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RURAL WATER USERS ASSOCIATIONS in North Dakota

WHY?
HOW?
WHO?

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FOREWORD

Rural water systems are multiplying rapidly in North Dakota, bringing water to rural residents who previously had to haul water in by truck or trailer. The authors hope that this report will help to clarify what rural water systems are, who joins rural water systems, and general procedures of organizing a rural water users association.

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TABLE OF CONTENTS

Highlights

Rural water user associations are being formed in many areas in North Dakota. These associations perform a similar function in areas of deficient water supply as the rural electric cooperatives did 20 to 30 years ago. A water user association is a nonprofit corporation or cooperative composed of member-consumers who have organized to pipe water to their farms and residences. The investment costs, $8,000 to $10,000 per mile, have been financed by the Farmers Home Administration.

The monthly costs of members appear to be less than commercial hauling at consumption levels greater than 375 gallons per month and less than a 100-foot depth private well at consumption levels less than 5,000 gallons per month. Most people, however, joined the Grand Forks-Traill Water Users Association for the convenience of having an increased and stable supply of water rather than cost reduction.

Members of the association were generally younger; had more children living at home; had larger farms and/or more expensive homes; did not have a cistern; and, prior to their membership, had higher costs of obtaining water than their nonmember neighbors.

The process of organizing a water user association includes generating interest of potential members, conducting a membership drive, obtaining a state charter as a nonprofit corporation or cooperative, conducting an economic feasibility study, and obtaining a loan to finance construction. Key roles in this process are played by a steering committee, an engineering firm, an attorney, a credit agency, board of directors, and the individual members.

RURAL WATER USERS ASSOCIATIONS IN NORTH DAKOTA
WHY? HOW? WHO?

by

William C. Nelson and Clayton O. Hoffman*

The development of rural water associations is of major importance in North Dakota and the United States. By June 1, 1973, funds were granted or obligated throughout the United States for approximately 5,480 water systems serving nearly two million families under the Farmers Home Administration (FHA) water and sewer program.[1]

Rural areas, and to a lesser extent small towns, have been deficient in utility services relative to major urban centers. Water and sewage utilities have tended to remain the responsibility of individual consumers and have been inadequate from the standpoint of coal and sanitation. The inadequacy of these privately furnished facilities has not only disadvantaged residents of small towns and the countryside, but also has served to retard economic development in nonmetropolitan areas.

The principal aim of this report is to provide information to assist rural people in evaluating the feasibility of a rural water system and to organize a rural water association. The rationale for a system, characteristics of members and nonmembers, and procedures for forming a rural water association will be outlined.

Rural Water Systems

What Are Rural Water Systems?

Rural water systems are composed of miles of underground pipe, reservoirs, and wells which supply water to farmers, rural residents, and, frequently, small towns. They are operated and owned by the members in the form of a nonprofit corporation or cooperative.

There were 21 water users associations that are officially organized in North Dakota[2] as of January, 1975 (Figure 1):

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*Nelson is an assistant professor and Hoffman is a former graduate research assistant, Department of Agricultural Economics, North Dakota State University, Fargo, North Dakota.

[1]U.S. Department of Agriculture, "News," No. 2617-73, U.S. Department of Agriculture, 1973, p. 3.

[2]"Rural Water Systems Making Progress," North Dakota REC Magazine, September, 1974, pp. 10-13.

