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PROGRAM UPDATE

UGANDA

By: Britta Johnston
Uganda Program Director

Over the summer, members in the Uganda Program were hard at work completing both alternatives analysis and pre-implementation plans for a December drilling trip. After completing a beneficiary analysis, we determined that the population of Nakyenyi was about 3,500 people, notably larger than our original estimate of 1,200 people. Due in part to this scope change, the program officially determined that the optimal solution to meet Nakyenyi's water needs is a machine-drilled borehole with a submersible pump and gravity fed distribution system. The first phase of this solution includes the drilled borehole and a handpump for the interim period between implementation trips.

With a plan in place, the program has spent the Fall semester planning for the first implementation trip in December. A travel team consisting of five students and two traveling mentors will implement the distribution system, as well as collect additional data for the design of a gravity-fed distribution system. The team will also meet with the newly established EWB-USA in-country office and the local district engineer to coordinate construction oversight efforts. This trip is a great opportunity for the program to continue water quality testing of existing sources in the community and gather more PMEL and GPS elevation data.

After completing a second Hydrogeological survey in May, we decided with the local governing board on a location for drilling. The Nakyenyi Water Board, owner of the parcel selected for drilling signed a Land Ownership Agreement, granted permission to drill a water well on land. They are excited to accompany our travel team to learn about borehole drilling and well construction.

During our Fall meetings, the program has been working on a variety of tasks to prepare for our trip and get a head start on designs for our next implementation phase. We have been developing a sanitation and hygiene education program to introduce to the community this December. They are using our current elevation and GPS data to plan the location of the water storage tank and the initial tap stands that are scheduled to be implemented next summer.

Over the next year, the Uganda Program hopes to travel again to begin construction on the water distribution system and bring water from the drilled source to a storage tank in the town center. The full scale gravity fed water distribution system will hopefully be completed by 2023, and the community will transition to full ownership.



Nicole Marco, David Myers, William Kovarik, and Kimberly Kuhn present a map of Nakyenyi to the water board during the March 2019 Assessment trip. The water board provided suggestions on where to put tap stands for a future distribution system.

PROGRAM UPDATE

PANAMA

By: Lisa Sangree
Panama Program Director

The Panama program has made some exciting progress this semester while finalizing the designs for our final phase of the water distribution project in Las Delicias. During the December 2018 trip to Las Delicias, the water distribution system was officially commissioned and is now being used by community members. Additionally, our team collected data to aid the design of a new transmission main and source capture to add to the distribution system.

The goal of this new transmission main is to provide more water to the community to compensate for the expected population growth in the next 50 years of the system. One challenge of this transmission main design is a stream that crosses through the middle of the proposed pipe route. To overcome this issue, the team is designing a stream crossing. Our members are leveraging past designs within our program to come up with multiple solutions for crossing this stream, including digging through, using a stronger metal pipe to cross the stream above ground, using covered PVC pipe to cross the stream above ground, and more. The designs are in the process of being finalized and travel team members are being prepared to begin implementing these designs in March 2020.

Over the summer there was an issue with one of the break pressure tanks in the distribution system, so the program worked hard to communicate with the community regarding these issues. Ultimately, the community was able to solve the problem and the break pressure tank is properly functioning again. It demonstrated our improved communication and joint problem solving with the community.

We were also encouraged to hear that the community rebuild their existing transmission main with the same techniques used for the distribution system. This demonstrates how well the community members understand the engineering thought behind a distribution system. We have full confidence that if an issue were to arise with the distribution system, the community members have the knowledge to solve these issues and the project can be sustained for the entire 50 year life span.

The Panama Program is excited to announce the adoption of a new project; as efforts in Las Delicias are coming to an end, the Program will be partnering with La Pedregosa, a community about 30 minutes away from Las Delicias facing similar water system problem. The community consists of about 300 people who are mainly subsistence farmers. They have a current distribution system in place that was constructed by a past Peace Corp volunteer; however, it is not providing the proper amount of water to community members, and the water it does provide is unreliable. Additionally, a wind farm is being constructed nearby, and the construction is destroying parts of the distribution system and some of their water sources. Our program has also been working to analyze their current system and how the design of the current distribution system in La Pedregosa may be contributing to the water reliability. This analysis has been done with the information we were given by the community and our NGO when the project was adopted. We have been communicating with the members in La Pedregosa to continue to learn more about their distribution system, so we can be prepared as possible when we assess. They have been very responsive to our questions, and we have already received information regarding their system; they even visited Las Delicias' system to understand their new distribution system. We are planning on visiting them in the March 2020 trip to begin assessment of the community.



