Non-Community Water Systems

Because of resource constraints, the Needs Survey did not include non-community water systems. Non-community water systems are made up of transient non-community water systems and non-transient non-community water systems. Transient non-community water systems serve at least 25 persons more than 60 days out of the year, but do not regularly service any given 25 more than 6 months of the year. Examples of these systems are gas stations and road side rest areas. A few are day camps for children. Non-transient non-community water systems regularly serve at least 25 of the same persons more than 6 months of the year where those person are not full-time residents. Examples of this type of system are factories, schools, and office buildings.

Only those non-community water systems that are not-for-profit are eligible to receive funding from the Drinking Water State Revolving Loan Fund. These are the only non-community water systems that would be included in the Needs Survey. EPA estimates that 10 percent of the roughly 90,000 transient non-community water systems and that approximately half of the 20,000 non-transient non-community water systems are not-for-profit organizations. In total, approximately 19,000 non-community water systems are not-for-profit systems.

With the data on hand, it is impossible to accurately estimate the need of not-for-profit non-community water systems. However, it is likely that their needs are less than those of community water systems serving the same number of people. Non-community water systems usually have fewer sources with less capacity, smaller storage and treatment facilities, and very limited transmission and distribution systems. Source, storage, and treatment facilities are smaller for non-community water systems because the population served is often not in full-time residence. The peak demands faced by community water systems—due to morning showers and night-time meal preparation, for example—do not occur at many non-community water systems. Also, non-community water systems do not have to provide capacity for fire protection or for irrigation of residential lawns. More importantly, most non-community water systems consist of one or perhaps a few buildings and do not have substantial distribution and transmission networks.

A rough estimate that significantly overstates the need of not-for-profit non-community water systems could be made by examining the source, storage, and treatment needs of the smallest community water systems. This methodology results in a need of $125,000 per system. When this need is applied to the not-for-profit non-community water systems on a State-by-State basis, the relative distribution of need among States is not significantly affected. For this reason and because resource constraints prevented EPA from developing a high-quality need estimate for non-community water systems, an estimate of need for these systems was not included in this report.

Separate State Estimates

The Needs Survey did not include estimates for all types of need. Two States felt that it was important to report costs associated with needs not included in the survey. One reported needs for anticipated future growth, and the other reported needs for refinancing existing loans for drinking water projects. The need reported by the States in their separate State estimates totals $197 million. A list of the estimates is available in Appendix D. Separate State estimates were not included in estimates of need listed elsewhere in the report.

Alaska Area Native Health Service, OEHE

These Alaska Native children haul water from a public watering point. Many Alaska Native people do not have water in their homes.

Need for Households Not Served by Community Water Systems

The Needs Survey was not designed to estimate the total need for households not served by community water systems. Statistics from the 1990 Census show that approximately 16 million households in the United States are not served by community water systems. Of these, close to 15 million households are served by private drilled or dug wells and over 1 million households take their water from other sources such as cisterns, springs, rivers, lakes, or other untreated surface water sources. The risks faced by households not served by community water systems are not well understood because of a lack of information, but the available data show that public health risks are significant for many of them.

Hauled Water and Untreated Surface Water Sources. The more than 1 million households that take water directly from cisterns, springs, rivers, lakes, and other untreated surface water sources make up just over 1 percent of the total households in the nation. Census data show that 2 percent of American Indian households on federally recognized Tribal lands and 20 percent of mainland Alaska Native households take their water from these sources.

Hauled water and water from untreated surface water sources can be provided as running water, but often it is stored in barrels. Hauled water and water from untreated sources may contain microbiological contaminants that can make people ill. A 1984 EPA study of national rural water conditions found that total coliform bacteria were present in the water supplies of 78 percent of households that use these sources.[3] Coliform bacteria are an indication that disease-causing microbiological contamination could be present.

Households without running water are of particular concern because opportunities for people to become ill are abundant when running water is not available. Running water is important to basic sanitation. It is needed to flush toilets, wash hands, prepare food, and bathe. Living conditions for households without running water are below those that most of us take for granted. Because of a lack of data, we do not know how many households do not have running water, but homes without running water can be found across the nation.

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[3] U.S. EPA. Office of Drinking Water. *National Statistical Assessment of Rural Water Conditions.* EPA 570/9-84-003, June 1984.

Hauled Water and Untreated Sources—Three Examples

Colonias—*Colonias* along the Mexican border often do not have a safe supply of running water. In many of these communities, people haul water from a central watering point or untreated surface water source. Even in cases where water is piped, many households draw untreated water from irrigation canals or unsafe ground water sources that present a significant threat of disease. In 1995, it was estimated that 339,000 residents lived in *colonias* in Texas border counties alone. Waterborne and communicable diseases are common throughout the border area. In some towns on the Texas-Mexico border, one-third of children contract hepatitis A by age 8, and nine out of ten adults by age 35.[4] In a few border counties, the rate of hepatitis A is more than triple that of the rest of the State. The lack of safe piped water and wastewater disposal is a significant factor contributing to the high incidence of disease.

The Navajo Shonto Chapter—Water for the Navajo Shonto area is available from one central watering point that is in need of rehabilitation. The area served covers approximately a 15-mile radius. A photograph of this watering point is in Appendix B. Although no official count has been taken of the people served by this watering point, it is estimated that 400 to 500 people haul water from this location to their homes. Hauled drinking water faces a risk of contamination during loading, unloading, transport, and storage.