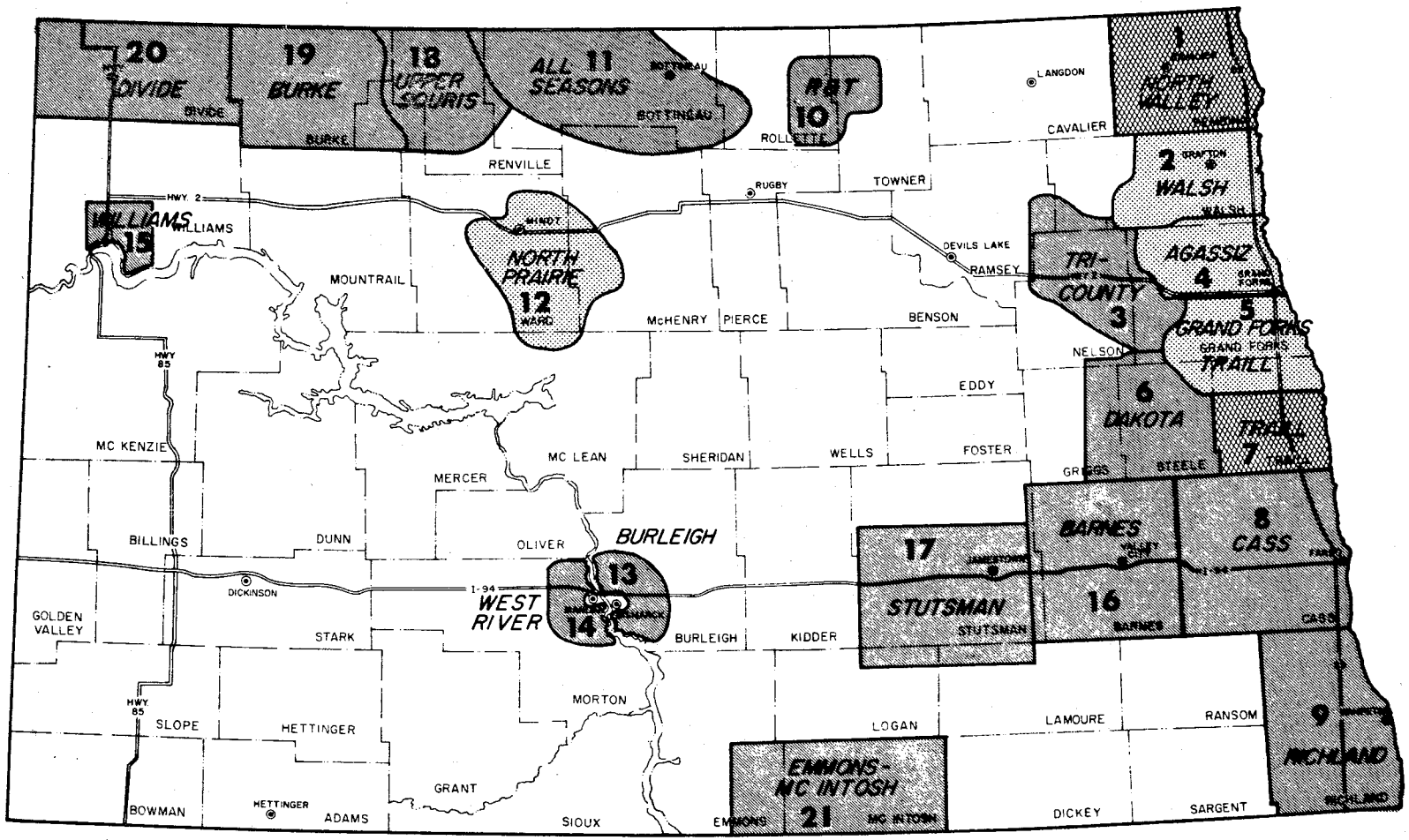

FIGURE 1. RURAL WATER USER ASSOCIATIONS IN NORTH DAKOTA, FEBRUARY, 1975

SOURCE: K. B. MACKICHAN & ASSOCIATES, INC., FEBRUARY, 1975.

STATUS OF WATER SYSTEMS

- OPERATIONAL
- UNDER CONSTRUCTION
- PLANNING STAGE

1. North Valley
2. Walsh
3. Tri-County
4. Agassiz
5. Grand Forks-Traill
6. Dakota
7. Traill County Rural
8. Cass Rural Water
9. Richland Rural
10. RET
11. All Seasons
12. North Prairie Rural
13. Burleigh
14. West River
15. Williams Rural
16. Barnes
17. Stutsman
18. Upper Souris
19. Burke
20. Divide
21. Emmons-McIntosh

Others areas within the state are considering rural water systems for the near future.

The Grand Forks-Traill System

The Grand Forks-Traill Water Association is the first rural water district formed in North Dakota. The official organization of the water district took place on June 26, 1969. The first water was obtained from the system on approximately October 15, 1972. The final completion date for the entire system was December 15, 1972.

The Grand Forks-Traill Water Users Association serves approximately 1,230 members. The system consists of 500 miles of water pipe, five large wells, and nine reservoirs. The major components of the system are designed for at least 40 years of use with minor repair. The system will provide a minimum tap pressure of 20 psi with simultaneous demand from all meters. There is no built-in design for fire protection other than providing an improved source of water.

The total construction costs amounted to approximately $3,975,000.[3] The cost was financed by a 40-year loan from FHA. The loan will be repaid from the income of the sale of water. This is the only source of revenue for the association as water associations do not tax their members. The interest rate paid by the association may fluctuate, but cannot be over 5 percent. The 1971 rate was 5 percent. This was the largest loan that the FHA had made in the United States for this type of project up to 1972.

The geographic area of the Grand Forks-Traill Rural Water System includes 22 townships in parts of Grand Forks and Traill counties, North Dakota. The service area is about 530 square miles. The total population of the area in 1970 was 5,583.[4] The population decreased 15.9 percent from 1960 to 1970. The area lies in the Red River Valley of the North and is bounded by U.S. Highway No. 2 on the north, the Red River on the east, North Dakota Highway 200 on the south, and an irregular line on the west (Figure 2).

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[3]Ibid., p. 10.

[4]Voelker, Stanley W., and Thomas K. Ostenson, Population Changes Within Census County Divisions of North Dakota, North Dakota State University, Fargo, North Dakota, March, 1971, pp. 16-22.

