



BOBCAT

GEOSPATIAL SOLUTIONS

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Work Completed

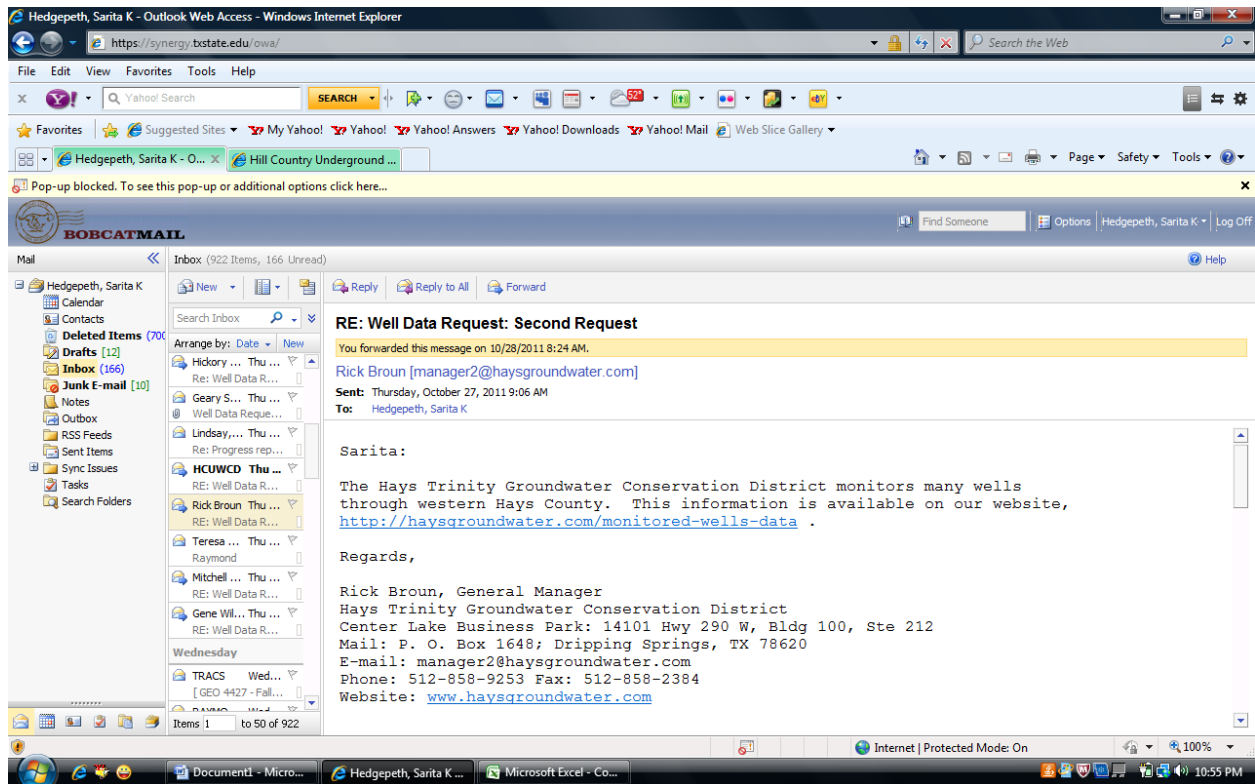
BGS began by collecting historic well data in the Texas Hill Country from the TWDB and USGS websites. We eliminated wells that didn't meet the criteria of at least 40 measurements over a 10-year period. To get recent measurements we sent out an email to all of the Groundwater Conservation Districts listed in HCA's proposal on October 5, 2011. We only got responses from Medina County, Cow Creek, and the Central Texas Groundwater Conservation Districts. One problem we have incurred is that the Medina County wells are only referenced by a reference number not a state well number.

We began the early stages of our map creation while we waited for responses to our request for data. BGS has acquired shapefiles from the Texas Natural Resources Information Systems website and created our base map. With the help of Ryan Schuermann, we placed the selected wells from our Excel spreadsheets we had constructed into the map using their latitude and longitude coordinates.

Ongoing Work

BGS is currently collecting monthly data for the wells. We found an entry on the TWDB website that contains quite a bit of the necessary monthly data. We are in the process of identifying wells common to the two TWDB databases and merging the separate datasets into a unified Excel spreadsheet. We will also combine information in the responses received from the Ground Water Districts we have contacted with our historical measurements. We have received useful data from Cow Creek Groundwater Conservation District, Medina County GWD, Headwaters Groundwater Conservation District (Kerr County), Central Texas GCD, Hays Trinity Groundwater Conservation District, Hill Country Underground Water Conservation District and the Edwards Aquifer Authority.

