

Village Supply System

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This sub team's primary goal is to design a distributed storage system for a village water supply.

In the past, [Six teams from CEE 4540 Fall 2013 explored options](#) for the design of village schemes. ([Background information is available](#))

Current & Future Research

In the end of December 2013, The World Bank and Indian Government have launched [\\$1billion rural water and sanitation project for low income states](#). The onset of the project signified the fundamental need for different approaches in designing water supply system for small villages .

Fall 2014 Village Supply System team is divided into three sub teams: Distribution System Design, Household Infrastructure, and Pump Design. Based on what CEE 4540 Fall 2013 teams have explored, each sub team aims to come up with more applicable village supply system that shall meet the expectation of the World Bank and the Indian government's rural water and sanitation project for low income states. In order to reflect the need of Indian villages, the team will actively have conversation with our partners in India about the growth and equity targets. Also, the team will utilize resource inventories such Google Earth to incorporate objective data of the area.

The challenges of each sub-team are presented below:

Distribution System Design:

Keeping four core standards—cost, efficiency, equity, and convenience—in mind, the Distribution System Design team will create a generalized algorithm for supplying treated ground water to each household. The team will try to ensure to devise flexible algorithm that can easily adjust to changes in population and climate. Three main components of the design shall be pipe sizes, pressure target, and flow restriction.

Household Infrastructure Subteam:

This semester, goals of the house hold infrastructure sub team include designing a household water storage tank, including a float valve and a flow restriction valve to ensure equitable distribution of water. Additionally this team will be designing a tap or faucet system for individual house holds that minimizes water contamination, the spread of waste and encourages sanitary habits. This team will also consider the design of a sink or water catch system for recycling and disposing of grey water.

In future semesters, this team could include anything from redesign of the toilet (use less or no water) to design of a greywater treatment system that will allow households to repurpose their wastewater safely. The code will also need to be modified to account for growth and variability, ensuring that the system can adapt to any rural village.

Pump Design Subteam:

This section works on how to modify and improves upon the ideas and models already in place for design of pumps in villages for the Fall 2014 Semester. Specific goals for these pumps include: having single electric pumps that send water to the town and lifts water from the well at ground level to an AguaClara facility/distribution system, deliberating types of pumps and pressure requirements for equal distribution, balancing cost and efficiency of pumps, and evaluating the different options for the design of the photovoltaic and pump system.

Among the different designs for the photovoltaic and pump system, this section will be looking at two main options. The first option will be to divide the power between the two pumps, create a simple control system for easily maintenance, and to design the photovoltaic system to be able to handle cloudy, winter days. The second option to be looked into will be to divert all the power to the first pump on cloudy days and to allow the control system to automatically divert all of the power to the well pump when the chlorine contact tank isn't full—thereby allowing the second option to be more easily implemented.

Members

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[Email Team](#)
[Documents](#)

	Challenges	Tasks	Symposium	Final Presentation
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Spring '14	? Unknown Attachment	? Unknown Attachment	? Unknown Attachment	? Unknown
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In Fall 2014, the Village Supply team split into three separate subteams, each focusing on a different area of the challenges. The documents for each subteam can be found below.

PV/Pump Subteam

	Challenges	Tasks	Symposium	Final Presentation
Fall '14	? Unknown Attachment	? Unknown Attachment	? Unknown Attachment	? Unknown

Distribution System Subteam

	Challenges	Tasks	Symposium	Final Presentation	Final Rep
Fall '14	? Unknown Attachment		? Unknown Attachment	? Unknown Attachment	? Ur

Household Subteam

	Challenges	Tasks	Symposium	Final Presentation
Fall '14	? Unknown Attachment	? Unknown Attachment	? Unknown Attachment	? Unknown