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Class of '95
Summer Service Fund

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Dear Dan Marcus and Committee Members of the Class of '95 Summer Service Fund,

I would like to thank you for the wonderful funding opportunity that you provided for my project this summer with Engineers Without Borders in Kenya. The construction of the rainwater catchment system we designed was an amazing learning experience for me as an engineer, as I was able to finally apply the theory that I learned in class in the field. The system is now functioning for the Muchebe Community, providing a new and clean source of water as they head into the rainy season. On the following pages, you can find a summary of the work we completed and a few photos from the trip.

The Class of '95 grant has been a crucial supporter of my work in Kenya with EWB, and this opportunity has allowed me to personally grow in my cultural awareness and engineering practice. Thank you once again for your support!

Sincerely,
Cecilia Stoner '17

EWB Kenya Rainwater Catchment System Construction Project Summary

On our first day in Muchebe, we traveled to the warehouse where the rainwater catchment system would be built in order to confirm measurements taken during our January assessment trip and to meet with the Water Management Committee, a team of community-elected leaders of the system. The team also met with the concrete and plumbing fundis (skilled laborers) who led the construction of the first rainwater catchment system at Muchebe Primary School in August 2014.

Our work began on the first Monday of the trip, where the foundation pit was dug. A concrete slab was laid about six inches above grade so that runoff from the slab would flow naturally with that of surface water. The roof of the warehouse was aligned, the rafters bolstered, and fascia boards attached to the rafters to support the gutters. Gutter clips, and subsequently gutters, were hung along the north and south sides of the shed to collect the rainwater from the roof. First flushes were installed on all four downspouts to serve as a filter for the first waters in a rainstorm, and underground pipes were laid to transport the water from the downspouts on the north and southwestern quadrants of the shed to the tank foundation located on the south side, while water collected on the southeast quadrant was piped overhead directly to the tanks. Six 10,000L tanks were placed in a 2x3 formation, with a tap stand pit located on the east side of the tank closest to the road, to provide the community ease of access to the system and decrease the need for community access onto the property. Tanks were connected to each other via 1.25-inch galvanized iron pipe fittings, and led to a two-tap tank outlet at the tap stand. Holes were cut into the top of the tanks so that any overflow would run onto the slab and off with surface water, and fine wire mesh was secured over the overflow holes to prevent the entrance of foreign objects.

Following the successful implementation of the system, the community members of the Water Management Committee were trained in the operations and maintenance (O&M) of the system and provided with an updated O&M Manual that was created for the first rainwater catchment system. The entire Muchebe community was then invited to view the system and learn about its maintenance, as well as sustainable water practices and water treatment tips. We hosted a celebration to commemorate the opening of the new system to the community, and invited traditional Kenyan dancers and the chief of the village to attend.

Besides the daily work on the project, our team was able to participate in a number of fun local activities. One weekend, we traveled to the Masai Mara where we went on safari and saw a whole host of incredible wild animals, some in migration. I also had the unique experience of meeting a deaf Kenyan man in the village, who taught Kenyan Sign Language to local children who were too poor to go to far-off deaf schools. Since I am fluent in American Sign Language, we discovered that our sign languages were actually incredibly similar, and we were able to talk for over two and a half hours together! We also were able to attend Sunday church services at a local parish, and it was incredible to see how lively and actively people are with their faith in Kenya. We made a number of really wonderful friendships with community members of all ages – one boy, Stephen, helped me collect data and told me that he wanted to become an engineer too!

So overall it was a wonderful and truly life-changing experience for me, as I was able to both develop as an in-the-field engineer as well as a better member of our global community. I'd like to again thank the Class of 1995 for their support of my summer work. Please feel free to look through the next few pages to see some pictures from the trip!!

Photo Documentation and Drawings



Figure 1: Photo of the completed rainwater catchment system tank cluster for Muchebe Village.



Figure 2: The EWB-Kenya team posing with the completed system.



Figure 3: Cecilia Stoner leading an operations and maintenance walk-through of the completed system with the community leaders and members.



Figure 4: A community member collecting water from the completed system.



