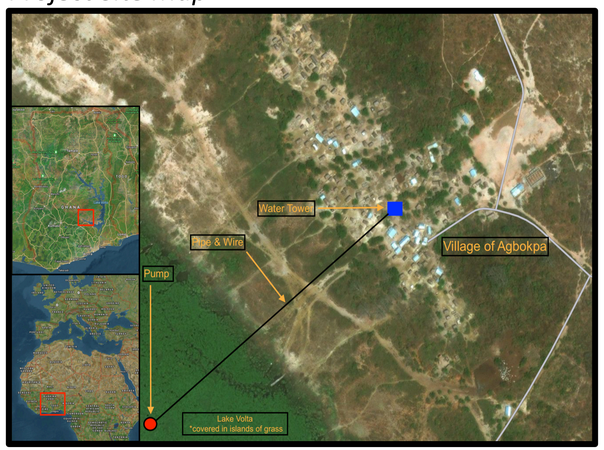
Water Filtration in Rural Ghana

Project Site Map



Project Budget

Table 1

Material costs for the project. All costs are in US dollars, though most costs were paid in the local currency—Ghanaian cedi.

Item	Cost
Concrete Water Tower	$3,430
Submersible, 120V Pump	$1,515
Pump Controller	$415
Marine Grade Wire (1200')	$1,104
Pump Electrical Components	$210
HDPE Fittings	$350
PVC Fittings	$350
HDPE Hose (1200')	$950
PVC Pipe	$350
Pump Cage Fittings	$307
10,000L Polytank	$850
5,000L Polytank	$412
500L Polytanks (4 Total)	$228
Scaffolding	$312
Import Duties	$556
Pump Cage Material	$483
Tools (Welder, Generator, etc.)	$1,580
Paint	$112
Cement and Rebar	$93
Miscellaneous Material and Tool Costs	$1,560
Total Material Cost	$15,118

Table 2

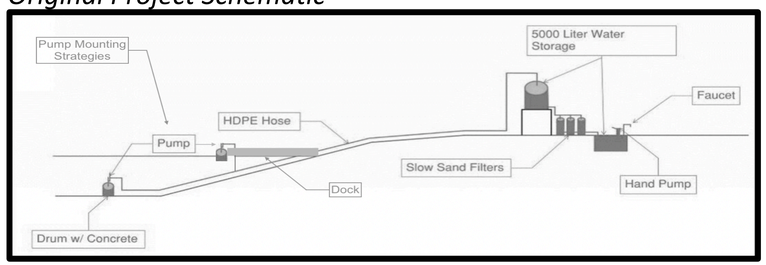
Labor costs for the project. All costs are in US dollars, though most costs were paid in the local currency—Ghanaian cedi.

Item	Cost
Airfare and Travel Expenses	$9,177
Local Transportation of People and Material	$2,335
Food and Accommodations	$808
Local Labor	$516
Donations to Agbokpa	$450
HDPE Fittings	$350
Total Labor Cost	$13,286
Total Project Cost	**$28,304**

Abstract

" Agbokpa is a rural community in southern Ghana with no access to clean or running water. Villagers in developing nations without access to water face significant hurdles in obtaining an education and socially and economically developing their communities. In August of 2019 Cal Poly students Eugene Long, Fletcher Podosek, and Mason Nolan traveled with professors Paul Redden and Dr. Nathan Heston to Agbokpa to fix this problem. The team spent three weeks living in the village and constructing a water tower, pumping system, and filtration system that communally serves the village. The team worked with local craftsmen and sourced nearly all equipment and material through the local economy. The project was conceived and designed at Cal Poly almost a year before it was built. But differing site conditions, changes in available material, and significant delays meant that on arrival, a significant portion of the system had to be redesigned. A near-complete project redesign for a time-crunched project required rigorous planning. On-site design, estimation, and procurement all were critical to the success of the project. "

Original Project Schematic



Final Project Schematic

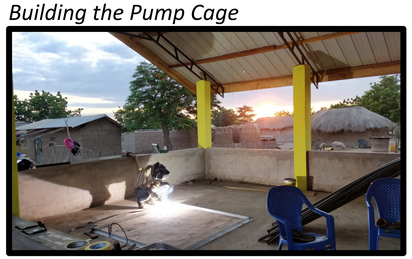
Completed Water Tower

Project Team

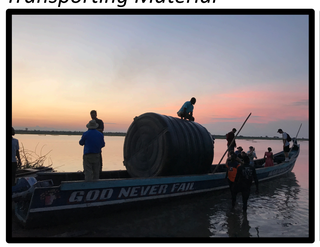
Tower Scaffolding

Pump Cage

Building the Pump Cage



Transporting Material



Trenching

Award Ceremony

Island Interference

CM Senior Project by Eugene Long

A special thanks to my teammates and my advisors, Dr. Nathan Heston and Paul Redden, for their hard work and selfless contributions to this project.

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