La Pedregosa community members meet with the Las Delicias water board to understand and study the constructed water system

PROGRAM UPDATE

GUATEMALA

By: Maddie Rogers
Guatemala Program Director

This year has been busy members of the Guatemala program. After completing the initial assessment trip in December 2018, members have worked together to analyze potential solutions and create proper construction documentation. Particularly, members have worked diligently on developing detailed construction drawings and plans for the new school in Chuixil, a rural village located in the department of Joyabaj. Using data collected during the December 2018 assessment trip, members analyzed the potential alternatives and have since moved to the creation of construction drawings to be used in the first phase of implementation, beginning in March 2020.

In January 2019, the Guatemala program began preliminary design of the proposed school and developed an Alternatives Analysis. Different potential designs for the schoolhouse, wastewater management system, and gravel access roads were examined in detail. It was through the creation of this report that the design of the main school building was determined: a 3 classroom schoolhouse with a kitchen and office space and that there would be a three-bathroom facility with proper wastewater management. Thanks to everyone involved; the report was successfully submitted in June 2019, and we received final approval from EWB-USA in July 2019!

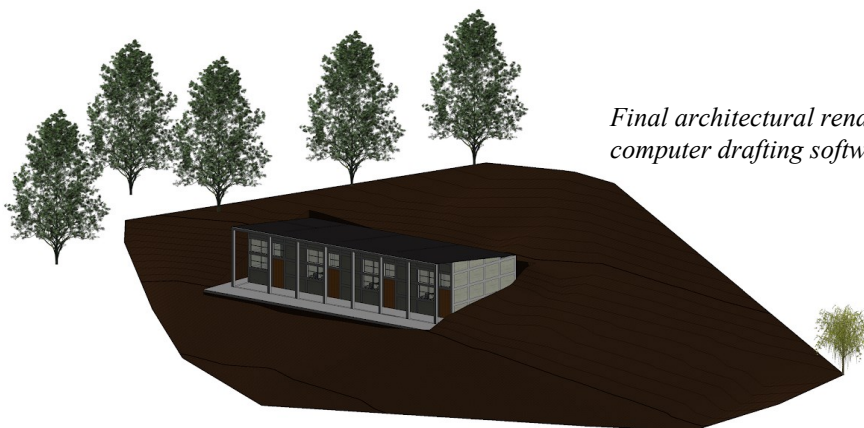
The program initially planned to submit our Pre-Implementation report over summer quickly after the Alternative Analysis completion, so we could return to the community in December 2019. After discussions with our professional mentors and advisors, the program decided to push the implementation trip back until March 2020. This would ensure the quality of our designs were up to professional standards and a sustainable, comprehensive solution for Chuixil. With the extra time given for a March 2020 trip, members of the Guatemala program have been finalizing the pre-implementation report.

With help from professional mentors and the combined knowledge of engineering and architecture students, we were able to create a safe and viable school structure. In particular, architecture students have been working on developing a 3D model of the school building and the regrading of the site. Students have also developed other important construction documents such as reinforcement detailing, column designs, and elevations plans. These plans have been finalized, and the first submittal of the report was completed in early November. After some more review, responses to comments, and final approval from EWB-USA, the program will be sending construction plans and material specifications to the construction supervisor in the community--Don Mincho--for him and his team to begin some of the construction and site regrading prior to our arrival in March 2020.



Guatemala Program members inspect the site for the proposed school

In the coming months, we will be hard at work preparing the final report and organizing a trip to the community. Travel team members will be selected and properly trained to assist in construction, and final budgets and reports will be sent to the community. We are looking forward to officially beginning construction of the school and excited to see the design work we have created implemented to make a positive impact on the community!



Final architectural rendering of the proposed school using computer drafting software!

