

Mafi Zongo Water Project

North Tongu District of the Volta Region, Ghana



Engineers Without Borders™-USA (EWB-USA) is a non-profit organization established in 2000 to partner with developing communities worldwide in order to improve their quality of life.

Project Cost
\$150,000
(Over Three Years)

Background

In 1995, approximately 30 communities (population 10,000) in the North Tongu District of the Volta Region organized around the desire for improved water quality and accessibility. With the aid of a locally active NGO, AMURT, the Phase I design and construction of a water system was completed in May 2005. However, the system has experienced some difficulties. As a result, the communities and AMURT have appealed to Engineers Without Borders (EWB) for technical assistance. Having completed an initial assessment of the water system, the EWB student chapter from the University of Arizona (EWB@UA) is in the process of developing solutions and planning for the expansion of the distribution network.



Photo By: Bethy McGehee

The Need

A water purification and distribution system in Mafi Zongo, Ghana is unfinished and experiencing difficulties with its earthen dam, below-ground pipes and treatment facility that could prevent water distribution altogether. While some villages are still waiting to receive pipe stands, the entire community is forced to drink unsanitary water. As a result, communities are plagued with water related illnesses and many must travel long distances to gather unsafe water.

The EWB-USA Response

Assessment

The EWB@UA team completed a first assessment visit in January 2006. They completed a health assessment to determine the overall condition of the villagers as well as identifying the water-related illnesses the plagued community members. The team completed site surveying to determine the capacity of the watershed area, dimensioned the existing treatment system and analyzed the water quality.

Interim Progress

Analysis was completed to ensure that the watershed would collect enough water during the rainy season to supply all 30 villages with water through the end of the dry season. Construction drawings were created for the water treatment plant and given to the community. Plans for solving water quality issues were initiated.

Following up

A second assessment trip was completed in August 2006. The team taught local villagers how to properly install and repair PVC pipes, completed surveying around the treatment facility to solve drainage issues, waterproofed the system's water tank and assessed damage to the earthen dam and spillway which was damaged during heavy rains. The team continued to analyze the water quality and donated a digital turbidity meter to the community. Samples of sand from the slow sand filter were collected to troubleshoot slow filtration rates.

Moving Forward

The EWB@UA team is in the process of designing additional pre-treatment to improve influent into the slow sand filter and ultimately provide higher quality water to the villages. The team plans to travel back to supervise the construction of the new pre-treatment (roughing filter) and spillway in August 2007.

The new roughing filter will ensure continued operation of the slow sand filter and help provide all 30 villages with safe drinking water. A hydrologic model is being developed to help the villagers ration water during dry years and ensure an uninterrupted water supply throughout the year. EWB@UA also plans on addressing pipeline leakage issues that exacerbate the water security concerns and optimizing the efficiency of the water pumps to reduce ongoing project costs.