Ram Pump Team Detailed Task List

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Part I

Research Ram Pump Parameters: 9/6/12-9/14/12

- Analyze previous team's research on Ram Pumps and Ram Pump designs. Consider weaknesses and strengths presented in their designs and determine areas in which further research should be focused.
- Read other researcher's reports referenced in the Spring 2012 Ram Pump Research Report, specifically those from Clemson University, Warwick University, and Papua New Guinea University of Technology to gain an understanding of other historically successful Ram Pump designs.
- Understand limitations in our design presented by our lab space, specifically those regarding the size of the ram pump and the flow rate through the pump.
- Determine the flow rate through pump and dimensions of pump that would be useful in an AguaClara plant.

Part II

Design Ram Pump: 9/15/12-10/5/12

- Design a ram pump based roughly off of previous team's designs, adjusting for the following:
  - Reduce the dimensions to allow the pump to fit on the lab bench while still providing a high enough flow rate to be useful in an AguaClara plant.

  - Consider relocating the waste valve to increase pumping efficiency and eliminate dead space.
  - Consider using commercial valves instead of custom valves to simplify construction.
  - Find an accurate means of measuring flow rate.
  - Design a means to reduce shaking and energy loss in the ram pump.
  - Consider availability of materials used in our design.
- Design the connection to delivery line between plant and distribution tank.
- Estimate delivery flow rates to stock tanks or storage tank.
- Determine if a storage tank for pumped water is needed.
- Figure out how to scale the pump design to higher or lower flow rates.
- Generate materials list.

Part III
Build Ram Pump: 10/5/12-10/26/12

- Order materials.
- Learn construction techniques from those familiar with fabrication.
- Build pump.
- Evaluate pump and construction techniques based on ease of construction, cost and availability of materials in Honduras, and pump stability and performance.

Part IV
Test Ram Pump: 10/26/12-12/1/12

- Determine pump efficiency for different flow rates.
- Determine limits of pump performance.
- Examine wear on pump parts from repeated use.
- Test different air chamber configurations and sizes.