



# AguaClara

## Alumni Connection

December 2010

*Improving drinking water quality through innovative research, knowledge transfer, open source engineering, and design of sustainable, replicable water treatment systems*

Agalteca Inauguration:  
July 15, 2010



### AguaClara Professional Group (APG)

We are currently researching opportunities to create an AguaClara Professional Group (APG). We have explored options with various organizations with the hope that we can form an affiliation. The new group will maintain a link between the Cornell-AguaClara team and the implementation partners. The APG will employ engineers to provide engineering services and documentation, publicity and fund raising, coordination of technology dissemination, and supply of complicated plant components. The group will also be in charge of the AguaClara Engineer program, which will provide support for the implementation partners. If you are interested in getting involved, email us at [CUAguaClara@gmail.com](mailto:CUAguaClara@gmail.com).

### AguaClara Website Update

Our website has been designed to be a dynamic and ever changing part of the team publicity. The site is used to provide general information about the project to prospective donors and partners. Thus, each semester the website is revised and updated to ensure that it is an accurate representation of the AguaClara project and the current team challenges. In Fall 2010, the outreach team translated the website to Spanish. This page will be able to be accessed from the main page of our website <http://aguaclara.cee.cornell.edu> starting in January.

Special Thanks for Recent  
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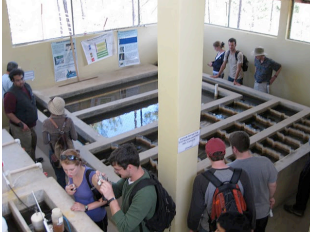


### New AguaClara Plant Sites and Partnerships

We have established many new relationships to fund the construction of future plants. We are also excited to announce that we are expanding to other Latin American countries! There are four plants in the design or construction phase in Honduras, including the expansion of the plant in Marcala. The other plants will be located in Atima, Gracias, and Alauca. In Nicaragua, we will be working with Los Robles to build a plant in Datanli. Finally, in Guatemala, we will be working with INFOM Guatemalan Government to build plants in San Miguel Chicaj and Cubulco. We are very grateful to be working with a variety of organizations to fund these plants.

## Rock for Honduras: AguaClara Benefit Concert

On November 4, 2010, we hosted our semi-annual benefit concert, Rock for Honduras, at the Nines. The event featured lively performances from Weggalo Star, Julia Richer Daily, and Larry Lin. Team members and friends enjoyed food, drinks, and great music all for a good cause. We raised more than \$400 at the concert with all of the proceeds going toward the research, design, and implementation our systems in Honduras. We would like to thank The Nines for hosting the concert and the Latino Studies Program for their generous sponsorship. Thank you for all of your support!



## Updates from the Design and Research Teams

This semester, the foam filtration team has been working on several tasks. The team's goal is to create new and effective ways of filtering water for systems on both a large and small scale. Previous research showed that foam filtration is not feasible for an AguaClara plant. Therefore, the team has focused on designing a point of use filtration unit that can be used in homes, schools, or apartment complexes. Their most recent experiment measured head loss through the foam as a function of filter run time. They will be using their experimental results and designs to enter the point of use filtration unit into the EPA P3 competition.

In the past, the ANC Control team has researched adding alkalinity to the plant influent using a lime feeder, a reactor that produces saturated calcium hydroxide solution as effluent. This added alkalinity provides a more neutral pH during the coagulation process and increases flocculation efficiency. Recently, solid poly-aluminum chloride (PAC) has been introduced to the AguaClara plants. This alternative coagulant is economically competitive and does not cause a drop in pH. This yields superior flocculation results, improving plant operation.

The Chemical Dose Controller Team has worked this semester to convert the nonlinear doser designed in Fall 2009 to locally available materials, while addressing feedback from the operator at Agalteca where the nonlinear doser is now in operation. A prototype will be brought to Honduras in January to get more feedback. The Tube Floc team has spent the semester modifying their experimental apparatus (FReTA), and performing experiments on Polyaluminum Chloride (PAC) and alum, coagulants being used in AguaClara treatment plants. They are finding the minimum coagulant dose required for rapid flocculation to occur. Not only will the results elucidate the fundamental mechanisms involved in flocculation with each coagulant, it also provides the basis for future experiments with rapid mix.

The design team is working on a few big pieces that are going to be coded into the design tool by the end of this semester. Currently, we do not have any design for operator access (i.e. stairs, platforms, walkways) in our AutoCAD drawings of the plants, so any piece of the plant that is elevated (for example, the entrance tank, or the alum stock tanks) are just floating in air in our drawings. Adding these features is an important part of accessibility and ease of operation of the plant, and it forces us to be thoughtful about the layouts of the plant as a whole. One subteam is coding in a whole new piece to the plant: the drain channel. The drain channel will run along the side of the sedimentation and floc tanks and its purpose is to carry away the water that is drained from either of those tanks. One of our members is working closely with the chemical dose controller team to come up with an automated algorithm for the design of the chemical dose controller. This is an important piece of the plant that does not yet exist in our automated AutoCAD drawing. Several different 2D layouts have also been added to our AutoCAD automated drawing. Each layout shows a front, top, and side view of the large pieces of the plant (i.e. the sedimentation tank, the flocculator, and the entrance tank). Eventually we will also be creating separate layouts for smaller pieces, such as plate settler modules and baffle modules.