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Ariel Seidner's Individual Contribution Page

Spring 2014 Contributions

As part of the LFSRSF team in the Semester of Spring 2014, I helped complete the construction and documentation of the LFSRSF. I, along with the team, succeeded in documenting the entire construction of the filter, designed a new sand drain, made some modifications to the previous design and also initiated backwash. Along the entire process I helped in manufacture, such as drilling and milling and helping my team mates along the entire way. I also made sure that the filter was safe to use by checking that the filter was stable with a center of mass calculation. After testing the filter we where able to determine what the head loss through our filter was during backwash and during filtration and have made conclusions from this data to improve the design. By the end of the semester we accomplished what we wanted, granted that we came a little short of using the filter with clay and coagulant. However, the filter is ready to be used and tested in the future, with the hopes of further improving the design.

Fall 2013 Contributions

As a member of the Ram Pump team, I'm happy to say that the semester proved to be quite successful. At the beginning of the semester the Ram Pump team started with one mission it needed to accomplish: to create a Ram Pump that would deliver 70mL/s to the chemical stock tanks and the bathrooms of the AguaClara plant in Honduras. Although we did not reach this goal, we succeeded in ways that we did not expect.

Before I explain what transgressed throughout the semester in Hollister Lab 160, I have to make it very clear that the team worked together on almost all aspects of the project, and had we not done so, I believe we would not have the success we now have. Now, myself, along with the other group members, first constructed a fundamental laboratory component, the Simulation System. The Simulation System was not an option. Without it, it would be highly unproductive to test the ram pump given that large amounts of water would be wasted and the laboratory infrastructure itself could not provide the necessary water flow. The entire system was composed of two main parts. First, the main component is the headloss system. This is an arrangement of pipes that simulates the height against which the ram pump would have to pump water. The second part is the recycling system which brings water that is ejected from the waste valve and is carried back to the source so that it can be reused. This was an incredibly important part of the project and will be used in many semesters to come. As we completed this part we proceeded to test the existing design and collect data. I also helped to develop a theoretical limit of how much water a ram pump could possibly deliver. After having collected data from the necessary parameters we compared it to a commercial ram pump that that had been purchased and whose performance data was also collected. The comparison yielded a definite winner, the commerical ram pump, yet nonetheless it was also unable to deliver the 70mL/s that the team hoped for. To our surprise, the existing design from AguaClara was not too far out from the commercial pump and after having investigated the possibilities of why this was so, we incorporated new design considerations into a AguaClara model 2. The next blew our minds off! It delivered less than the previous model. I was quite bewildered and perplexed. Yet fate would come to help! We discovered a significant leak, fixed it and ran the pump one more time. The first trial yielded a HIGHER flow rate than the commercial pump! We where all extremely excited. This would be the design that we would take to Honduras.