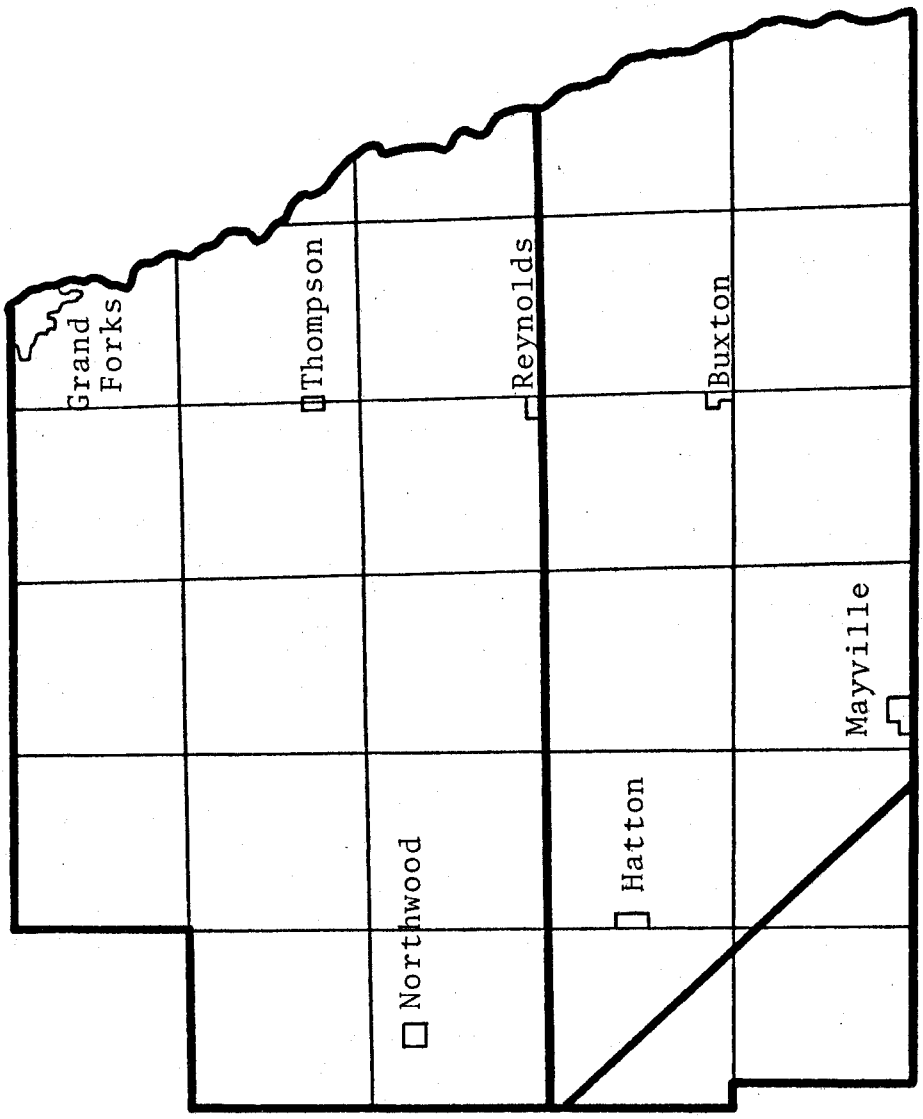

FIGURE 2. DESIGNATION OF AREA INCLUDED IN GRAND FORKS-TRAILL WATER USERS ASSOCIATION

The system serves farmers and rural residents in the area, as well as the incorporated cities of Thompson, Reynolds, and Buxton; the unincorporated cities of Merrifield and Cummings; a country club; and supplies the municipal water systems of Northwood and Hatton. The water service to Northwood and Hatton is on a wholesale basis as they had a city water system prior to 1972. The water is delivered to a reservoir furnished by these two cities and then resold by the municipal utility to individual consumers.

Most of the farms in the area are now cash-crop farms engaged in the production of barley, wheat, sugarbeets, potatoes, flax, pinto beans, and sunflowers. There are relatively few livestock in the area.

Why Rural Water Systems?

Insufficient water supply is the most obvious reason for the formation of a rural water system. Insufficient water supply may mean sufficient quantity of poor quality water or sufficient quantity of good quality water, which is only available at a very high cost.

Technological advances in polyvinyl "plastic" pipe and in the large "plows" which bury the pipe seven feet deep have facilitated rural water systems. The final requirement, financial assistance, is being provided by the Farmers Home Administration (FHA).

The need for rural water systems has existed in North Dakota since the first farmers settled the land. However, recent changes in technology and credit availability have been the real keys to opening the door for rural water systems.

Cost Comparisons

Cost serves as a common denominator in comparing rural water systems with commercially hauled water and private wells. A rural water system can provide water at less cost than either a private well or commercial hauling at a monthly consumption of 5,000 gallons (Table 1).[5] Commercial hauling is more than twice as expensive as the other two alternatives. Commercial hauling is less expensive than a private well only at less than 1,000 gallons per month and is less expensive than the rural water system[6] at less than 375 gallons per month.

The difference in cost between a private well and a rural water system is negligible at 5,000 gallons per month. The rural water system is increasingly less expensive than private wells as consumption drops below 5,000 gallons per month. Conversely, a private well has a cost advantage over a rural water system at consumption levels greater than 5,000 gallons per month.

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[5]At the rate schedule in effect in August, 1974.

[6]Minimum annual cost of a rural water system is $121.23.

TABLE 1. COST COMPARISONS OF PRIVATE WELLS, COMMERCIAL HAULING, AND RURAL WATER SYSTEMS

	Private Well[a]	Commercial Hauling[b]	Rural Water System[c]
Investment Costs:			
Well (20 Years)	$ 850.00	---	---
Pump and Equipment (20 Years)	1,150.00	$150.00	---
Cistern (50 Years)	---	500.00	---
Fees (50 Years)	---	---	$250.00
Total	$2,000.00	$650.00	$250.00
Annual Cost of Investment-- Amortized at 10 Percent	$ 235.02	$ 76.38	$ 25.23
Annual Cost at 5,000 Gallons Per Month:			
Maintenance	$ 35.00	$ 10.00	---
Operating	15.00	10.00	---
Fees	---	600.00	$252.00
Total	$ 50.00	$620.00	$252.00
Total Annual Costs	$ 285.02	$696.38	$277.23

[a]Well costs were obtained in July, 1974, from a private driller and were based on a four-inch diameter well and depth of 100 feet. Pump and equipment costs included the pump, pipe, pressure tank, screens, and fittings.

