

Foam Filtration Detailed Task List Spring 2014

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Abstract

The Spring 2014 foam filtration team will focus on improving the water treatment system designed in Fall 2013 and incorporate the knowledge learned on the trip to Honduras this past January.

1 Design New Apparatus for Lab

1.1 Flow Rate– Melissa

Figuring out how to recycle 1L/s of water in the lab to simulate real world conditions keeping in mind biological interference.

1.2 Redesign (De)Compression Technique– Skyler

After visiting Honduras, the winch and pulley technique was extremely labor intensive. The winch could not retract and the disk had to be pulled up manually. Also, the system was extremely over-designed and needs to be more compact to make travel easier. The steel system rusted almost immediately and was heavy, requiring multiple people to aid in construction; new materials should be investigated. To accomplish this, our first weekly meeting with Monroe will include brainstorming on future ideas. Additionally, we will need to consult with Paul Charles from the CEE Shop to see what other techniques are available.

1.3 Siphon Technique(?)– Bari

In Honduras, the siphon was slow at draining the dirty water off the top of the compressed foam. We aim to have either an improved siphon design or a completely different drainage system.

1.4 LFOM and Doser– Jeff

Based on our MathCAD files made last semester, the LFOM and doser designs should be improved. This includes the amount of coagulant dosed and attachment to the apparatus.

2 Life of Foam

2.1 Durability of Foam– Kristin

After the new structure is set up in the lab, this will include a series of tests to figure out the corresponding dosages with influent turbidities and how often it needs to be cleaned. Also, baseline efficiencies for different coagulants (PACl, Alum, etc.) with biological interference should be tested.

2.2 Compact Complete System– End of semester goal to keep in mind by all

This overall goal we have throughout the semester is to keep in mind the compactness of our entire apparatus so that it is easy to ship, construct, and maintain. This also keeps in mind the potential of foam filtration for disaster relief and getting to small communities.

3 Role Assignment

3.1 Kadambari Suri- Team Organizer (Stalker)

Bari excels at keeping us on track and knowing exactly where everyone is at all times including: professors, faculty, staff, Jorge, and other students. She sends us most of our reminders via text and emails and will continue to do so. Also, as a freshman her main task is to learn and continue the team in future semesters.

3.2 Jeff Suen- Data Coordinator

Jeff did the majority of the Lyx training and MathCAD last semester. Therefore, he is the most knowledgeable and willing to get work done.

3.3 Skyler Erickson- Materials Coordinator

Skyler gets along best with Paul and Tim, he also was the main team member last semester who contacted the foam distributor. He will continue to keep in touch with these providers to help us redesign our system.

3.4 Melissa Shinbein- Team Organizer (Tasks/Food)

Melissa has been on foam filtration the longest (forever). She will continue to use her M.Eng and undergraduate experience to guide the team towards their short and long term goals. She also enjoys baking immensely.

3.5 Kristin Chu- Proof Reader

Kristin, as the newest member of the team, will be in charge of proof reading. This will assure she becomes well acquainted with our goals and past research. Also, as engineers, writing is not our specialty. We need a proof reader.