Noelia Gonzalez
October 30, 2012

**Term Project Update**
**GIS in Water Resources**
**Fall 2012**

**Title**
Rainwater Harvesting Analysis on 3D Rooftop Model

**Objective**
Analyzing Honolulu residential 3D rooftop models to determine the capacity of rainwater capture based on roof style.

**Location**
Honolulu, HI

**Update**
I have been able to obtain the following files:

- **Residential Roof:** The roof data file was obtained from CyberCity3D. The area of study is shown in Figure 1.

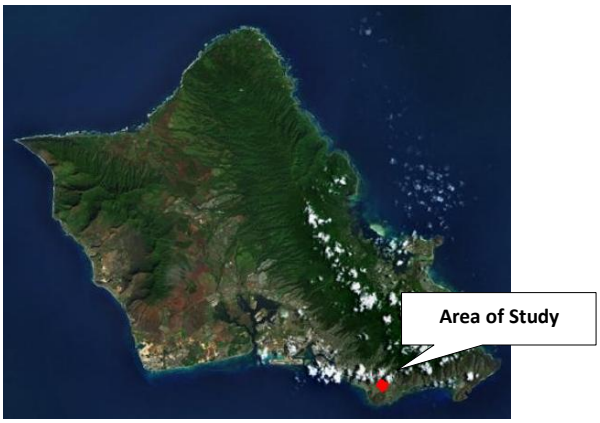

Figure 1: Honolulu, HI

- **National Elevation Dataset:** the DEM was obtained from http://water.usgs.gov/maps.html. The study area is located in Honolulu County, HI, Hydrologic Unit 20060000. The island is identified by a single hydrologic unit, no subunits. In order to make the analysis easier I used the extract by mask tool to create a polygon with only the area that I will be analyzing. The features that have been created so far are shown in Figure 2.

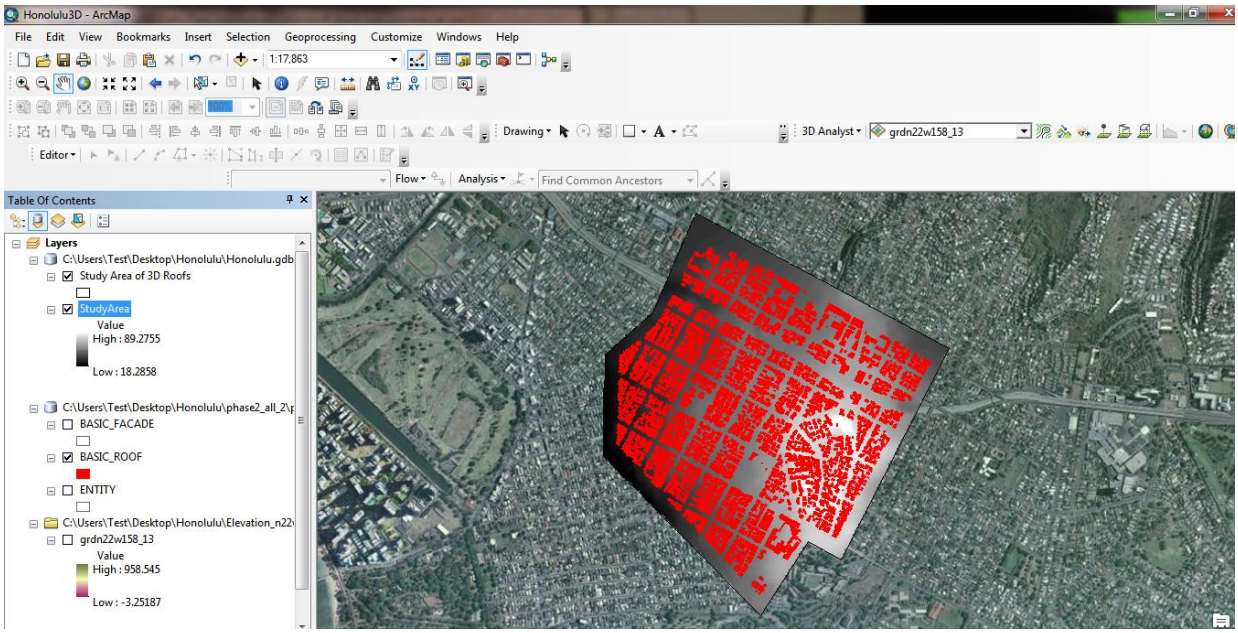


Figure 2: Polygon of the area of study

- **Precipitation:** The main purpose of this project is to create a more realistic approximation of the amount of water that can be collected by using the distribution of rainfall over time. I have obtained precipitation data from: http://waterdata.usgs.gov/nwis/dv?cb_00045=on&format=html&period=&begin_date=2010-10-01&end_date=2011-09-30&site_no=211747157485601&referred_module=sw.

**Steps to Follow:**

- I want to analyze the different amount of water that can be captured throughout the year. I will be using precipitation data from October 1, 2010 to September 30, 2012. This data needs to be incorporated into ArcGIS. I need to do a little bit of research to understand how to use the data. I will utilize Lecture 7-Spatial Analyst to find a way to incorporate the precipitation into ArcGIS and http://www.catchment.crc.org.au/special_publications1.html to learn about spatial analysis.

- I need to find the amount of water that can be captured by the roof type. In order to do this, I must find a formula that I will calculate the amount of water that can be collected. In doing so, I will take into account the amount of rainfall, the geometry of the roof, and the roof runoff coefficient. The runoff will be then calculated using the raster calculator operation in ArcGIS in order to find the water accumulation within my study area.