[b]Based on a constant fee of $10 per 1,000 gallons, plus cost of pressure pump and tank and cistern.

[c]Based on August, 1974, rate schedule of the Grand Forks-Traill system.

Caution must be taken when viewing the cost data as costs may vary by location, depth, and diameter of well, driller charges, etc. In addition, the cost estimates are based on new or replacement value of all required equipment to obtain water. Many families have made this investment to obtain water and only the additional or future costs should be considered in the short-term, decision-making process.

Rationale for Joining or Not Joining System

Members and nonmembers of the association were asked to specify their reasons for joining or declining membership in the water association. Five different reasons were accepted from each person, with the first reason given a point value of five and subsequent answers one less for each response. A total value was calculated for each response to facilitate ranking their reasons in order of importance. The rationale for joining the system is shown in Table 2.

TABLE 2. RATIONALE FOR JOINING THE GRAND FORKS-TRAILL WATER ASSOCIATION, 1972

Reason	Total Points[a]	Percent
1. Convenience	536	37.3
2. Increased Quantity of Water	181	12.6
3. Stable Quantity of Water	180	12.5
4. Community Pressure	121	8.4
5. Cost of Hauling Water	89	6.2
6. Improved Quality of Water	79	5.5
7. Effect on Housing Value	60	4.2
8. Effect on Land Value	56	3.9
9. Cost of Well	35	2.4
10. Reserve Supply of Water	11	.8
11. Stable Pressure for Water	4	.3
12. Penalty for Late Membership	4	.3
13. Other than Listed	81	5.6
Total	1,437	100.0

[a]Five reasons in order of importance were obtained from each respondent, the first reason was given a value of five and subsequent reasons one less for each response and the final step was to sum the total points for each reason.

Most people joined the system for the convenience of having an increased and stable supply of water available. This is indicated by the first three reasons for joining the system. The fourth reason, community pressure, refers to an individual joining the system to assure that the system would come into the community. An example of community pressure is a farmer who wants to join the system but is isolated from other members. He would have to convince the people living near him to join the association, thereby decreasing the cost for the system to come into that area. The increase in land and housing value from having an adequate water supply was also rated high.

Cost of hauling or private wells relative to the anticipated costs of the system water had little influence according to members of the system. Nonmembers expressed more concern about cost as the proposed rates of the system was the fourth most important reason for not joining the system (Table 3).

The first two reasons for not joining the system were consistent with the previous information; the persons who had a satisfactory well or other water sources were not likely to join the system. The third reason, low water consumption, was given more frequently by older people with no children and a small amount of water using equipment. The fourth reason, rates being too high, coincides with the low consumption of water. It should be noted that a person who uses a small quantity of water may pay less per month for hauled water than the minimum rate required each month by the water association.

Expected Impact of the System

Members of the water association were asked what items they expected to purchase or what other changes they were going to make as a result of the water system (Table 4).

TABLE 3. RATIONALE FOR NOT JOINING GRAND FORKS-TRAILL WATER ASSOCIATION, 1972

Reason	Total Points[a]	Percent
1. Present Water Quantity Satisfactory	93	24.0
2. Present Water Quality Satisfactory	78	20.1
3. Low Consumption of Water	65	16.8
4. Rates Too High	49	12.6
5. Doubts About System	43	11.1
6. Plan to Retire	17	4.4
7. Plan to Move	7	1.8
8. Investment in Present Water System	5	1.3
9. Poor Water Quality of Water System	1	.2
10. Other than Listed	30	7.7
Total	388	100.0

[a]Five reasons in order of importance were obtained from each respondent, the first reason was given a value of five and subsequent reasons one less for each response and the final step was to sum the total points for each reason.

TABLE 4. WATER USING EQUIPMENT EXPECTED TO BE PURCHASED AS A RESULT OF THE GRAND FORKS-TRAILL WATER ASSOCIATION, 1972

	Percent of Members Interviewed (166) Expected to Purchase Item	Actual Number	Approximate Cost Per Item	Total Value
Automatic Clothes Washer[a]	26	43	$214.95	$ 9,242.85
Dishwasher[a]	13	21	264.95	5,563.95
Garbage Disposal[a]	15	25	69.95	1,748.75
Electric Water Heater[a]	22	36	106.95	3,850.20
Water Softener[a]	28	46	269.95	12,417.70
Bathroom (Installing All Fixtures)[b]	9	15	950.00	11,250.00
Laundry Facilities	5	8	400.00	3,200.00
Other Items	13	21	---	---
Total				$47,275.45

[a]Price information obtained from Montgomery Ward, 1973.
[b]Price information received from Foss Plumbing and Heating, Fargo, North Dakota. 1973.

Twenty-eight percent of the members of the water association expected to purchase new water softeners. Automatic clothes washers and water heaters were also expected to be purchased by a large portion of the members, 26 and 22 percent, respectively. If all items are purchased as expected and this sample (166 households) is representative of the total membership of the association (1,032 households in 1972), a total of $293,902 may be spent on water using appliances (1972 prices).