Figure 5: Cecilia Stoner recording measurements with children in Komosoko, the village where we will build a rainwater system next summer.

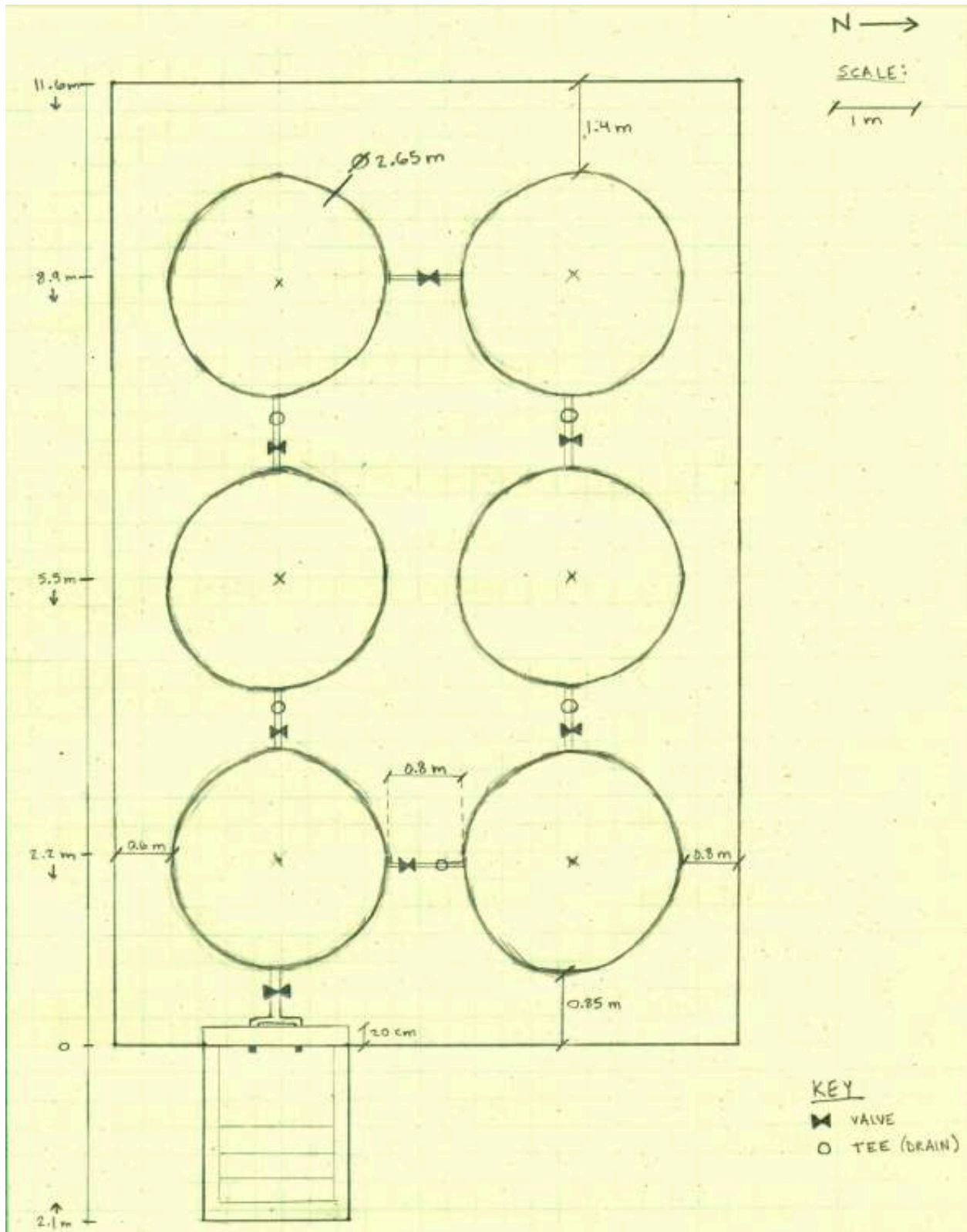


Figure 6: Example of an 'as-built' drawing from our final report to EWB-USA documenting the final system. Drawn here is the cluster of six tanks that was built on a concrete foundation, with notes for the valves, drains, and dispensing station.

