANAGEMENT PLAN IMPLEMENTATION
Army Corps of Engineers
Recreation

New start implementation of management plan; national recreation river designation applies to Missouri River from Gavins Point Dam to Ponca (NE) State Park.

TRANSPORTATION

WATER QUALITY

LEGAL AND INSTITUTIONAL FACTORS

INSTREAM FLOWS

31-INSTREAM FLOW TECHNICAL STUDY
South Dakota Dept. of Game, Fish, and Parks
Instream Flows
Also in Western Dakotas Subbasin

Ongoing special study to evaluate instream flow methodologies and determine water quality needs.

WEATHER MODIFICATION

CONCLUSIONS AND ADDITIONAL RECOMMENDATIONS

- A. The city of Sioux Falls, South Dakota, is in need of additional supplies of municipal and industrial water. A project to supply water to Sioux Falls, called the Sioux Falls Unit, has been proposed by the Water and Power Resources Service (WPRS) based on studies that have been completed. The South Dakota Department of Water and Natural Resources supports the city of Sioux Falls in attempting to meet its future water needs and stands ready to assist WPRS in the location and evaluation of data on the Sioux Falls Unit.
- B. Due to substantial opposition to the Initial Stage Oahe Unit in the project area, the project as presently authorized will probably not be built. The Oahe Unit was originally designed and viewed partially as an effort to offset the loss of farmland incurred by the State of South Dakota for the construction of Missouri River reservoirs. The Initial Stage Oahe Unit should not be deauthorized until other programs to offset those losses are fully identified and commitments are made by the Federal Government to pursue such programs.
- C. Many parts of eastern South Dakota have a great need for improved domestic water supply, both in terms of water quality and quantity. There is also interest in irrigating large amounts of land. Federal funding should be made available for studying and constructing domestic and irrigation water supply facilities. The Water and Power Resources Service should conduct studies to include looking at use of already constructed Oahe Unit facilities and examining other possible irrigation sites in the State. Also, the Corps of Engineers should examine domestic water supply alternatives in their ongoing Eastern South Dakota and Upper Big Sioux River Study.

- D. The Water and Power Resources Service is conducting a study of irrigation development possibilities called the "Lower James-Fort Randall Water Diversion Proposal Study." The possible uses of the nearly complete Oahe pumping plant, Pierre canal, and other features of the Initial Stage Oahe Unit should be examined through this study.
- E. One area that has a need for improved domestic water supply is in north-central South Dakota. A pipeline from the Missouri River for providing treated water into a nine-county area has been studied largely through the use of local funds. This proposal is called the WEB pipeline. Federal funding, possibly from the Department of the Interior, should be made available to conduct a feasibility study of the WEB pipeline.
- F. Many interstate water-related issues have surfaced during the Commission's James River Basin Subregional Analysis. In order to resolve these issues, better communication and coordination are needed between Federal, State, and local water resources organizations. The Missouri River Basin Commission should establish an Ad Hoc James River Interstate Coordinating Committee to facilitate this communication and coordination.
- G. The James River is almost like two rivers - one upstream of Sand Lake National Wildlife Refuge and another entirely different river downstream. The hydrologic effects of Sand Lake need to be known in order to formulate a plan for water management in the James River Basin. When established by the Missouri River Basin Commission, the James River Interstate Coordinating Committee should undertake such a study.
- H. The average channel capacity in much of the lake plain area of the James River has been reduced by as much as two-thirds in some places. Deposition of sediment is the main reason for this reduction. The Army Corps of Engineers should conduct a study of the sources of sediment and evaluate alternative methods of reducing sediment inflow.