Ten percent of the 33 farmers who produce livestock reported they would increase their livestock inventories as a result of the water system. Also, 14 percent of the 58 farmers who did not have livestock at the present time did expect to go into livestock production when the system begins operation. The anticipated increase in livestock numbers is indicated in Table 5. The increase is substantial considering that there was only a total of 23,800 livestock produced in the area in 1972.[7]

TABLE 5. ANTICIPATED INCREASE IN LIVESTOCK INVENTORIES OF MEMBERS OF THE GRAND FORKS-TRAILL WATER ASSOCIATION, 1972

Type of Livestock	Expected Increase in Inventory	Price Per Animal	Total Value
Beef Cattle	1,325[a]	350	$463,750
Dairy Cattle	30	450	13,500
Swine	270	120	32,400
Total			$509,650

[a]One farmer accounts for an increase of 1,000 head.

The farmers with livestock were surveyed as to the economic feasibility of livestock production under the water usage rate structure set by the association. Sixteen percent thought that the rate schedule was too high. Fifty-nine percent viewed the rate structure as being high, but thought production would be feasible. The other 25 percent felt that the rate schedule was favorable for high levels of water use.

There was no increase in the value of farmland that could be directly related to the new water system in 1972.[8] The average land value quoted by the landowners was $218 per acre.

The water association did increase the value of rural residential lots. All of the farm homes in the Grand Forks area capable of being occupied have been bought or rented.[9] The water association probably had some effect on the increased occupancy by making a stable water source available to these farm sites. Eleven percent of the 166 members interviewed stated that an anticipated increase in land value was a reason for joining the water association. Changes in lot values in town were estimated. Some lots in Thompson, North Dakota, have increased in value from $500 in 1971 to $2,500 in 1973.[10] Most

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[7]Statistical Reporting Service, U.S. Department of Agriculture, and Agricultural Economics Department, North Dakota State University, North Dakota Crop Livestock Statistics, Fargo, North Dakota, May, 1973, pp. 47-48.

[8]Interview with Grand Forks County Agent, Grand Forks, North Dakota, March, 1973.

[9]Ibid.

[10]Interview with Dick Morgan, President of the Chamber of Commerce, Thompson, North Dakota, March, 1973.

of the housing development is taking place close to the city limits of Grand Forks and in the towns of Thompson and Reynolds. It is difficult to determine how much of the increase in housing is due to the water system and how much is due to other factors.

Reynolds was installing a city sewage system at the same time as the water system. The residents had been individually responsible for their own sewage system previously. There was no construction activity in Reynolds in 1972, but considerable housing construction was expected in the following years. All of the vacant lots in Reynolds were purchased by a financial firm located in Grand Forks.

There was a substantial amount of building occurring in Thompson, with 30 new homes constructed by 1973. Twenty-one new homes were built in 1972.[11] The average value of these homes was approximately $25,000. A new eight-plex apartment also has been constructed in Thompson.

There are three operating trailer courts currently connected to the system.[12] Two were new and an older one had been closed because of the lack of water prior to the existence of the system. One of the courts was constructed on a member's farm with eight trailer spaces available. The other two courts are near the Grand Forks Air Force Base and have 21 total spaces available.

There are new subdivisions being developed on the outskirts of Grand Forks. The subdivisions (as a unit) are not connected to the water system, but individuals were able to water from the system if they joined the association when it was formed. The other people on the subdivisons will be able to obtain water from the system when extra reservoirs are built.

An increase in water consumption was expected when the system began operation (Table 6).

TABLE 6. EXPECTED CHANGES IN WATER USE BY MEMBERS OF THE GRAND FORKS-TRAILL WATER ASSOCIATION, 1972

Expected Water Use	Members' Response[a]
	percent
No Change	21
Increase, But Not Double	54
Double	21
Triple	4

[a]Based on response from 166 members.

Seventy-nine percent of the members expected to increase water usage. It is probable that the amount of water used will continue to increase as people adjust to having a stable source of water.

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[11]Ibid.

[12]Interview with Randall Loeslie, Manager of Grand Forks-Traill Water Association, Thompson, North Dakota, May, 1973.

Who Joins Rural Water Associations?

Personal interviews were made in June, 1972, with 166 members of the Grand Forks-Traill Water Users Association and 41 nonmembers in the area (Table 7). The persons contacted were selected through a stratified random sampling procedure.

TABLE 7. CLASSIFICATION OF PERSONS INTERVIEWED BY TYPE OF RESIDENCE AND MEMBERSHIP

Classification	Member	Nonmember
Farm With Livestock	33	23
Farm Without Livestock	58	
Nonfarm Rural Residents	33	18
Rural Town Residents	42	
Total	166	41

Age and Children

The age of adults in the member residences was substantially lower, 55 percent less than 55 years, versus nonmembers where only 30 percent were less than 55 years old. The number of children in the home also differed between members and nonmembers. Sixty-one percent of the member households included one or more children, while only 22 percent of nonmember households contained one or more children. Seventy-six percent of the nonmembers had lived in their present home for more than 20 years as compared to 50 percent of nonmembers.

Water Sources

The source of water prior to the formation of the Grand Forks-Traill Water Users Association appeared to be an important factor in the membership decision. A higher proportion of the nonmembers had their own wells (67 percent) and cisterns-ponds (33 percent) than members (Table 8). Sixty-four percent of the members averaged more than 10 loads annually (1,000 to 2,000 gallons per load) and hauling costs of more than $100 per year were incurred by 51 percent. On the other hand, only 14 percent of the nonmembers hauled more than 10 loads per year and only 23 percent had expenditures for water hauling of over $100 annually. Twenty-five percent of persons who joined the association had been without water for one or more days during the past year as compared to 7 percent of the nonmembers.

