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Case Studies of an ISE Senior Design Project – Water Treatment in a Small Honduran Village

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Abstract: This paper concerns two different, but related undergraduate senior design projects that were implemented to assist a small Honduran village in water treatment efforts. The first senior design project occurred during the 2010-2011 Academic Year (AY) and consisted solely of Industrial and Systems Engineering (ISE) students. The purpose of the first project was to design a new and more reliable water transmission system to the various domiciles in the village with the source being a river (Rio Hondo). This project involved the construction of a new water tank with hyperchlorination capability. The second senior design project, with the goal of treating grey water from the domiciles, involved both ISE students and senior engineering students from other disciplines. From an academic standpoint, the students were not required to travel to Honduras to implement the projects. Nonetheless, the projects, one completed and the second now underway, were implemented by the villagers. In Summer 2011, some of the students and two faculty members traveled to the village to assist in the implementation of the first project. However, due to safety concerns in the country of Honduras, in large part spurred by the withdrawal of the Peace Corps from the country in early 2012, the university recommended that the students/faculty not travel to assist in the second project's implementation. Both senior design projects were quite successful, culminating with the second project taking first place in the university's senior design project competition. The paper will describe the various factors that led to the success of the projects including, but not limited to fundraising, working with Peace Corps volunteers (in the first project), working with local (Honduran) environmental agencies, and the involving of volunteers from student society chapters such as the Society of Hispanic Professional Engineers (SHPE) and Engineers Without Borders (EWB).

Keywords: Engineering Education, Capstone Senior Design, Global Issues