



# Development of Rural Water Systems in North Dakota

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## Introduction

North Dakota's water resources are the envy of many water-short neighboring states. However, the appearance of ample water supplies is often misleading.

While residents of urban communities take their water systems for granted, many rural residents and residents of small communities do not enjoy the same easy access. They often find it difficult to locate an adequate volume of water to meet long-term needs. Also, if an adequate volume is obtained, many sources of water in rural areas contain water of inferior quality for domestic and livestock use.

Results of a recent study of community service problems in Foster, Logan and Stutsman counties indicated over half of those surveyed had some type of water problem. Hardness was the major complaint. Small town residents also identified color, odor and taste as problems, while rural residents mentioned iron, system failures and difficulties in securing an adequate supply.

## What Can Be Done?

Many residents have organized in a cooperative effort to develop rural water systems. These systems are helping to solve the problem of getting good quality water to where it's needed at a price people can afford.

### How Does A Rural Water System Operate?

First, an adequate supply of water is obtained from one or more central wells, from city water systems, or from lakes and rivers. The water is treated to make sure it meets the quality standards of the Federal Safe Drinking Water Act. After treatment, the water is then piped to individual farmsteads and rural communities through pipes placed below the frost level.

Storage facilities are located throughout the system to maintain a steady pressure and assure an ample supply of water even during peak periods of use. If there is a break or leak at some point, the reservoirs provide uninterrupted service to the rest of the system while the break is being mended.

Rural water systems in North Dakota are operated and owned by the water users in the form of an association. These associations operate either as a nonprofit corporation or as a cooperative and do not tax their members.

Income to the association is from the sale of water. Rates are established by the board of directors and funds received are used to repay construction loans, operate and maintain the water system, and maintain a reserve fund for expansion or replacing equipment.

## Forming An Association

Forming a Rural Water Association often takes a considerable amount of time and local effort before the system becomes operational. Local initiative and leadership are crucial. Local citizens must be involved in responsible roles throughout the development process.

## Major Steps

Interviews with officers of six operating rural water associations in North Dakota suggest five major steps in forming an association.

### 1. Generating Interest

People must first be made aware that there are programs available to help meet their water needs. Organizational assistance is available from a number of sources including the Farmers

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Home Administration, rural electric cooperatives, the Cooperative Extension Service, and the North Dakota Rural Water Association.

When people in an area show enough interest in forming an association, informational meetings should be scheduled to explain and discuss the program. Participants may include someone to answer technical engineering questions, a lending agency, and possibly officers of other rural water associations operating nearby.

A steering committee should be formed if enough interest is generated. This committee plays a critical role in the organizational process and remains in charge until a board of directors is selected.

## **2. The Membership Drive**

Steering committee members are responsible for the membership drive. They have the responsibility of conducting a preliminary survey of water requirements in the area and contacting prospective members.

A brief questionnaire should be developed to obtain information on the number of people in each household, estimated water consumption, sources of water and number and type of livestock. Information should also be distributed concerning probable costs, required density of members, and expected quality of water.

When a person indicates interest as a water user, that person is asked to pay a membership fee and sign a membership contract. The contract should be drawn up by a lawyer and should specify membership fees, the use of these fees, and what happens to unspent funds. Membership fees are used to defray costs of the association. Sample survey sheets, informational bulletins and contract forms are available from agencies providing organizational assistance.

## **3. Feasibility Study**

After the steering committee has contacted all of the people in the area, a meeting with the lending agencies should be held to determine if there are enough members to form an association. If the lending agencies approve the initial eligibility of the association, the steering committee will hire an engineering firm to conduct a more detailed feasibility study. This must be completed before a loan can be approved. The study will answer questions pertaining to potential membership density, sources of water, size and type of distribution lines, estimated cost of the project, and average cost per member.

## **4. Formalize Organization**

Before the signing of negotiations with the lending agency, a legal basis for the association must be formed. The services of an attorney at this point is essential. In North Dakota, a non-profit corporation is the most common legal organization used.

After the association has been approved for funding, the engineers begin work on the final design of the system. When complete, it will be submitted to the lending agency and appropriate state regulatory agencies for final approval. If approved, construction can begin.

## **5. Operating Procedures**

The final step entails setting up operational procedures. Many water users' associations contract with a rural electrical cooperative to handle the billing and accounting procedures. This appears to be the most efficient method. Association members are normally responsible for reading their own meters and reporting the readings to the association.

Members elect a board of directors to serve as the governing arm of the association. They are charged with policy formation within the bylaws of the association and must also make decisions pertaining to the general operation of the system.

Most rural water systems hire a full-time professional manager. A good manager relieves the board of directors of many day-to-day problems and is probably the best guarantee of satisfied members and a smooth functioning system.

