Gravity Fed Water

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The Need for Easy Access to Clean Water

- The people in the town of Pangsing do not currently have a steady water supply
- We aim to create a water system that will deliver fresh water from a local spring directly to them
- Currently, the villagers have to use buckets for water transport
- Working with ALI in order to meet the needs of Pangsing

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Goals

- Water delivered over half mile via pipe to village
- Zero energy used to deliver water
- Filter water for household use
- Have two water outlets from tank, filtered and non

Specifications

- Low cost
- Materials available in Indonesia
- Be able to be implemented using standard tools

Supply System

- Water comes out of spring and flows through piping (0.4L/s)
- Goes into ferrocement tank for storage
- Filters are fed from ferrocement tank through valved piping

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Sizing of Pipe and Tank

- Using given flow from spring, we found the size of the pipe with room for expansion
- 2” SDR 17 HDPE pipe - chosen due to headloss being lower and greater system scalability
- 10x10 tank for water - 785 ft^3 or 5872 gallons

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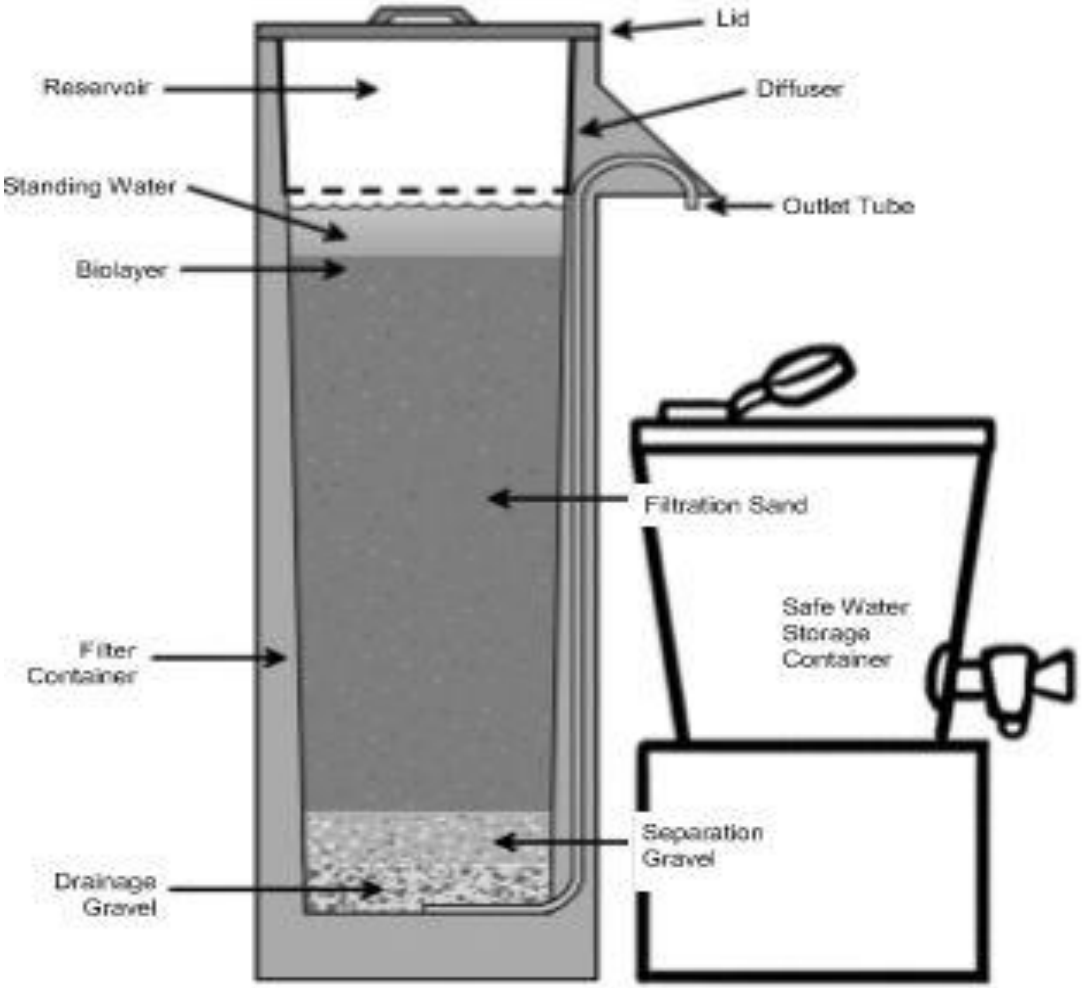
Filtration

- Did research on different types of filtration methods
  - Slow sand
  - Biosand
  - Rapid sand

- Used CAWST (Centre for Affordable Water and Sanitation Technology) design as basis for our own biosand filter design