- I. There is inadequate water supply and water use data available for the James River Basin. A hydrologic model of the river would assist in formulating a James River Basin water management and operations plan. The Water and Power Resources Service should undertake a water management study of the entire James Basin which would develop a hydrologic model of the river. This study should be conducted after or during the proposed analyses of Sand Lake National Wildlife Refuge and of sedimentation in the James channel.
- J. Many ground and surface water quality data are collected in both North Dakota and South Dakota; however, these two sets of data are often incompatible. Data have very limited use outside the State in which they were collected. All water quality data should be standardized to allow better utilization of data, fill data gaps, and avoid erroneous conclusions based on an incomplete monitoring network. All agencies collecting such data in North and South Dakota should coordinate their activities. A series of annual meetings should take place involving the U.S. Environmental Protection Agency and Geological Survey; South Dakota Department of Water and Natural Resources, Department of Agriculture, and Geological Survey; and North Dakota Department of Health, State Water Commission, and Geological Survey.
- K. The Soil Conservation Service conducts a program of providing technical assistance to private landowners for planning and applying measures needed to help conserve soil, water, and related resources called the "Soil Conservation Program." The budget for this program has been stable or declining for the last 15 years so the program is greatly reduced from what it has been in the past. Funding for the program needs to be greatly

accelerated to make the program comparable to that of 15 years ago so that pressing soil erosion problems can be adequately addressed.

- I. Rural flooding problems are recurrent in the subbasin, especially in the James River lake plain area where the 10-year flood covers almost as much land as the 100-year flood. Many studies of the rural flooding problem have been conducted, but structural solutions to the problem that are economically, environmentally, and socially acceptable have not been found. Current planning policies and criteria will not permit the implementation of programs and projects to alleviate these rural flooding problems.
- M. Many trees, especially dead Elms, and other obstructions cause localized flooding problems along the James River. Some programs are now underway to remove these obstructions; however, these are one-time programs. A continuing program is needed to ensure these flooding problems do not reoccur. In South Dakota, State funds should be made available to the Lower James and Oahe Conservancy Sub-districts to develop a continuing program to monitor the condition of the James River channel and periodically remove obstructions. This continuing program would replace short-term programs of the past. No change in the present program is needed in North Dakota.
- N. Numerous streambanks and lakeshores in South Dakota, especially in the James River Basin, are being damaged by improper land use. A State review and permit system is needed to resolve these inappropriate land uses. The South Dakota Department of Water and Natural Resources should develop legislation to guide this State review and to regulate the proposed use of lakeshores, stream-side areas, and other scenic areas.

O. Along many reaches of the James River the streambank is eroding.

Maintenance of a balanced ecosystem of live trees, brushy cover, and grasses along the streambank would reduce the erosion problem. The Lower James and Oahe Conservancy Sub-districts in South Dakota and the Garrison Conservancy District and County Water Management Districts in North Dakota should encourage landowners along the James River to maintain such an ecosystem.

P. Approximately 50 feedlots have been identified as pollutant sources in the James River Basin. Further study probably would identify about 80 more feedlots within the basin and numerous others in South Dakota that are also pollutant sources. The U. S. Environmental Protection Agency has not actively enforced water quality regulations to eliminate these discharges. Pollution from the feedlots should be eliminated. The South Dakota Legislature should provide funding to resume the State Feedlot Pollutant Discharge Elimination Program. This program provides matching money to help feedlot owners construct treatment facilities and holding lagoons. Also, the Legislature should grant the Department of Water and Natural Resources authority to assume full responsibility for point source discharge regulation from EPA in FY 1982. EPA would still provide DWNR with most of the funding for the program.

Q. Individual human waste-water systems are causing pollution problems in South Dakota. The South Dakota Department of Water and Natural Resources now has authority to enforce existing regulations and with limited resources enforces only on a complaint basis. This enforcement program should be moved to the local governmental level in order to better monitor systems and their problems. Municipal and county governments should adopt and enforce DWNR regulations or enact regulations more stringent than DWNR's to control this problem. Technical assistance should be provided by the DWNR.

R. Both North and South Dakota participate in State Comprehensive Outdoor Recreation Planning (SCORP). There is a need in the James River Basin to examine certain water-related aspects of SCORP activities in more detail. To determine the need for improved or additional recreation facilities at lakes and reservoirs, the existing public and private facilities, level of usage, and the potential for additional facilities should be assessed. To determine if a specific section of the James River should be considered for recreation development, a survey of demand for corridor recreation along the river should be conducted. An analysis of the level of funding needed to properly maintain, police, and manage existing water-related recreation facilities should be undertaken. In North Dakota, these three studies should be conducted by the Department of Parks and Recreation; in South Dakota by the Department of Game, Fish, and Parks.