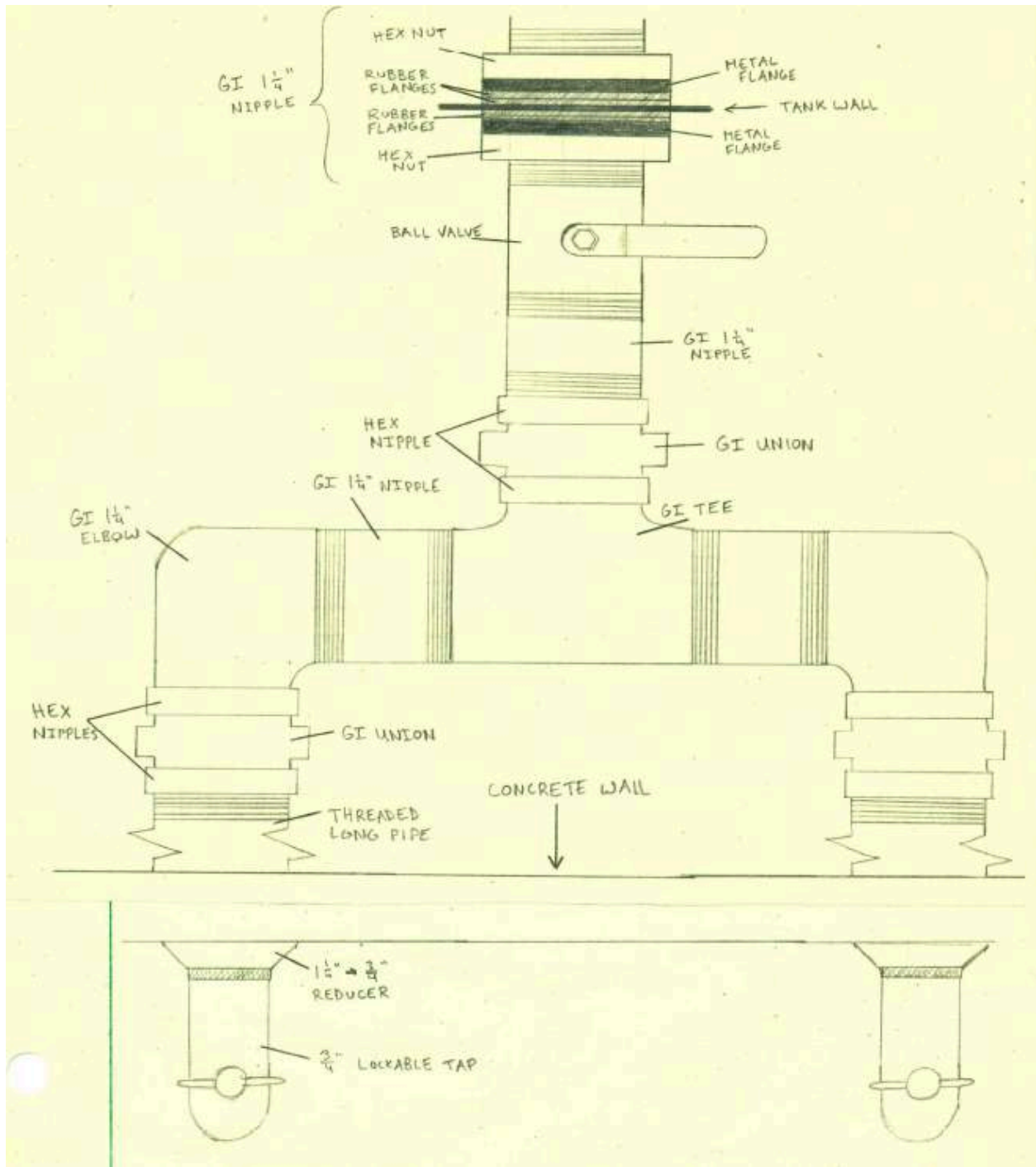


Figure 7: A second example of an 'as-built' drawing of the system, this one of the dispensing taps where community members can collect water.