

South Dakota State University

Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange

SDSU Extension Fact Sheets

SDSU Extension

1961

Developing Small River Basins

Cooperative Extension, South Dakota State University

Follow this and additional works at: https://openprairie.sdstate.edu/extension_fact

Historical, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.



For current policies and practices, contact SDSU Extension

Website: extension.sdstate.edu

Phone: 605-688-4792

Email: sdsu.extension@sdstate.edu

SDSU Extension is an equal opportunity provider and employer in accordance with the nondiscrimination policies of South Dakota State University, the South Dakota Board of Regents and the United States Department of Agriculture.

developing small river basins

Nearly every year, some part of South Dakota suffers from lack of water. The lack of water limits the yields of crops, the expansion of industry, and the introduction of new industry.

Flood prevention and flood control are always important parts of a river basin development plan. In areas of abundant rainfall it may be the only consideration, but in South Dakota, flood control is only part of the problem. We need more water in the state and we should not only *control* the water at flood time but we should also *store* it at flood time for use when water is scarce.

Usually, it is an advantage to develop water resources by entire river basins. Separate parts of a river basin may be developed to solve the problem of that particular part; but how one problem is solved may make the problem worse in other parts of the basin. It is better, then, to consider the problem of the total river basin, and to coordinate all water resource development activities.

WHAT ARE THE SMALL RIVER BASIN PROBLEMS OF EASTERN SOUTH DAKOTA?

The main problem of all river basins in South Dakota is getting the right amount of water to the right place at the right time. The problem of each basin is different, however. Some basins have enough water in them but it is not properly distributed for over-all use in agriculture, industry, and cities and towns. Other basins do not have enough water and must supplement their supply from outside sources. In South Dakota the only "outside source" is the Missouri River. Solving problems of small river basins may or may not make use of Missouri River water.

Below is a brief statement of the problems and possible solutions for the three eastern South Dakota small river basins.

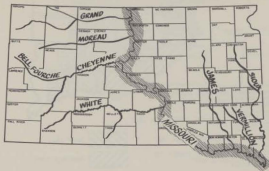


Figure 1. Missouri River is the only large water source for supplementing South Dakota's small rivers.

By Fay Kerr, Extension Water Resources Specialist

developing small river basins

IN EASTERN SOUTH DAKOTA

Cooperative Extension Service



JUN 6 1961

SIoux RIVER BASIN

Sioux Basin—Studies show that enough water flows out of this basin each year to provide for the needs of its people even if the population of the basin increased seven times.

The problem is one of more even distribution. Severe flooding occurs in some parts of the basin almost every year, usually in the lower part. Water shortages also occur in some part of the basin almost every year, usually in the central and upper parts of the basin. The problem of distribution probably will become greater as time passes and as more and more uncoordinated projects are built.

It will take a combination of several plans to properly manage the waters of the Sioux basin. Plans that should be studied include these:

1. Store water in the upper part of the basin to recharge underground sources, which in turn will stabilize the river flow and lake levels during dry periods.
2. Divert water into certain upstream lake beds during periods of high river flows. Use this stored water as needed.
3. Conserve and store water in tributaries in the central portion of the basin and in main stem reservoir sites where possible. There are not many suitable main stem sites. Use water directly from its storage area for irrigation or other beneficial uses.
4. Complete proposed flood control measures in the lower portion of the basin to handle flood waters coming out of other states over which South Dakota has no control.
5. Study carefully the feasibility of introducing Missouri River water into the Sioux basin.

In view of the large amount of water already in the Sioux basin, it seems that the introduction of Missouri River water should not be necessary. Whether it

is necessary or not should be determined soon so that if Missouri River water is needed, a claim for it can be made before all Missouri River water is allocated elsewhere.

VERMILION RIVER BASIN

Vermillion Basin—Studies show that enough water flows out of this basin each year to meet the needs of the people if the population increased about 2.5 times. The problem is one of more even distribution.

An excellent development plan can result in this basin if programs now being considered are fully coordinated so that each project will help the other. A flood control project is planned for the lower part of the basin. One main stem reservoir already exists. A small watershed project on Turkey Ridge Creek is in the planning stage. Interest is developing in small watershed projects on the east and middle branches of the river.

Well coordinated small watershed types of development should be the backbone of any water distribution system in this basin. The small watershed development projects, however, will lack one important thing. They are *flood prevention* devices not *water storage* devices. Water storage, however, can be built into small watershed developments. The water storage part of the project is a local cost.

A general development plan should include the following initial steps:

1. Determine amount and location of *storage* within all possible small watershed developments in the basin. Will this distribute the water to the right place and in the right amounts to serve the people for irrigation, municipal and industrial use, and for recreation?

2. Study the possibility of additional main stem reservoirs to give better distribution.

3. Proceed with plans for the flood control project in the lower basin to give protection during periods of excessive runoff.

4. Study need for and cost of introducing Missouri River water.

JAMES RIVER BASIN

James Basin—The amount of water available in the James basin is not sufficient for present needs without using artesian water. Artesian water is not satisfactory for irrigation or industrial use because of the salt content. In some cases it is not suitable for domestic use.

The upper half of the basin is already on the way to solving its problem. The Oahe Conservancy Subdistrict has been formed. The directors of the district are working on an overall plan for full water resource development. The Bureau of Reclamation has submitted plans that are being considered, along with plans for small watershed developments and

private projects. Missouri River water will be used.

The lower James basin (south of Beadle County) is not organized and at present is not in a position to plan benefits from the Oahe Unit or other water resource developments.

If the entire basin could be developed under one master plan, all projects could be coordinated better. For this reason, it would be an advantage if lower basin counties could be annexed to the Oahe Unit.

CONSERVANCY SUBDISTRICT BECOMES PLANNING AGENCY

A conservancy subdistrict is a group of counties or parts of counties organized to coordinate the development of water resources within the subdistrict. It is set up as a legal subdivision of state government and has powers accordingly. It is managed by a board of directors, elected by the people in the subdistrict.

The subdistrict may receive technical assistance from any state or federal agency. If it chooses it may operate on its own.

The subdistrict may include any group of counties or portions thereof that wish to be included. There may be advantages in grouping counties by river basins, because each river basin has different problems. The picture below shows the areas of the two conservancy subdistricts which have already organized, the Oahe Unit and the Randall Unit, and shows some possible combinations for new subdistricts or annexes to the existing subdistricts.

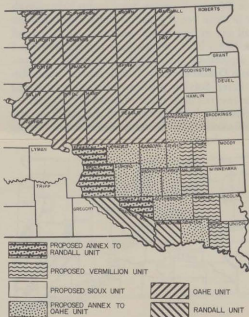


Figure 2. Possible combinations of counties for subdistrict organization. Final boundary determination is the choice of local residents.