Wealth

Wealth also was a distinguishing characteristic between members and nonmembers. Forty percent of the member residences were valued at more than $15,000, while only 7 percent of the nonmembers valued their homes above $15,000. More than 320 acres of land were owned by 74 percent of farm members as opposed to only 30 percent of farm nonmembers.

TABLE 8. SOURCE OF WATER, MEMBERS AND NONMEMBERS, GRAND FORKS-TRAILL WATER ASSOCIATION, 1972

Source	Member	Nonmember
	percent	
Well	47	67
Hauled	71	60
10 or More Loads Per Year	64	14
$100 or More Expenditures	51	23
Rain (Cistern and Ponds)	18	33

Statistical Analysis

A statistical analysis was performed to identify the characteristics which were significantly related to members and nonmembers.[13] Fourteen characteristics were significantly related to the decision to join or not join the rural water association (Table 9).

Households with high values of housing and water costs had a greater probability of being a member than households with low dwelling and water costs (designated by a + sign in Column 1). Presence of a cistern, however, would decrease the chance of the individual joining the association (designated by a - sign in Column 1). Use of these three characteristics led to a correct classification of 71 percent of 207 households in the total sample into member and nonmember groups.

Division of the respondents into nonfarm and farm groups resulted in 74 percent of farm residents and 69 percent of nonfarm residents classified correctly with respect to their membership. Water cost, cisterns, water hardness, and number of household major appliances were significantly related to nonfarm member and nonmember groups. Membership in the system of the farm resident group was related to the value of the dwelling, length of residence, number of dairy cattle, and frequency of washing vehicles at home.

Division of the respondents into four groups yielded better results. Eighty-six percent of the rural nonfarm residents were classified correctly in nonmember and member groups by three characteristics: value of dwelling, length of residence, and age of resident. Two characteristics, total water cost and age of resident, correctly classified 74 percent of rural town residents into member or nonmember groups.

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[13]Discriminant analysis was the technique employed to identify statistically significant characteristics. Each discriminant equation presented in Table 8 was significant at a 5 percent level and each characteristic was significant at a 25 percent level. This means that there is less than or equal to a 25 percent probability of rejecting a characteristic which is actually related to the membership decision.

TABLE 9. SUMMARY OF SIGNIFICANT CHARACTERISTICS IDENTIFIED IN THE STATISTICAL ANALYSIS OF MEMBERS AND NONMEMBERS[a]

Characteristic	Total Sample	Two-Way Classification		Four-Way Classification			
		Nonfarm	Farm	Rural Nonfarm	Rural Town	Farm Without Livestock	Farm With Livestock
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Value of Dwelling	+		+	+		+	+
2. Annual Water Cost	+	+			+		
3. Houses With Cisterns	-	-					
4. Water Hardness		+					
5. No. of Appliances		+					-
6. Length of Residence			-	+		-	-
7. No. of Dairy Cattle			-				-
8. Gallons Used for Crops			+				
9. No. of Times Vehicles Washed			-				-
10. Age of Resident				-	+		
11. No. of Acres Operated						+	
12. No. of Wells						-	+
13. No. of Times Without Water							+
14. No. of Swine							-
Percent of Sample Classified Correctly	71%	69% Average = 71%	74%	86%	74% Average = 81%	77%	95%

[a]The actual coefficients computed in the discriminant analysis are presented in Hoffman, Clayton, "North Dakota's First Rural Water System," Unpublished M.S. Thesis, Department of Agricultural Economics, North Dakota State University, Fargo, North Dakota, 1973, pp. 74-98.

Farm residents with above average dwelling valuations and number of operated acres were members of the system more frequently than those who had private wells and had lived on farms for many years. Ninety-five percent of the farms with livestock were correctly identified as members or nonmembers by eight characteristics. The value of dwelling, number of wells, and number of times which water was not available were positively related to membership. The number of appliances, length of residence, number of dairy cattle and swine, and frequency of washing vehicles at home were negatively related to membership.

Value of dwelling was the most important characteristic identified in the analysis. It was positively related to membership in five of the seven equations. Annual cost of obtaining water was positively related to membership in three of the seven analyses. Other characteristics, such as length of residence and age of resident, were also signficantly related to membership; however, the direction of their relationship varied among the groups. For example, length of residence was positively related to membership in the rural nonfarm group, but negatively related in the farm, farm without livestock, and farm with livestock groups.

In general, persons likely to support and join a rural water association will:

(1) Own a newer, higher valued home.
(2) Have high annual costs of obtaining water.
(3) Not have a cistern.
(4) Be younger with more children living at home.

How to Organize a Rural Water Association

The process of organizing a rural water association can be quite complex and time consuming. There are at least five major steps to the process, including generation of interest, membership drive, feasibility studies, formal organization, and initial operating procedures.

Generating Interest

The first problem encountered in forming a water users association is to make people aware that there is a program available to assist them with their water needs.[14] Organizational assistance is available from the state office of the Farmers Home Administration (FHA) and extension service personnel, but an area will have to rely primarily on local participation and organization in order to form an association.

The state office of the FHA recommends that the people interested in forming an association try to encourage an existing local organization to support the project. This organization could be a Chamber of Commerce, church organization, county commissioners, or any organization that has some influence in the community.

