Group 9 Project Proposal

For our hydraulic engineering design project, we propose an implementation of a curbside bio-retention area on Trinity St. within the University of Texas at Austin campus. Our main concerns for this project will be the mitigation of non-desirable elements and organisms within the untreated water before it enters an inlet using plants as the primary filtration agency as well as slowing the flow velocities. This use of a curbside bio-retention area will incorporate tenets of low impact design, offer aesthetic appeal, and would be well-integrated to the pre-existing flora and fauna of campus.

In order to achieve our objectives, we would require design criteria for the aforementioned area, peak flow rates, knowledge of plants commonly used and suitable for our area, and general building codes so that we may build within acceptable bounds.

The simulation models we plan to use are Geographic Information Systems (GIS), AutoCAD, and SolidWorks. We have determined the key project elements to be concrete, soil, and plant material.

The key element involved with this implementation process is the angle of the flow, which will determine the amount of water that will enter the retention area. This in effect will determine the area needed as well as other specifications for each retention area. A secondary element is the plant life. Certain plants do not only create aesthetic appeal, but may be able to reuse some of the unwanted contaminants for food. Our team believes that this will lower contaminants that enter Waller Creek, as well as create a more luscious environment around the area.

Each member of the team has requested a specific task in achieving these goals. Janelle Wong will be focusing on attaining data involved in calculating peak flow rates in the area. This will involve rainfall intensities, flood data, and gradients within the area. Yu-han Yang will be in charge of plant life within the retention area, as well as city and state codes for implementation. Zachary Steeg will focus on GIS, and will also be collecting data including the 100 year flood design criteria for the area as specified by the City of Austin.