Washeterias Serving Alaska Communities—Especially during cold weather, the only drinking water available to many Alaska Native communities is from the community washeteria. A washeteria is a single building with showers, toilets, and washing machines. The washeteria often doubles as a water treatment plant with heated water storage. Residents haul drinking water back to their homes from a watering point at this location. In most cases, water is hauled on a boardwalk that is also used to haul sewage to disposal sites. Sewage spills are not uncommon and the risk of contamination is great.

José Rodriquez

The pump (insert) draws water from this irrigation pond and distributes it, without treatment, to this colonias *community.*

[4] Comptroller of the State of Texas, *Fiscal Notes,* July 1995, p.I.

Private Wells. Approximately 15 million households in the U.S. are served by private wells. Most of these private wells provide an adequate quantity of high-quality water. Much like community water systems, however, some of these wells produce ground water that is not safe to drink. Unlike community water systems, very little is known about the degree of contamination at private wells. Although private wells are tested occasionally for microbiological contaminants and nitrate, almost no testing is done for pesticides, solvents, and inorganic chemicals. Often, private wells are tested only once, immediately after being drilled. According to the National Ground Water Association, 24 States do not require private wells to be tested at all.

Two studies examined the occurrence of total coliform bacteria in water produced by private wells. A 1995 CDC survey of more than 5,500 private wells in nine midwestern States estimates that approximately 41 percent of the wells in those States are contaminated with total coliform bacteria.[5] Even more significantly, the CDC study shows that over 27 percent of the private wells produced samples that were contaminated with *E. Coli*. The presence of this bacteria indicates recent fecal contamination. The results of the National Statistical Assessment of Rural Water Conditions, published by EPA in June 1984, support the findings of the CDC. This nationwide study found total coliform bacteria in over 40 percent and fecal coliform bacteria in 20 percent of households served by private wells.

Microbiological contaminants are the greatest health risk faced by owners of private wells, but other contaminants also pose a risk. In January 1996, the Michigan Department of Public Health recommended that owners of private wells in 10 counties test their water for arsenic. State testing indicates that water from about 2 percent of wells State-wide might exceed the current community water system standard of 50 μg/l.

Communities and households with private wells, especially those in agricultural areas, face the additional risk of nitrate contamination. Nitrate contamination causes "blue baby syndrome" and can lead to the death of infants. In 1986, the United States Geological Survey performed a National Water Quality Assessment case study of the Delmarva Peninsula, which includes most of Delaware and the eastern shores of Maryland and Virginia.[6] The study covered over 6,000 square miles, nearly half of which is used for farming. Fifteen percent of the wells sampled exceeded the EPA maximum contaminant level of 10 mg/l for nitrate. Seven other State and national studies of private rural well conditions report nitrate concentrations in excess of 10 mg/l in 2.4 percent to 23 percent of the wells sampled.

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[5] Center for Disease Control and Prevention, et.al. *A Survey of the Presence of Contaminants in Water in Private Wells in Nine Midwestern States*. Report in Draft.

[6] Hamilton, Pixie and Robert J. Shedlock. *Are Fertilizers and Pesticides in the Ground Water? A Case Study of the Delmarva Peninsula, Delaware, Maryland, and Virginia.* United States Geological Survey Circular 1080. U.S. Government Printing Office: 1993

One reason for contamination at private wells may lie in improper siting and construction of older wells. Although all States now have well construction standards, an unknown number of private wells were constructed before those standards were established. Because of space constraints, a lack of understanding of health implications, and a desire to minimize cost, some older private wells are located too close to the home's septic system or other sources of contamination.

Several States provided partial cost estimates for needs associated with establishing new water systems at communities without safe running water. These communities include those that lack running water and those that depend on contaminated private wells. Estimates from those States are provided below, but are not included in totals elsewhere in the report.

State	Cost Estimate
Minnesota	$5.4 million
New York	$276.4 million
South Dakota	$578.9 million
Texas	$147.9 million
Virginia	$12.1 million
Washington	$5.4 million

Possible Solutions. A lack of information makes it impossible to understand fully the needs for households without a safe supply of running water. Many community water systems are making efforts to address a portion of this problem by extending their service. Some Needs Survey respondents estimated needs for connecting nearby existing homes that do not have a safe or adequate supply of water. These conservative estimates show that the need for connecting these homes would be at least $6.0 billion.

Another potential solution for households without a safe supply of running water is reconstruction of older existing wells. Older existing wells could be upgraded to modern construction standards or replaced by new wells that are drilled away from sources of contamination. Constructing a new well may be the best solution for a household or group of households that do not have a supply of safe running water. In many cases, an aquifer is available to provide safe drinking water, but wells must be properly sited and constructed to make this solution successful. Further study is necessary to understand the needs faced by households not served by community water systems.

Water System Expansion - An Example

Counties in Alabama planned to spend $4.3 million in FY 1995 for expansions of existing water systems to serve rural areas. Within Clay county, the city of Ashland has agreed to add 74,000 feet of water mains, 175 service connections, and 30 fire hydrants in an effort to extend transmission lines beyond city limits. Private wells in this county have shown fecal contamination and contain high levels of iron. When this project is completed, Ashland will have provided service to 471 additional people.

Jim Wendte

Some homes without water service from public water systems store drinking water in cisterns like the one being filled in the photograph above.