

## **A Water Supply and Sanitation Study of the Village of Gouansolo in Mali, West Africa**

Telmo, Andrea

Mali 1999-2001

Michigan Technological University – Civil & Environmental Engineering

Water supply and sanitation are two of the most important sectors in development. Access to water supply and sanitation are basic human needs and rights. Worldwide, 71% of the rural population has access to improved water supply and 38% has access to improved sanitation. In rural Africa, 47% of the population has access to improved water supply and 45% has access to improved sanitation, and in rural Mali the percentages are 61% and 58%, respectively.

The objective of this study was to assess the water supply and sanitation situation in the village of Gouansolo, a rural village in the southwestern part of Mali, West Africa. By conducting an assessment one can determine water supply and sanitation coverage and identify water supply and sanitation problems in the village and then propose solutions to improve water supply and sanitation coverage. Water supply coverage is defined as the percentage of the population with access to safe (improved) water supplies that provide 20 liters/person/day within one kilometer of the household compound. Sanitation coverage is defined as the percentage of the population with access to adequate (improved) sanitation facilities that hygienically separate human excreta from human contact.

When this study was conducted, the village had a population of 836 and was comprised of 46 households with an average household size of 18 persons. Forty- four households were included in the survey. There were 38 water sources in the village. The two types of water supply technologies present were hand dug wells and borehole pumps. There are three types of hand dug wells: improved traditional wells, not improved traditional wells, and modern wells. Well depths ranged from 5.2 to 9.0 meters. Twenty-seven of the 38 water sources had water available year round, and all households had access to a water source with year round availability. The distance traveled to collect water ranged from 3 to 260 meters and the average distance traveled was 44 meters. Although all households had reasonable access to a water supply, not all households collected water from an improved source. The only improved water supply technologies in the village were two borehole pumps. Simple pit latrines were the only type of sanitation facilities present in the village and they are considered to be improved sanitation technologies. The findings of this study determined that 48% of the households in Gouansolo used improved water supplies (i.e., borehole pumps) and 91% used improved sanitation facilities (i.e., simple pit latrines).

The most common water supply problems reported were erosion at the top and bottom of traditional hand dug wells and seasonal availability of water in these wells. The most common sanitation problem reported was deterioration of latrine floors. It was proposed that the most appropriate improved water supply and sanitation technologies to use in the village are protected hand dug wells and simple pit latrines. The cost of cement to construct a 9-meter protected hand dug well was estimated to be \$260 U.S., which exceeds Mali's gross national income per capita, \$240 U.S. The cost of cement to construct a simple pit latrine was estimated to be \$10 U.S. These estimates did not

include the costs of other materials, tools, equipment, labor, and operation and maintenance (O&M). Lack of financial means was identified to be the main obstacle to the improvement of water supply and sanitation and the achievement of 100% coverage in the village.