Title: Characterization of Produced Water In New Mexico
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Project Description:

The Petroleum Recovery Research Center (PRRC), a division of the New Mexico Institute of Mining and Technology, compiled data on quality and quantity of produced water (water produced as a byproduct of oil and gas production) into the NM WAIDS database. This database encompassed information on water quality/quantity in various producing regions of the state. Purposes of the original database included assessments of the amount and quality of produced water to support the design of water treatment systems to promote the use of produced water. Work on the database ceased about 10 years ago. The database is now out of date, and online access to the database is currently not available. The proposed project would update the NM WAIDS database, bring the database online, provide GIS user-friendly functionality and analysis tools, and identify and attempt to fill in data gaps in newly active plays in the San Juan and Permian basins.

The NMWAIDS database was taken offline in 2013 due to concerns about the security of the web pages and queries that accessed the database. In the ten years that have elapsed since the database was first put online, cyber security has become an increasingly important consideration and the old interface was becoming highly vulnerable. In addition, there is a need to obtain more data. Several oil and gas plays have come to the foreground since the bulk of the data was collected, including new horizontal plays in both southeast and northwest New Mexico.

Methodology:

The project objectives are:

1) Reactivate access to the current water quality/quantity database by recoding the web interface using current best practices,

2) Examine the existing produced water database to identify data gaps and make efforts to fill in those gaps,

3) Provide data access via online search queries, both text-based and through an online GIS based system if possible. Sufficient location information will be provided to enable users to map data in their own systems via a common format such as GIS shapefiles.

Results:

The revised design layout for the entire Go-Tech website, which hosts the water quality database access pages (NM WAIDS), is complete at this point. Internal beta testing is underway. The revised web site, including the water quality databases, is planned to be in operation by 9/15/2015, with the transition taking place over a weekend to avoid downtime during normal working hours.

Major efforts during the previous quarter were primarily trouble-shooting small problems with the new web site and making sure that it was ready for publication.

A recent effort to digitize previously unpublished data that was collected by the USGS from wells in southeast New Mexico has been completed, and will add about 130 samples to the NM WAIDS database. This data is primarily produced water samples from wells that were sampled in the mid-1950's to 1960's.

Efforts have also been underway to begin redeployment of the online GIS mapping service to both oil and gas production wells and produced water sample data. Initial work using one particular software solution did not work well on the large production well dataset so we are now focusing on using Google Maps as a programming interface. A beta product is now available but will require some modification before it can be useful to a general audience.

Remaining Work:

A server must be configured to handle two different operating environments that will be needed by various components of the web site as a legacy system was required by one of our other clients. This should be the last step before the major project objective, Item 1, is complete. Task 2, analysis of data to identify gaps, will be started during the second quarter of the new project year. The online GIS maps, Task 3, will require a significant amount of attention and may not be completed by the end of the year; however the data can be made available as GIS shapefiles for user download.

Student Participants:

Graduate Students:
Dongyi Chen – PhD, computer science
Cris Gallegos – Master's, computer science
Matt Bradley – Undergraduate, Technical Communication

Powerpoint Update: I would prefer to wait until the new web site is up before providing the Powerpoint slides.