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C E 365K- Hydraulic Engineering Design  
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### Flooding by Waller Creek along East 45<sup>th</sup> Street- Proposal

Waller Creek seems to serve as a major project in hydraulic engineering at Austin, Texas as regions surrounding Waller Creek experience major flooding problems. As mentioned in class, many areas surrounding Waller Creek have reported major flooding problems in the past, and the community desires actions that will mitigate such issues. For instance, one of the major regions of concern involves East 41<sup>st</sup> to 47<sup>th</sup> Streets, which many of the buildings in this region lie under the 100-year floodplain. Consequently, in this project, we aim to handle flooding along the area where Waller Creek and East 45<sup>th</sup> Street intersect using channel design and possibly LID. Figure 1 displays the primary region of interest.

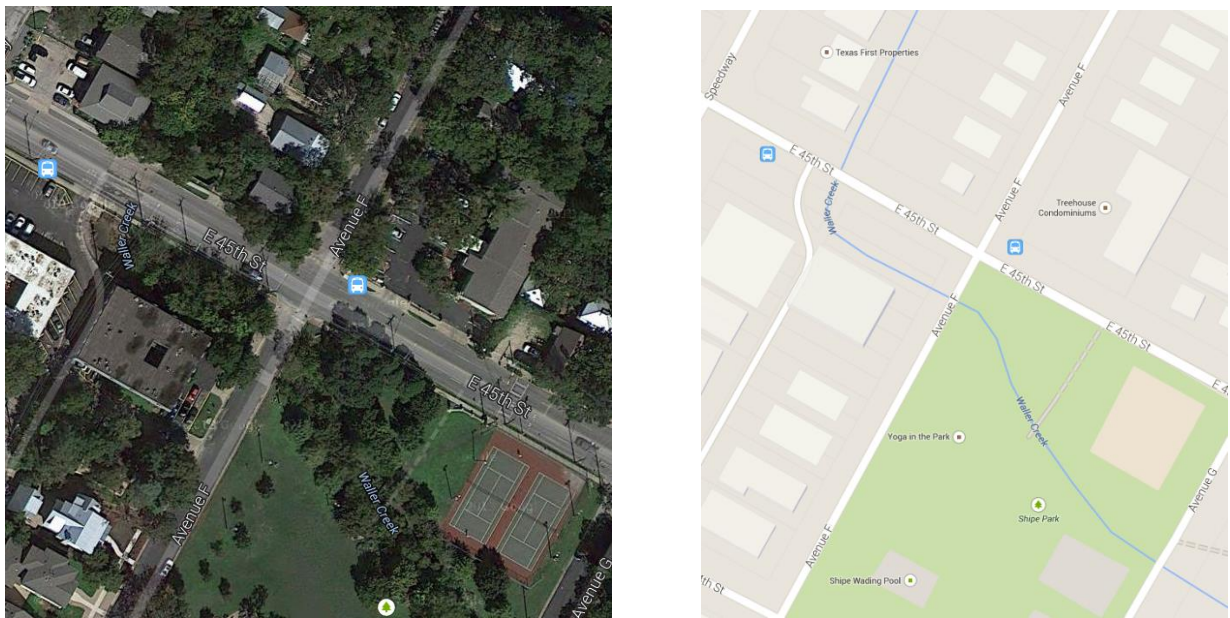


Figure 1: Satellite Map (Left) and Google Map (Right) of Region of Interest

In this project, to handle flooding, the flow rate upstream from the intersection of Waller Creek and East 45<sup>th</sup> Street needs to be known. Next, the discharge area that involves the intersection between Waller Creek and East 45<sup>th</sup> Street needs to be known. At the same time, we also need to know the annual precipitation for that area. Meanwhile, we also need to know the land use in the area as much of the area involves impervious surface. Next, for this project, we also

need to know whether we need to implement City of Austin's requirements, such as designing for a 25-year storm with a minimum duration of 5 minutes. Therefore, we can determine the runoff into Waller Creek and hence test whether an imposed solution will reduce the flow rate going into Waller Creek.

Then, since we are interested in handling the flooding problem by Waller Creek, we think that using simulation model HEC-RAS seems to be the most probable model. The model provides the depth of the channel, such as Waller Creek, which helps us determine whether our project may help lower the depth and hence the risk of flooding. Therefore, the key project elements involve the flow rate into Waller Creek and the depth of Waller Creek with our project plan.

As mentioned in class, the project requires 2 ArcGIS databases, 1 before the plan and 1 after the plan. Meanwhile, a detailed AutoCAD drawing of our project should also be included, along with the simulation model. Based on my group's discussions, **Matt Strumeyer** will be responsible for the AutoCAD detailed drawing of our project plan. This person, **Matt Strumeyer**, will also be responsible for determining the flow rate into Waller Creek from the discharge area before and after the plan. Meanwhile, **Scott Cameron** will be responsible for the GIS database before the plan, noted as a representation model. Finally, **Juhn-Yuan Su** will be responsible for the simulation models with the proposed plan. Meanwhile, we will work together on developing the GIS database with our plan, but **Scott Cameron** will be primarily responsible for constructing and maintaining the GIS database with the plan.