Engineers Without Borders: Team Mexico | College of Engineering

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USU student team continues water quality improvement projects in rural Mexico

Published in Utah State Engineer—Oct. 25 2018 — The USU student team, Engineers Without Borders, continues their water quality improvement project in rural Mexico.

Left to right: Students Dallin Wilberg, Megan Licht, Dane Denison, Carolina Collins, Pablo Mendez and Lucy Campos are part of the USU Engineers Without Borders Mexico team

In Central Mexico, USU engineering students got a real-world lesson about the concepts they study in the classroom. This summer, six student members of Engineers Without Borders traveled to the community of La Saletrera near Mexico City. The team has been travelling to the region for several years as part of an ongoing project aimed at mitigating the effects of arsenic-contaminated drinking water.

The team, led by Professor Ryan Dupont, taught residents how to build and use inexpensive biosand filters using everyday materials.

“What these are extremely humble and hardworking individuals. They’re eager and happy to learn new things and help others in their community. The humble hospitality of these community members is something we can all learn from,” said Dallin Wiberg, EWB student leader.

The USU Engineers Without Borders team has been traveling to Central Mexico since 2009

Part of the mission was to perform a post implementation assessment of previous years’ work.

“We conducted a wide array of water quality tests from an extensive pool of samples from all over the community,” said Wiberg. “We also completed qualitative surveys with families and individuals who use the filters to assess their usage and satisfaction.”

The team evaluated filters that are regularly used and properly maintained and filters that are neglected. “We got drastically different results in the quality of water that comes from a frequently used filter as opposed to the opposite,” he added.

In the second half of the trip, team members surveyed locations for a proposed water tank designed to service the community. “We collected all the necessary data to come back next year and build the tank at the location desired by the community,” said Wiberg. “When we presented our information to the Multi-Community Water Counsel, we found that their needs had changed.”

What is a Biosand filter?

Biosand filters are point-of-use water filters typically made of concrete or plastic. The filters contain multiple layers of gravel, fine sand and a layer of biologically active material called the schmutzdecke — a German word meaning ‘dirt cover.’ The layers function together to remove pathogens and suspended solids. By adding a layer of rusty nails, the filter can also reduce arsenic.

The team discovered that members of the community living at higher elevations received less water during certain times of day. When the pumps are turned on and water is flowing to the houses, there is usually insufficient water, or merely not enough in the line to create a pressure high enough to reach the residents at higher elevations.
“We were very impressed by their concern for their friends and neighbors,” said Wiberg. “We quickly realized that our project needed to change.”

With the short time remaining, the team gathered the necessary data to create a bypass pipeline that would address the problem. The students helped the community devise a plan that helped ensure water could reach the higher elevations.

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Media Contact: Matt Jensen – Utah State University, College of Engineering | matthew.jensen@usu.edu | office: 435-797-8170 |