**Civil Engineering Infrastructure Project *in a Developing Country*:   
Design and construction of a water tower for a rural village of 500 people in the country of \_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Problem K3-4 1 1**

**OVERALL OBJECTIVE: Your firm is tasked with developing a summary design, construction, and maintenance plan for a water tower that will store and supply water for a rural village of 500 people in the country you have been assigned.**

**LONG-TERM DELIVERABLE (END OF SEMESTER): You will pitch your plans to the non-profit Mechanics Foundation in a 12-minute presentation at the end of the semester. Your plans must be developed thoughtfully enough to convince the foundation to provide funding for implementation of your plans in the near future. You will need to clearly identify the water demand for your location and present a detailed design with calculations and computer-generated detail sketches, and include a budget and maintenance plan.**

**EXPECTATIONS: This should be a fun and thought-provoking exercise weaved throughout the semester that considers (a) technical content, (b) societal and economic benefits and constraints, and (c) an entrepreneurial mindset. Each group is expected to keep track of all time spent on the project, and include this time report in your final submittal. Overall, this project will be worth a minimum of 100 “problem set” points toward your final Problem Set and Other Submissions grade. Bonus points may be awarded for exceptional work.**

**INTERIM DELIVERABLE #2: Now that your team has conducted research on water needs and water use in your assigned country and you have submitted a preliminary volume of water to store, the next steps are to finalize the volume of water to be stored and develop a conceptual design of the whole system.**

* **Reexamine your original calculations and conclusions based on initial feedback provided by the Foundation. After this reexamination, your must be able to specifically identify a) the expected present day per capita usage (in units of L/person/day and gal/person/day) for the community you have chosen, b) a clear explanation of water uses this considers, c) the final volume of your tank (in units of L, gal, and ft3), and d) the rationale for any adjustments used in establishing the final tank volume if any (i.e. if your tank volume is not simply 500 people times your per capita daily usage). [Note that “reexamining” does not implicity require that your team changes numbers for your original submittal.]**
* **Develop (or further develop) a conceptual design for your water system, including your water source, any treatment required for water quality, pumping requirements, water tower, and delivery method.**
* **As part of your conceptual design, you must have a water tower and not simply a tank placed on a hill. The reason for this requirement is for flexibility in placement and to facilitate transportability of your design to a broader environment. As part of your conceptual design, you must indicate the elevation of the bottom of your tank that you intend to use relative to the ground and explain the rationale for your decision.**
* **Prepare to meet with the Foundation for approximately 10 minutes on the day of the class meeting corresponding to Lecture 29. The meeting will be held in the SETRL conference room and you must be able to effectively communicate the above deliverables to the representatives of the Foundation in any form you desire. Note that a projector is not available in this room.**