MEMBER SPOTLIGHT



Uganda Spotlight

Will Kovarik is a second year Mechanical Engineering major with a minor in Computer Science. Will has been a dedicated member of the Uganda Program since he began attending meetings in his Freshman year. He began his career by helping the Preliminary Pump Design Group research pump specifications and estimate capital installment costs. In the spring semester of 2019, he had the opportunity to travel to Uganda and helped complete the assessment of Nakyenyi, our partner community. On the trip, he took responsibility of managing expenses as the team treasurer, and aided in the collection of data crucial to the design phase of the project.

He enjoyed seeing how the work completed during club meetings had tangible impacts on the community of Nakyenyi. From seeing the lifestyles of community members and their need for clean water, Will was motivated to dedicate more of his time and efforts to Engineers Without Borders, knowing that our work could make a difference. His sense of commitment to both the people of Nakyenyi and EWB has inspired him to become a vital member to the Uganda Program. Recently, Will has gotten more involved by becoming chapter Treasurer on the Executive Board and leading a Construction preparation group in the Uganda Program. Additionally, he will be taking on the responsibilities and duties of Trip Lead for our upcoming Implementation Trip in December of 2019. Thank you for the hard work and dedication, Will! -By Britta Johnston



Panama Spotlight

Simone Atwa is a second year Civil Engineering and Architecture student and has been a vital member to the Panama program since the start of her freshman year. She began working with a design group and calculated the water pressure of tap-stands at each home in Las Delicias; This allowed the travel team to understand what the designed pressure was in comparison to the actual pressure while in country.

The following semester, she contributed to the design of the new source box water-capture system for the community. Alongside other group members, they formulated a plan for material usage and an efficient shape for the system. Delving further into the design, she found she was able to combine her love for art and engineering by creating colorful representations of the water-capture system to allow for greater community understanding.

She has also joined the map group for Panama's new project, La Pedregosa, learning the ropes of ArcGIS. From plotting pipelines to naming homes, she has been able to experience the community of La Pedregosa from a new point of view. This will be very helpful for the team when they travel to the community to understand the existing system as well as the community layout.

Simone has loved every second of EWB, meeting such passionate and down-to-earth people. She hopes to continue working in this organization, both during and beyond her years at Northeastern. Thank you Simone for the contribution to the Panama program, your hard work is greatly appreciated! -By Lisa Sangree



Guatemala Spotlight

Although this semester's Guatemala Member Spotlight, Carson Dallas, has not been with EWB-USA NEU long, she has been an incredibly valuable member by offering very unique expertise and a large time commitment. Carson is a fifth year Architecture major in Northeastern's College of Arts, Media and Design. She joined our program last spring after we reached out to the School of Architecture asking for recommendations regarding the conceptual design of our school structure.

Her perspective helped inform many important design decisions such as the orientation of the building, adequate ventilation, sloping of the roof, classroom dimensions, and much more. She introduced us to a software called Climate Consultant to provide sun and wind patterns specific to the time of day and time of year associated with Guatemalan schooling to help inform certain aspects of the design. As engineers, these are things that could have been overlooked, but have fortunately been addressed to provide a comfortable, safe environment for the children of Chuixil.

We were fortunate that Carson ended up staying with us longer than the conceptual design phase, and she is now in charge of the AutoCAD and Revit architectural plans that we have attached to our report submittals. She has been invaluable for knowledge transfer and is incredibly reliable and organized. Her involvement in EWB is a great reflection of the importance of having non-engineering majors involved with EWB projects, since although we are a College of Engineering organization, we welcome students of all backgrounds and interests! Thank you so much, Carson, for all that you have done for the Guatemala program! -By Maddie Rogers

NATIONAL CONFERENCE

By: TJ Cahill

From November 8th to November 10th this year a group of eight Northeastern EWB members attended the 2019 Engineers Without Borders National Conference in Pittsburgh, PA. This conference is held on a yearly basis and is a way for chapters to talk with industry leaders, attend educational lectures to refine their EWB practices, and network with global companies as well as one another.

The first day of the conference began with a welcome ceremony and a keynote speaker from Boeing and the CEO of Engineers Without Borders, Catherine A Leslie. Following this keynote were various sessions, with varying topics such as implementing effective solid waste systems and how to increase student engagement within a chapter.

During the lunch break of the first conference day, our chapter was presented with the 2019 Premier Student Chapter Award, recognizing chapters that go above and beyond the mission of EWB-USA and exemplify their values. Our chapter is extremely honored to be selected for this national recognition.

