

WATER SUPPLY, DISTRIBUTION AND STORAGE SAN PABLO DE AMALI, ECUADOR

ABSTRACT

Our organization is a small non-profit student organization with a mission to work with developing communities to establish safe infrastructure, clean drinking water, and sanitation through the implementation of engineering projects. We have both local and international outreach projects, with the main project currently being the providing of access to clean water for the community of San Pablo de Amali, Ecuador. The first phase of this project was completed in 2020, resulting in the installation of two large storage tanks, a reservoir, earthen dam, intake, and distribution piping, and house connections to the community.

San Pablo de Amali, Ecuador is a small farming community with a population of 200 people. For nearly fifty years, this community has been served by a water supply system, however a few years ago, the system reached its useful life and failed to supply clean drinking water. In addition, this community was facing a series of unfortunate economic, social, and political setbacks. Due to these setbacks, funds for the water system were not available. The existing water system included a milk jug for a water intake, a crumbling concrete storage tank and some small diameter HDPE piping that was riddled with holes. Many residents were not getting water and had to improvise with carrying five gallon buckets back to their homes.

Once our student organization found out about this problem, they jumped in to help. Students and Professional Engineers made two assessment trips to complete an alternatives analysis for a new water supply, storage, and distribution systems. While on the assessment trips, they took water samples, land survey data and population information. Once the data collection was complete, they worked with other licensed Professional Engineers, the local Ecuador County Government, and the community to develop a detailed design. During the assessment and implementation trips to the field community, the teams were small and always included a professional engineer as a member of the team.

This report details the collaboration and activities conducted by over dozens of engineering students of multidisciplinary backgrounds, multiple licensed professional engineers with various disciplines, a licensed professional surveyor, university faculty, and a team of technical liaisons and engineers to plan and design community-building solutions to battle the water system crisis in San Pablo de Amali. Over the duration of two years, the first phase was completed with the demands for efficient collaboration and management between students and professionals, consideration of the public's welfare, and the utilization of multidisciplinary engineering.