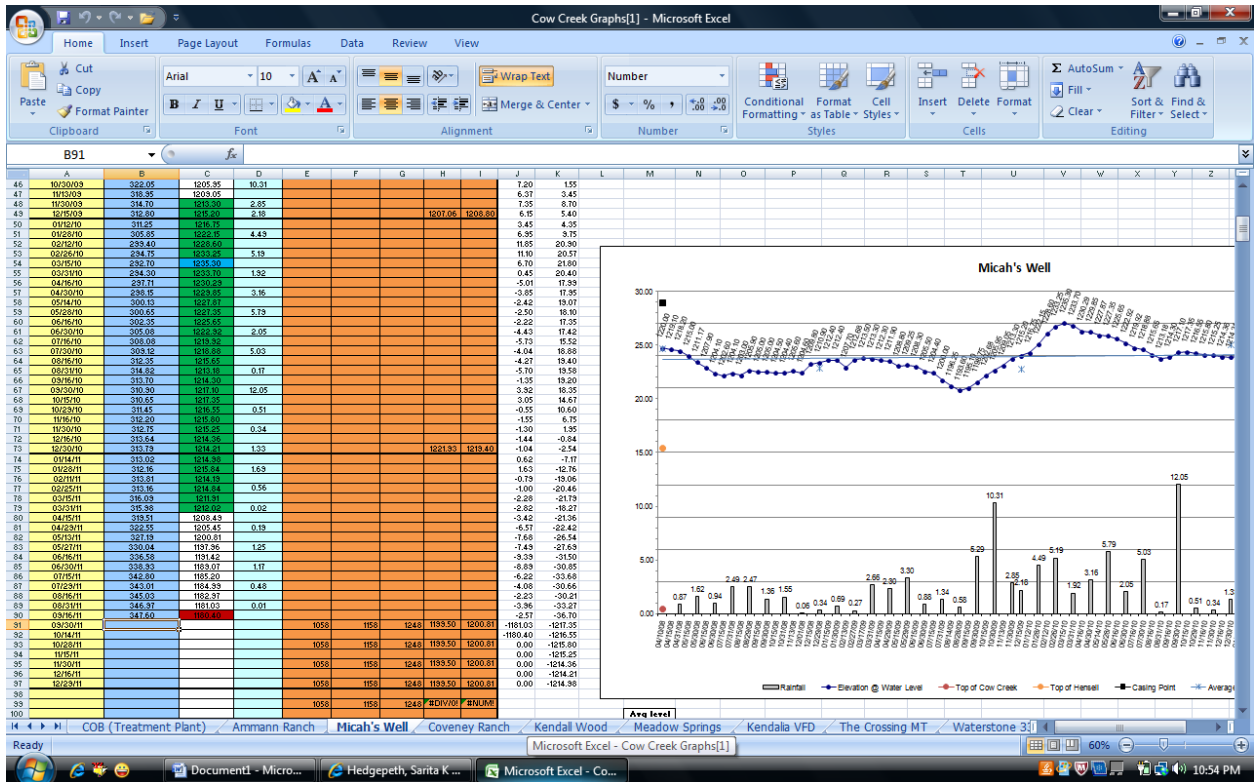
Figure 1: Sample Email of Contact with Ground Water Districts



An issue has arisen in the data extraction process from the Cow Creek dataset. Although Cow Creek sent the data in an Excel spreadsheet, we're having difficulty using the data in the "Date" field. If we can't use that field because of formatting problems, we will need to re-enter the date manually. We plan to get Ryan's help on Wednesday to find an Excel formula that will make Cow Creek's "Date" field usable data.

All group members are currently familiarizing themselves with the various software applications that will be necessary to perform the percentile analysis and to create the data-to-website interface.

Figure 2: Sample of data received from Cow Creek Groundwater Conservation District



Future Work

BGS will begin to refine the data now that current well data has been obtained from the ground water districts. Now, we will begin to aggregate these current monthly measurements to the historic data records collected from the TWDB and USGS. Once that is complete, percentile values will be calculated and recorded for each qualifying well. Next, if necessary, the wells will be re-geocoded into ArcGIS 10 based on latitude and longitude coordinates.

Using ArcGIS 10, necessary adjustments will be made to the data layers that will be used for the interactive IMS (Internet Map Server). ArcGIS 10 will also be used to convert the required data layers into KMZ files.

Once the refinement of wells and required data is complete, the webpage creation process will begin and the layers will be exported from ArcGIS 10 into Manifold System for the creation of the interactive map. Originally, Google Earth was proposed to be the source that will manage the interactive map, but it has been decided that Manifold System will be used. On the webpage,

the Manifold System link will direct users to the interactive map, where the data layers can be accessed.

Conclusion

We're happy to report that after a second request, six of the eight groundwater districts from whom we asked for data have responded. Their datasets are important because recent measurements aren't generally recorded on the larger databases kept by TWDB and USGS. Each dataset is unique in structure and must be tweaked in order to be completely useful for our study. We hope that we can automate much of that conformation, but we'll do manual data entry if necessary. We will continue to collect data from the remaining groundwater districts until November 7. We need to spend the remainder of our time on map creation, percentile calculation, and webpage development.

List of Groundwater Districts that responded to our email:

- Edwards Aquifer Authority
- Hickory Underground Water Conservation District No. 1
- Hays Trinity Groundwater Conservation District
- Central Texas GCD
- HGCD
- HCUWCD