The second day of the conference included a keynote speaker who emphasized the importance of water and sanitation. This presentation focused on how wash is crucial to improving all aspects of the communities that we are working with as well as the world as a whole to prevent disease. Later in the day, our Chapter President Peter Botticello and Vice President Nicole Marco, held a very successful presentation on exploring the best practices for communication misunderstandings throughout an EWB project. They received great feedback and provided effective methods for utilizing resources to their full potential to those in attendance.

Lisa Sangree and Cassia Lockwood, the Program Leads for the Panama program at Northeastern, created a poster that was presented. The rest of this day was spent attending more presentations such as how to better brand a chapter, increase funding efforts, and navigating community politics as an engineer. As a whole, the conference was a success; members gained knowledge to improve the chapter in a multitude of ways in order to keep up the great work that has been conducted over the past year in EWB at Northeastern University.



EWB-USA NEU members accept the 2019 Premier Chapter Award with the President and CEO of EWB-USA

FUNDRAISING

By: Matt Burmeister

The Northeastern University Chapter of EWB-USA prides itself on its strong fundraising program, allowing us to support three thriving infrastructure projects around the world. Effective fundraising is crucial to maintain sustainable relationships and projects in our partner communities, as well as our ability to mold members into future engineers. Our three main sources of funding are corporate donations, personal donations, and grants.

Northeastern University continues to expand and develop its co-op program, which epitomizes experiential learning. This program significantly enhances EWB-USA NEU's ability to build important relationships with engineering firms in the Greater Boston area. Annually, members of our chapter present at more than 10 companies explaining our mission and the progress on each of our projects. These presentations are also opportunities for students to share transformative personal experiences and tangible community impacts, both of which are only realized with the financial support we receive from our corporate sponsors. As our students continue to pursue new co-op opportunities, we are actively seeking to expand our network of corporate relationships.

Personal donations are also significant to our fundraising capacity. Our network of generous alumni, families, faculty, and friends allow our chapter to continue providing the support that our partner communities deserve. Many of our personal sponsors are reached via our Year End Giving Campaign. No matter the amount, every donation counts, and this is demonstrated by the fact that personal donations rival our corporate sponsorships in terms of yearly revenue.

Finally, EWB-USA NEU continues to apply for grants through both the University and its College of Engineering, as well as externally. Grants such as the Dean Scranton Fund are vital to our ability to continue sending students to our partner communities each year, and our chapter is actively seeking more grants through which we may secure additional funds. In fact, during this semester each Program has organized a specific group dedicated to grant-writing and other fundraising efforts. Our members learn important grant-writing skills and strategies, and with the help of our senior members and faculty advisors we are consistently able to compose strong proposals and reports.

Our fundraising efforts would not be successful without the support of many committed student members, among both the Executive Board and Grant Groups. I'd like to thank those students who have specifically been involved with the finance team and attended any finance meetings. The dedication of both our Executive Board members and our Faculty Advisor, Jess Ormsby, ensure that we continue to provide the highest level of service to both our students and our partner communities.

2019 BOOTCAMP

By: Nicole Marco
Vice President of Administration

Bootcamp is a yearly EWB Northeastern event, spearheaded in 2012 to teach new members all about EWB projects. During the day long event, members are introduced to the stages of EWB projects through the lens of our three projects. Through presentations and group activities, members learn basic engineering skills, technical writing, and problem solving. On October 5th, 70 chapter members came together, gathering in groups of 3-5 people lead by veteran members to share experiences and ask questions.

Throughout the day, the program leads of each program gave overviews of their projects and introduced the chapter to one of the four main stages of EWB projects: assessment, design, implementation, and monitoring and evaluation. After each presentation, chapter members were then able to practice what they learned using a case study project in Kenya. Lauren Grove and Maddie Rogers brought everyone through the project in Guatemala, explaining how they executed their assessment trip in December 2018. Students were then guided through the process of planning an assessment trip and the simulation finished with the students creating a Go/No-Go decision.

Cassia Lockwood and Lisa Sangree then took everyone through the Panama program and the design phase. Each group brainstormed alternatives to the project in Kenya, and we then came together to share ideas for an effective

and feasible project. Upon deciding on a water distribution and food storage project, Cassia and Lisa taught the group about how to design gravity-fed water distribution systems, and Rishi Shah introduced the basics of structural design. Each group was given example problems to practice calculations in each of these processes, including how to make decisions to allow for the most efficient systems.