## **Primary Concerns**

Two factors are of primary concern to rural residents thinking about forming a rural water association. First, how does the cost of getting water through a rural water system compare with other methods? Secondly, how is the necessary financing obtained to build a rural water system?

### **Cost Comparison**

Cost comparisons between the alternatives of rural water service and a private well system are difficult to make for the entire state. Costs vary tremendously depending upon the density of population, the availability of water, problems of drilling and operating a private well, and probably most important, water quality.

Studies completed on the economic impact of poor quality water indicate it generally costs the consumer of poor quality water more than the con-

sumer of good quality water. Most of these costs come from the reduction in useful life of water-related facilities because of excessive water hardness.

Generally speaking, the two systems are not competitive. Rural water systems are intended to serve primarily domestic needs with an ample supply of high quality, safe and healthful water only when it cannot be obtained from a private well system at a reasonable cost. The two alternatives complement each other in meeting the water needs of North Dakota rural residents.

A rural water system and private wells are not the only ways adequate water can be supplied to residents of rural areas. Other sources include a water hauling association and surface water collected from precipitation. One or more of these alternative water sources may be used in conjunction with or to supplement a rural water system.

The water hauling association is a system whereby a given amount of water, based on historical use, is delivered by truck each month or every two weeks. This system may prove to be a feasible alternative, especially in more sparsely populated areas.

#### **Financial Assistance**

Financing is the second major concern. Development of even a small system could cost millions of dollars. However, even more important than the total cost is the cost per unit or family.

Population density is the most important factor determining the feasibility of a system. In areas where there are fewer people living farther apart, the per family or per unit cost of providing water through a rural water system can be a major obstacle. A majority of the rural water systems in operation to date are in the eastern portion of North Dakota where rural population densities are the highest.

The first need for funds at the local level is to complete the interest survey and initial feasibility study. If positive, funds will also be needed to employ a consulting engineering firm to complete a more detailed feasibility study. A membership fee is collected from prospective water users to cover these costs.

Construction costs form by far the largest need for capital. The Farmers Home Administration has financed a majority of the systems currently in operation in North Dakota. Availability of loan funds normally is not a problem. However, grant funds used to reduce costs have been limited, and this has been a detriment to the development of new systems.

To help remedy this situation, the State of North Dakota provides additional loan funds that come from earnings of the Bank of North Dakota. These

funds are loaned at an interest rate 3 percent below the rate charged by FmHA and allow limited federal funds to be used on more new projects. An added benefit is that the lower interest rate helps lower monthly water bills.

Loan funds may also be available through other federal agencies. However, these funds only apply in selected situations.

#### **Positive and Negative Aspects**

Experience in North Dakota and surrounding states indicates there are both negative and positive aspects related to the development of rural water systems.

##### **Negative Aspects**

On the negative side, rural water systems have created new problems. For example:

- \* **Expansion of water systems built close to larger towns and cities may contribute to urban sprawl. However, a strong zoning program can prevent additions to the system from encouraging leap-frog urban expansion into farming areas.**
- \* **Speculation and inflated land values, based on the promise of good water, has taken place. This will affect future land taxes and estate taxes for the entire area.**
- \* **When rural water systems go into operation, businessmen who haul water or drill wells may lose some of their clients.**
- \* **Many of the present systems lack provisions for growth or expansion because of the high cost of construction and original system design. This could present problems, especially in the energy development areas where future population growth is anticipated.**

##### **Positive Aspects**

On the positive side of the ledger, the following factors could be listed:

- \* **Thousands of rural residents now have good quality water who didn't have it before.**
- \* **Many farmers and ranchers now have a backup supply for their livestock should trouble develop with their private system. Also, some livestock farms show increased animal gains because of improved water quality.**
- \* **A more stable population in rural areas has resulted.**
- \* **An improvement in quality of living has generally taken place from a sanitation standpoint and through the purchase of more modern conveniences.**

#### **Summary**

What does the future hold for the development of additional rural water systems in North Dakota? Increasing construction costs and establishing feasibility in more sparsely populated areas will make the challenge more difficult.

Even so, rural water systems will remain a valid alternative when:

\* There isn't enough water on area farms and ranches or when the water quality is poor.

\* The quality and quantity of water is satisfactory, but development costs are prohibitive on an individual family basis.

\* Users feel the convenience and sanitation of a community system outweigh those of a private system.

\* Sufficient financial aid is made available to hold user expenses to an acceptable level.

In any case, future developments are dependent on local interest and involvement. Technical and financial assistance can usually be located, but local residents must step forward to provide the leadership needed to get things going.

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