



Summer 2018 Kenya Trip

The Princeton Engineers Without Borders Kenya team has completed another successful implementation trip! This year, four members of our team – Clare Cook, Melissa Yuan, Kal Shaw, and Matthew Yun—traveled with our technical mentor Larry Martin to the Kuria West District of southwest Kenya to implement two borehole wells at Kubweye Primary School and Kiburanga Primary School. We are happy to report that both locations now have a consistent source of clean drinking water, which should sustain them year-round through rainy and dry seasons.



The team celebrates with students and faculty after drilling is completed at Kiburanga Primary School

Monitoring & Evaluation

The first week of our trip was dedicated to monitoring the past projects our team has completed in the area. Princeton Engineers Without Borders has been working in the Kuria West District since 2013 when Princeton Swahili Professor Mahiri Mwita contacted our organization about beginning a partnership with the area where he grew up. Since then, the team has implemented three projects: the 2014 and 2015 rainwater catchment systems at Muchebe Primary School and nearby Muchebe warehouse, and the 2016 rainwater catchment system at Komosoko Primary School. While visiting these schools and communities this year, we were pleased to find that several years after implementation, the systems remain fully functional and under good care.



Matthew checks the tanks at Muchebe Primary School

Overall, people are very happy with the state of the water tanks, and have had no problems with disease from drinking the tank water. This is significant since the communities previously struggled with Typhoid outbreaks. There are some ongoing water access problems in both communities: the rainwater catchment tanks tend to run dry partway into the dry season, partially due to some problems with water allocation among community members. Thankfully, since there are separate tanks dedicated to the schools and communities, there is at least sufficient water to sustain the students and faculty for the entirety of the school year. Our team will be investigating how we can best meet the remaining water needs of the area.



The team enjoys tea with Muchebe head teacher, Ms. Susan

Implementation

After one week in country, Sparr Drilling Limited—the company we contracted with to perform the drilling—was ready to start, and we began implementation of the first borehole at Kubweye Primary School. Kubweye PS is established as one of the strongest primary schools in the area, and attracts students from as far as Nairobi. They had recently introduced a boarding option to house more students, bringing the student population up to about 900. However, with no source of clean water nearby, students would haul water from home (generally collected from rivers or seasonal wells) and often leave in the middle of the school day to collect more water from the river. This especially posed a challenge for the boarding students. In addition, community members explained that the area as a whole was in need of a new water source, as most people collected water from a single well, which would get very low in the dry season, leading to long lines and forcing some families to get their drinking water from the bacteria-carrying river.



Drilling at Kubweye Primary School

After drilling to 159 meters (and some initial worries), we found water! Pumping tests with a temporary electric pump revealed that the borehole could sustain a water output of up to 5 m³/hour (5000 liters/hour). This opens up the possibility for eventually installing an electric pump and adding distribution lines, so that more people in the surrounding area can have access to this water.



Pump installed at Kubweye Primary School

Once drilling was complete at Kubweye Primary School, our team and the drillers relocated to Kiburanga Primary School to begin our second project. Kiburanga Primary School has about 500 students, and just like Kubweye, has no easy access to clean water.



Form 7 students at Kiburanga Primary School

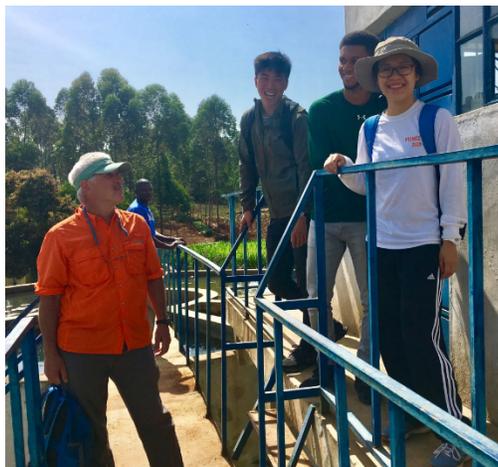
There, we faced some difficulties with drilling (the steel end of the drill bit broke off during drilling, halting the process earlier than planned), but we found that the well could supply enough water to sufficiently meet the drinking needs of not only the students and faculty, but also the surrounding community.



Completed hand pump at Kiburanga Primary School

Assessment

During the trip, the team also assessed for potential future projects; there are two currently under consideration. First, we may partner with the county government to expand distribution from existing water treatment plants. The team met with several officials from the Migori County Water & Sanitation Office, as well as with the local assemblywoman, and we are all very excited at the prospect of partnering together to improve access to clean water in the area. The other main possibility is installing an electric pump in the borehole we drilled at Kubweye Primary School this year to increase output. We plan to explore solar technology options in the coming weeks and months, and determine how we can best use our time and resources to get water to as many people as possible.



The team visits a water treatment plant at the Gatundu River

Community Building & Education

In addition to the design and implementation of new infrastructure, our team is focused on sustainability and maintaining positive community relationships. We try to ensure that full ownership of the project and responsibility for operation and maintenance passes to the community upon our departure. We accomplished these goals through sharing meals with community and school leaders, performing surveys in the communities, training elected water committees in proper maintenance of the borehole wells, interacting with students, and holding community meetings. We are very grateful for all the friendships we formed this summer, and we are confident the boreholes will be well cared for and maintained by the water committee and other community members to serve the schools for years to come.



Melissa talks to a group of students at Kiburanga Primary School



Dance break

Acknowledgements

Thank you so much to the Class of 1995 for their generous grant that helped fund this project; our technical mentor Larry Martin for giving his time and expertise to making these projects possible throughout the year and especially during our trip; Professor Mahiri Mwita for his support both before and during our trip; David Mariba for translating and arranging many key meetings with community leaders and government officials; Frida Mwita for translating and being generally wonderful; head teachers and faculty Peter Montongori, Christine Boke, Susan Paul, Josephine Robi, Wilfred and Tom for their hospitality and dedication to the implementation and long-term maintenance of these projects; Joseph for driving us everywhere; the teachers and students at Kiburanga and Kubweye Primary School for their enthusiasm and toleration of some very loud drilling during school hours; the school management boards and water committees for their flexibility and willingness to volunteer their time to care for the projects; our entire Engineers Without Borders team who spent their Sunday afternoons all school year to prepare for this trip; and countless other people who supported our trip this year.



Thank you!!