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[14]Interviews with the officers of the six water associations in North Dakota, July, 1972.

The associations that have been formed in North Dakota have been promoted by existing local organizations or an ad hoc group has set up the initial meetings to create interest in the community. Either method may be used, but it may be more practical to make use of an existing community organization.

When people in an area show interest in forming a water association, informational meetings should be scheduled to explain the rural water association program. Participants in these informational meetings usually include a representative of an engineering firm, a representative of the state FHA office, and officers of other water user associations.

Scheduling informational meetings at different dates and locations eases the problem of obtaining membership commitments in a two-fold manner: (1) it reduces the possibility of conflicts with other events and (2) provides answers to questions that people have after the initial exposure to the project.

A steering committee should be formed if there is enough interest shown at the informational meetings. There is not a fixed number of people to serve on a steering committee, but an important criterion in selecting a committee is to have a representative from all areas within the potential borders of the association.

Membership Drive

The steering committee is responsible for making a preliminary survey of the water requirements in the area and contacting each prospective member. Presentation of the case for membership is more effective if the committee member is well known by the prospective members. If there is a personal conflict between a committee member and some of the people in his designated area, some other member of the committee should be selected to talk to them.

A lawyer should be engaged at this stage to assist in writing a membership contract. This contract should specify the initial membership fees, what they can be used for, and what happens to any nonspent funds. In addition, a brief questionnaire should be developed to obtain information on each person contacted. This questionnaire should include:

(1) Number in the household.
(2) Estimate of water consumption.
(3) Number and type of livestock.
(4) Present sources of water.
(5) Reasons for not paying the membership fee.

A pamphlet should be distributed to each contacted household. The pamphlet should contain essential information about water associations in the state and the Midwest area. Information included would be the probable cost for members, required density of members, expected quality of water, and advantages to communities and farm operations.

When a person indicates interest as a water user, he should be requested to pay a membership fee. The first two associations in North Dakota required their potential members to pay $50 as an initial fee and $200 before final connection to the system. Problems have occurred in collecting the $200 portion

of the fee, and these two associations recommend that the whole membership fee be collected at one time. The $250 membership fee was recommended by FHA and may vary in other associations.

The membership fees are used to defray initial costs of the association and what is not expended is put into a reserve fund. Should the association disband, any money left from the membership fee is normally returned to the members.

Some people may not want to join the association when first contacted. The reasons should be recorded and this can be used as a guideline if there is a need to recontact the person at a later date.

After the steering committee has contacted all of the people in the area, a meeting should be held with FHA to determine if there are enough members to form an association. FHA makes an estimate of the revenue from water usage by members; and if this will cover the operating expenses and repay the FHA loan, an association is tentatively feasible.

The cost of installing a rural water system is approximately $8,000 to $10,000 per mile. Other costs taken into consideration are maintenance of the system, manager salary, and billing costs.

The revenue is calculated by multiplying the estimated monthly use per member by the appropriate cost on the rate schedule. An estimate of monthly use can be derived from the water survey questionnaire completed by members when they pay their membership fees.

The rate schedule is partially determined from this usage estimate. The rate schedule that the members are willing to pay will vary in different areas depending on their water needs. An area that has a large number of members which have a difficult time obtaining water may be willing to pay a higher rate schedule than an area where members already have a fairly good water supply. The rate schedule in effect in August, 1974, for the Grand Forks-Traill Water Users Association has an $8 minimum charge (Table 10).

TABLE 10. RATE SCHEDULE FOR THE GRAND FORKS-TRAILL WATER USERS ASSOCIATION, AUGUST, 1974

Amount of Gallons	Cost/1,000 Gallons
First 1,000	$8.00
Next 2,000	3.50
Next 2,000	3.00
Next 2,000	2.50
Next 5,000	2.00
Next 5,000	1.50
Next 8,000	1.25
Over 25,000	1.00

Source: Personal Interview, Manager, Grand Forks-Traill Water Users Association, August, 1974.

The rate schedule is reviewed each year and can be adjusted if either a surplus or deficit of funds is found after all expenses have been paid, including those required by the terms of the credit agreement.

Formal Organization

The association can be formed as either a nonprofit corporation or a cooperative.

Under FHA financing, all profits to a corporation, after reasonable reserves, are to be passed on to consumers in more favorable rates.[15] No profits can return directly to member users, so a nonprofit corporation is probably the most desirable form of organization. A cooperative would transfer the profits in the form of dividends instead of lower rates.

The organization of either a nonprofit corporation or a cooperative is very similar.

Five or more adults, one of whom must be a resident of the state, may form a cooperative by signing, acknowledging, filing, and recording the articles of the association. The articles have to be filed with the Secretary of State and a $16 filing fee is required.

A nonprofit corporation is a corporation having no capital stock and not being operated for financial profit. One or more persons may incorporate a corporation by signing, verifying, and delivering articles of incorporation in duplicate to the Secretary of State along with a $16 filing fee.

Feasibility Study

If the FHA tentatively approves the eligibility of the association, the steering committee can use part of the money secured from the membership fees to hire an engineering firm to conduct a detailed feasibility study to answer the following questions:[16]

(1) Where do the people live in relation to each other?
(2) What would be the best source of water for people in this area?
(3) What size and type of distribution lines would be needed to supply the water to the members? Where would the lines be located?
(4) What is the estimated cost of the project?
(5) What is the average cost per member?

This feasibility study must be completed before a loan to a rural water association can be approved by the FHA.

