

NC AWWA-WEA WEF Student Design Competition
Draft Problem Statement 2014-2015

The Town of Pittsboro, North Carolina (Town) owns and operates a Wastewater Treatment Plant (WWTP) which discharges secondary, tertiary, and UV treated effluent into Robeson Creek and has a permitted operating capacity of 0.75 million gallons per day (mgd). The population of Chatham County, including the Town of Pittsboro, is expected to grow considerably over the planning horizon and consequently, the Town would like for student design teams to investigate design alternatives to upgrade the existing plant to a total permitted operating capacity of 1.25 MGD. Preliminary engineering for improvements to the WWTP will include a preliminary engineering report (PER) and final presentation to the Town. The analysis should address the following elements:

- Rehabilitation versus demolition of existing treatment basins
- Current and future effluent limits
 - Biological Nutrient Removal (BNR), nitrogen and phosphorus.
 - Upgraded/Advanced tertiary treatment, including backup ultraviolet (UV) disinfection.
 - Biosolids processing and disposal.
 - Headworks evaluation to include grit removal.
- Expansion of the Town's reclaimed water system

Several aspects of the project site make it interesting and also challenging from a wastewater/water resources engineering perspective, including a constrained site located in the vicinity of residential areas, existing equipment that may be nearing the end of its useful life, and strict nutrient limits as a result of discharge to Robeson Creek, a tributary of Jordan Lake.

Design team(s) should include the following in the PER and final presentations, with special attention to the evaluation of design alternatives, where the conceptual design for the project is selected:

- Background and scope
- Existing conditions
- Preliminary design criteria
- Evaluation of design alternatives
- Conceptual design calculations and layout
- Cost estimates
- Summary and recommendations

A site visit to the Robeson Creek WWTP is tentatively scheduled for _____, where it is strongly encouraged that the student design teams attend and also plan to ask any questions regarding the project scope and preliminary design at that time. Randy Heard, the plant superintendent, will be available during the site visit to answer questions and provide additional information.