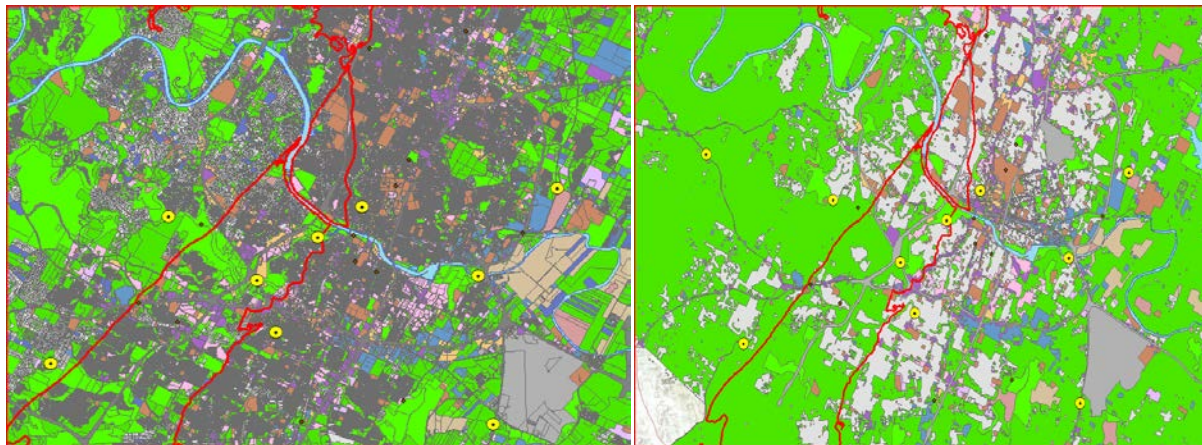


Water Quality and Flow Characteristics of Barton Springs and Surrounding Area

Barton Springs is a valuable resource in the Austin area, both in terms of recreational and ecological value. Increased urbanization in the area has caused concern about the potential for deteriorating water quality. The water that flows through the springs is from groundwater that is discharging from the Edwards aquifer. This project will attempt to describe the changing water quality along with the flow characteristics of the spring and surrounding area. This will be done by mapping historic characteristics such as land use, precipitation, streamflow, and water quality to depict the change over time.

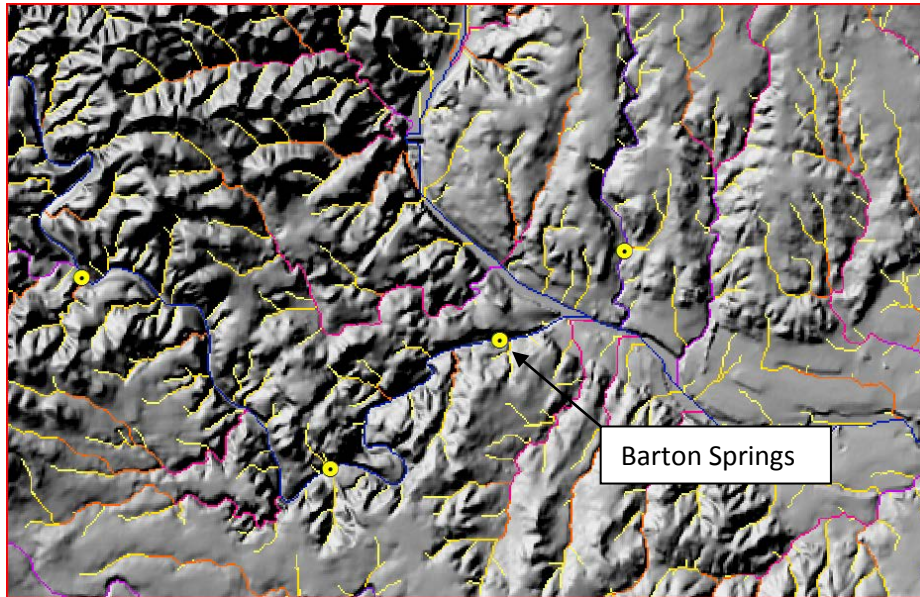
So far, layers for historic land use for the area, the hillslope and DEM for Travis County, recharge zones to the Edwards aquifer, and surrounding USGS streamflow gages with data for at least the past 10 years have been mapped. Land use data came from the city of Austin GIS ftp site for 1990, 2006, and 2008, and a very broad map for land use in 1985 came from the USGS enhanced historic land-use and land-cover dataset. Below is a comparison of the land use maps from 1990 and 2006, with the red outline representing the recharge zone for the Edwards aquifer. Both maps use the same color scheme to represent the same land uses. The two shades of green represent open space and underdeveloped/rural land. The comparison shows a loss of green space both in and around the recharge zone.



2006 Land Use

1990 Land Use

DEM and hillshade raster datasets for Travis County were added from Texas Tech's county datasets. From the DEM, the flow direction and flow accumulation for the area were calculated using the spatial analysis tools. The USGS stream gage data was found using the USGS NWIS website.



Hillshade, flow accumulation, and USGS stream gages in the Barton Springs Pool area

The next step for the analysis is to find and add data for precipitation, water quality, and demographics to see if there have been changes in development and water quality in the Austin area, specifically within the recharge area for the Edwards aquifer. Also, the topography, flow direction, and land use change around the springs will be evaluated to see if surface runoff could also be affecting water quality in the springs. Water quality data will be added from the USGS NWIS site. Precipitation data still needs to be found but should be available using either CUAHSI, or from the Texas Water Development Board.