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[15]Personal letter written by Richard L. King, Attorney for Grand Forks-Traill Water Association, to author, February, 1973.

[16]United States Department of Agriculture, Financial Assistance to Small Towns and Rural Groups, Farmers Home Administration, Washington, D.C., March, 1970, p. 3.

When the feasibility study has been reviewed and membership funds have been collected, the FHA authorizes the loan docket to be completed.

An association indebtedness to the FHA could not exceed $4,000,000 when the first North Dakota applications were made; however, at the present time there is no legal limitation on the amount of the loan. The loan is made to an association based on need, feasibility, and repayment ability. Repayment ability is determined by the projected amount of water that will be used by the members.[17]

The maximum term on all loans is 40 years. However, no repayment period can exceed any statutory limitation on the organization's borrowing authority nor the useful life of the improvement to be financed. The interest rate varies, but cannot legally exceed 5 percent.[18]

After the water association has been approved, the engineers begin work on the final design of the system. They determine the number of members to be connected to the system. An average of one user for each one-half mile of pipeline appears necessary in order to make construction feasible in North Dakota. A member may not be connected to the system if he is isolated in relation to other members. The membership fee is refunded when this occurs.

When the final design is completed, it will be submitted to the FHA along with the entire loan docket for final approval.

The contracts for construction are released after all papers are reviewed by the FHA. The contract is between the association and the construction firm.

Items that should be contained in the contract are payment schedule, penalty for late compliance, warranty of the construction work for an extended period of time, and possibly a performance bond. A performance bond requires the contractor to perform specifically what he has agreed to do.[19]

The contractor is reponsible for bringing the pipe to a central location in the farmyard of each rural member. The members that live in town will have the pipe laid to the edge of his lot.

The contractor is also responsible for damage to crops and to return the land to the same or reasonably the same condition it was prior to laying of pipe.

The association provides the curb stop, pressure reducing valve, and the meter. Members are responsible for connecting their water line to the curb stop and providing a frost proof area, such as the house basement, for the meter. Members will have to install a frost proof pit for their equipment if a basement is not available.

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[17]U.S. Department of Agriculture, op. cit., p. 3.

[18]Ibid.

[19]Black, Henry Campbell, Black's Law Dictionary, West Publishing Company, St. Paul, Minnesota, 1957, p. 267.

Operating Procedures

Many of the water user associations in North Dakota have contracted with a rural electrical cooperative to handle the billing and accounting procedures. This appears to be a more efficient method than for each association to set up its own accounting office. Each member is responsible to read his own meter and submit the reading to the association. The charges are calculated and a bill is sent to the member.

The size of the water systems in North Dakota, $2 to $4 million investment, makes a full-time professional manager a necessity. A good manager, thus, relieves the board of directors of many problems and is probably the best guarantee of satisfied members and a smoothly functioning system.

Additional people may be interested in joining the association after the system is operating. Policies for late joiners differ between associations. The first item that has to be taken into consideration is the design criteria. Systems are designed to provide a certain amount of water per any 24-hour period. If the association has a surplus which can be used, there may be provisions for additional memberships. New members would have to wait for supplementary financing to become available if the system is operating at full capacity. The funds would be used for larger pipe sizes and/or additional reservoirs.

Summary of Responsibilities

The steering committee plays the most critical role in the organizational process. They set up and conduct the informational meetings; make initial contacts with the attorney, engineering firm, and the FHA; conduct the preliminary survey of potential members; and collect membership fees. They are responsible for formally incorporating the organization and remain in charge until a board of directors is selected.

The engineering firm's responsibility can be extensive or quite limited. The engineering firm which was hired by the first two districts took a very active role in organizing informational meetings, contacting potential members, and assisting the steering committee in all aspects of the organizational stage. The engineering firm may also prepare reports for the lending agency and assist in advertising for bids. The other responsibilities of the engineering firm are to conduct the final feasibility study, design of the actual system, and supervision of construction.

The attorney for an association has a multitude of responsibilities.[20] He becomes involved in the early stages as a legal counsel to the steering committee and aids in preparing contracts, securing a charter from the Secretary of State, and completing all forms and procedures on financing from the FHA. The attorney is also needed to coordinate with engineering firms on advertising for construction bids, securing rights-of-way and real estate necessary for construction, assisting in negotiating contracts with any

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[20]King, Richard L., "A Checklist for Organizing a Rural Water Distribution System," presented to class in Agricultural Law, University of North Dakota Law School, Grand Forks, North Dakota, February 13, 1973.

wholesale customers, and checking the legality of construction contracts. During the actual construction stage, the attorney continues to be responsible for the legal aspects of any changes in easements, rights-of-way, and disagreements with any of the parties involved in the system. In addition, the attorney frequently acts as the secretary of the board of directors and is involved in setting up the management and accounting procedures for operation of the system.

The Farmers Home Administration has been the financing agency for each water users association in North Dakota. As such, the FHA has been involved in all aspects of organization and operation, particularly in setting membership fees, rate schedules, economic feasibility of the associations, and completion of final loan agreements.

The board of directors is the governing arm of the association. They are elected by the members and represent the members when dealing with other groups and individuals. The board is charged with making policy within the bylaws of the association and must also make decisions on details of system operation. The members have the responsibility of electing the board of directors, reading their meter, and submitting it and payment to the association. In addition, the members frequently are required to make the connection from their system to the association's water lines.