To finish off the morning, we enjoyed a presentation from the mentor of the Bbanda Uganda water project, Tim McGrath, on technical writing. As an alumnus of Northeastern with nearly four decades of professional experience, Tim instructed the group on the importance of writing clear and concise reports.

Heading into the afternoon, Britta Johnston and Jeffery Ling told everyone more about the Uganda program and how they are preparing for their upcoming implementation trip in December. With lots to do on implementation trips, our groups learned how to effectively time manage using online simulations of implementation trips in communities around the world.

Finally, our chapter president, Peter Botticello, taught us the importance of monitoring and evaluation of a project once implementation is complete, and Alyssa Dubois explained how this can be achieved through the Planning, Monitoring, Evaluation, and Learning (PMEL) program.

By the end of the day, our members were equipped to rejoin our programs with a new sense of purpose and confidence to help further our projects into the future. Our chapter moves forward with the next generation of students inspired to continue problem solving and innovating to allow our programs to thrive. Thank you to everyone who made Bootcamp a success!



David Myers and William Kovarik take a break from the activities with our Chapter members for a picture at Bootcamp!

PR AND RECRUITMENT

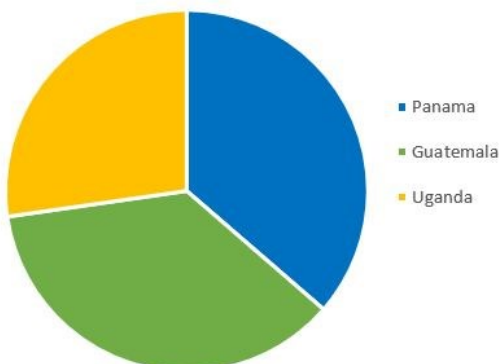
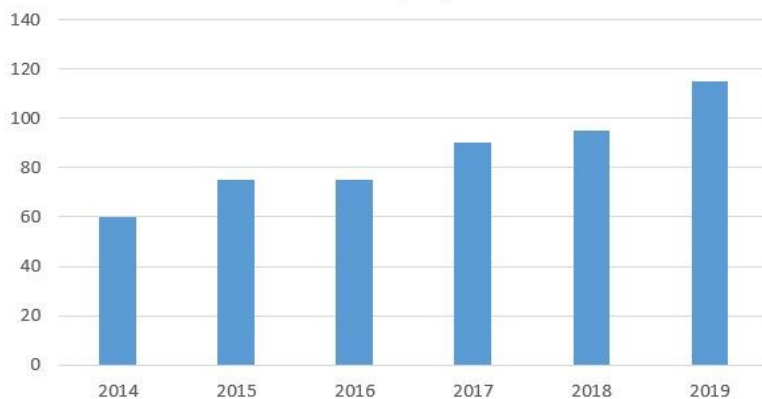
By: Rosie Delgado

EWB is always looking for new members! In the fall, we have plenty of new students on campus and lots of opportunities for member recruitment. We tabled at several different events including Fall Fest, the Fall Sustainability Fair, COE sophomore welcome, and the COE freshman welcome, just to name a few. So far, we have had over 350 students interested in either of our water distribution projects in Nakyenya, Uganda and Las Delicias, Panama or our structural project in Chuixil, Guatemala, sign up for our mailing lists. Right now is an especially exciting time for new members to join with all three projects planning to travel this academic year.

Each of our programs meet at least once a week, so students with busy schedules have plenty of opportunities to get involved. In addition, the Northeastern EWB community is incorporating more social and educational meetings. This way, members across different programs have an opportunity to network and learn more about what our chapter as a whole is working towards.

Thank you to all of the executive board members and volunteers who make time to recruit and engage members. Make sure to stay updated with EWB-NEU through our Instagram (@ewbneu), Twitter (@EWBNEU) and Facebook (@ewbnortheastern)!

Membership by Year



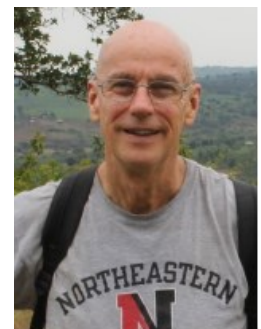
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