

Student Project Will Provide Clean Drinking Water to Honduran Village

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The water supply in the Honduran village of El Cipres becomes unhealthy to drink each year when the rainy season hits. Civil and environmental engineering students devised a solution that will work without the use of electricity.



The small tropical village of El Ciprés in Honduras faces a problem every time the rainy season hits. Its stream-fed water supply becomes especially turbid—inundated with suspended soil particles and microbes. It takes on a murky appearance and becomes unhealthy to drink.

A group of newly graduated civil and environmental engineering students from the [College of Engineering and Computer Science](#) has developed a viable solution to clean the village's drinking water. And now, with the backing of a pro bono humanitarian engineering organization, their system is going to become a reality in El Ciprés.

For Gerardo Martinez '15, Katayoun Mokhtarzadeh '15, Daniel Parish '15, Brian Rowland '15, Meredith Sullivan '15 and Katelyn Tamargo '15, the project began like any other assignment—develop a theoretical solution to a civil or environmental problem and present it at Senior Design Day. Success would be measured on their ability to design a system that effectively reduces the turbidity of El Ciprés' water supply from ~30 nephelometric turbidity units (NTU) to 5 NTU and meet their client's expectations.

To complicate matters, many go-to methods and technologies were immediately off the table due to the village's remote location.

“We all took a class on water treatment systems so we had a lot of knowledge on the topic, but this project had so many challenges. The biggest obstacle was that there is no electricity. Also, in the U.S. if you need a pump, you go get it. If you need to outsource something, you have a lot of choices. Our budget was \$5,000 and we had very little to work with. We didn't know where to start,” says Martinez.

Despite the significant constraints and limited resources, the group developed a scalable, gravity-fed system consisting of pre-treatment, filtration and storage basins. It will require no electricity and will be operated and maintained by local volunteers once it is completed.

Following their presentation at Senior Design Day, [Professor Svetoslava Todorova](#) made a surprise announcement. Their client, Fred Stottlemeyer of the International Rural Water Association, intends to build their plant in El Ciprés with their assistance, and explore the

possibility of expanding it to other villages that face the same problem. Todorova says, “I am proud that the team took this task seriously and turned a hypothetical project into a reality.”

Details will be confirmed to bring students to El Ciprés to be a part of the installation and training later this year with support of Stottlemeyer’s organization and the [Department of Civil and Environmental Engineering](#). From there, there’s no telling how far this could go to benefit the people of South America and beyond.

Mokhtarzadeh says, “I love the humanitarian aspect of this project. I come from Iran, where many people have the exact same issues. To be able to come up with a solution that may even be able to help there someday makes me proud. It’s an amazing feeling.”