Sizing for Filter

- Target flow rate of 1 gallon/minute
- 400 L/m^2/hr loading rate for BSF
- Area of .6 m^2 is needed (31in x31in)



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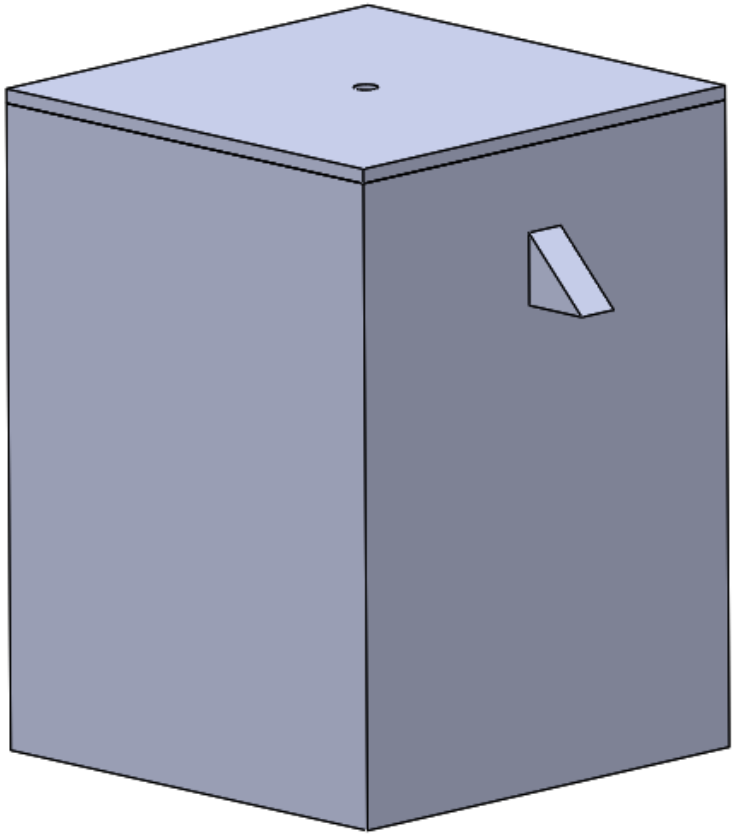
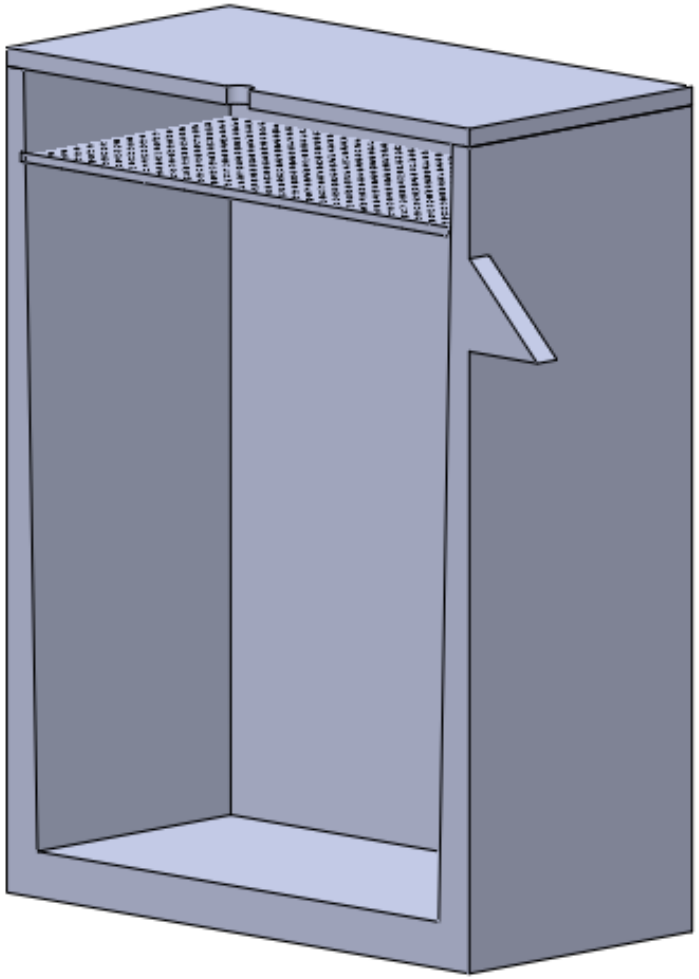
Materials for Filter

- Mold
  - Wood
- Concrete
  - Regular concrete (quickrete)
- Diffuser
  - plastic
- Sand/gravel
  - Will use medium sand in model (0.15-0.35mm)
  - Small/medium pea gravel below sand





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Conclusion

- Finished design of overall system (supply and filtration)
- Next Steps
  - Site team visit to build system
  - Implement these designs for future projects

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Questions?