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The Connection Between Water and Rural Industrial Development in South Dakota by



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During the 1970's, South Dakota attempted to diversify its economic base through rural industrial development. Manufacturing employment increased by 65%, from 15,800 jobs in 1970 to 26,000 jobs in 1980. A steady decline in farm numbers and related employment is likely to result in continued local, regional, and state attempts to expand manufacturing in South Dakota, in order to provide off-farm employment.

South Dakota is also currently placing major emphasis on developing its water resources--through both single- and multiple-purpose development projects. Irrigation, domestic, livestock, and industrial (manufacturing and processing) water uses are all likely to receive consideration during the 1980's in S. D.

Because of the strong interest within S.D. in both water development and rural industrial development, a study was undertaken in South Dakota State University's Economics Department on water requirements for rural manufacturing and processing firms and on the costs of supplying water to such firms. This issue of the Newsletter presents some of the findings of that recently completed study. Data for the study came from 1979 surveys of rural manufacturing firms which established operations in South Dakota during the 1970's.

Water Usage by Different Types of Industrial Firms

Industrial firms in the Instruments, Food Processing, and Stone & Concrete categories averaged the highest total annual use (Table 1). They were high in water usage per employee, as well, but so also were firms in the Metal Products and Rubber & Plastics categories. Chemicals and Machinery manufacturing firms were next in their water usage per employee. The Food Processing industry, which involves livestock slaughter among other things, had by far the highest per-employee water usage.

Table 1. 1978 Water Usage by Standard Industrial Classification Category of Manufacturing Firms in South Dakota

Standard Industrial Classification	Average Water Usage (1,000 gallons)	Average Water Usage per Employee (1,000 gallons)
Instruments	20,470	37
Food Processing	7,270	268
Stone & Concrete	3,618	114
Metal Products	1,045	37
Machinery	920	21
Electrical	676	2
Rubber & Plastics	499	37
Chemicals	254	22
Apparel	249	4
Transportation	213	4
Lumber	188	5

Individual firms within these industrial classification categories will obviously vary in their levels of water usage. However, this kind of data does give valuable information to communities in the early stages of planning for water supply expansions or for different types of industrial promotion.

Sources of Water Supply

More than two-thirds of the manufacturing firms surveyed rely primarily on municipal water systems for their water supplies. A substantial number of firms rely on private wells for part or all of their water supplies, however. Some firms rely on private wells for back-up support when municipal ser-

vice is disrupted or inadequate. A few firms indicated that they were drawing on rural water system supplies.

A few firms (14%) indicated that special water considerations were involved in their original decisions to locate in the communities in which they now operate. One such consideration is the presence of a well or water tower at the plant site. Food and Instruments firms cited importance of local water conditions in their plant location decisions more often than did others.

Costs Associated with Water Supplies

Whenever a community is considering expansion of its water system to accommodate a new firm--or new industrial growth in general--costs and benefits of such expansion to the community should be weighed. Costs of the expansion often need to be estimated in a preliminary way, prior to a decision on whether or not to contract a full feasibility study. A budgeting format and cost information on a number of key items were produced in this study, as aids to local planners in such preliminary cost estimations. The study also yielded information on how local water supply costs are shared between municipalities or local development corporations in South Dakota and newly located

manufacturing firms hooking up to water systems.

An attempt was also made to determine if local manufacturing firms pay their "fair share" of local water supply costs. Average water payments by 18 firms in 12 communities were compared to average costs of supplying municipal water in the firms' respective communities. Per-gallon water payments by the industrial firms were also compared to average, per gallon payments by all customers in each of the case study municipal water systems. The findings were mixed. In general, however, no clear, consistent pattern of either "over" or "under"-payment by industrial firms for municipal water was detected.

For More Information

More detailed findings from this study are contained in forthcoming SDSU Agricultural Experiment Station Bulletin No. 678, entitled Water Use by Rural Manufacturing Firms in South Dakota. Individuals involved in planning for rural industrial development, rural water systems, or municipal and industrial water projects may wish to request this publication from the authors of this Newsletter.

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