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HYDRAULIC ENGINEERING DESIGN PROJECT PROPOSAL

Our project objective is to reduce the stormwater runoff and the contaminate concentration into The Waller Creek watershed. We aim to investigate the feasibility of using permeable concrete or asphalt, which are Low Impact Development technologies, to accomplish this objective. Our focus will be on the campus impact on the Waller Creek watershed. Thus, we will narrow our scope to evaluate the runoff produced from either Dean Keeton or 21st streets.

Initially, this project will involve characterizing the environmental and hydrological problems of the watershed. Data on the runoff and water quality will need to be researched in order to assess the current environmental state of Waller Creek. We intend to collect this data from the City of Austin and the research completed by Professor Kinney from the Environmental Engineering Department.

For the hydrological aspect of our project, we intend to use the GIS data provided to generate an initial HEC-RAS simulation model to show the impacts of the specific area chosen on campus. The HEC-RAS model requires cross section geometry characteristics, culvert information, and steady flow data. The provided LIDAR and GIS data presents topographic and dimensional information on the current road systems within campus that could possibly be used in our simulation model. Finally, we will design our solution using AutoCAD and incorporate this design into our HEC-RAS model to evaluate our solution.

We anticipate permeable concrete and asphalt to be the key elements for our project. The main issues with this technology are clogging, maintenance, and raveling. A possible design to reduce the permeable concrete's clogging could be installing a stormwater grate as a means to remove sediments before reaching the permeable concrete. In order to complete this project successfully, Cassandra will focus on the development of the final GIS model, Albert will generate the final solution's CAD drawings, and Juan-Pablo will concentrate on simulating the runoff with HEC-RAS software. Additionally, as a group, we will collect the data needed for these simulation models. We hope to contact Professor Barrett to become our mentor.