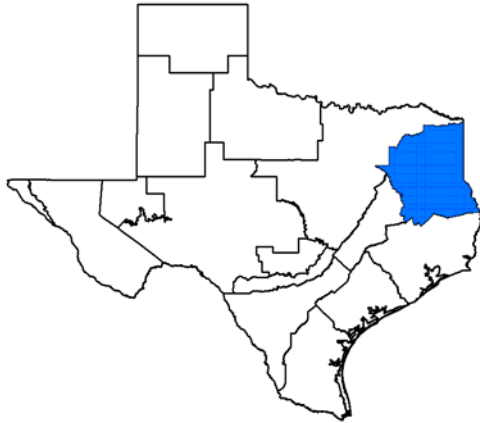


## Update of the Existing Groundwater Availability Model for the Northern Portion the Carrizo-Wilcox Aquifer



Bill Hutchison, Ph.D., P.E., P.G.  
GMA 11 Meeting  
November 14, 2017

## History

- July 2016
  - TWDB Published Request for Statement of Qualifications
- August 11, 2016
  - Due date for Statement of Qualifications
- November 2, 2016
  - TWDB Awarded Project to GSI Environmental team
- March 28, 2017
  - Contract signed by TWDB
- May 8, 2017
  - Kick-off Meeting with TWDB and GSI Environmental Team
- May 9, 2017
  - Stakeholder Advisory Forum No. 1

## TWDB Websites

- Version 1 of CW Model (2003) and Current Update:
  - [http://www.twdb.texas.gov/groundwater/models/gam/czwx\\_n/czwx\\_n.asp](http://www.twdb.texas.gov/groundwater/models/gam/czwx_n/czwx_n.asp)
- Current (2005) GAM (includes Sparta and Queen City)
  - <http://www.twdb.texas.gov/groundwater/models/gam/qcsp/qcsp.asp>

The screenshot shows the Texas Water Development Board website. The main heading is "Northern Portion of the Carrizo-Wilcox Aquifer Groundwater Availability Model (GAM)". The page includes a search bar, social media links, and a navigation menu. The main content area contains text about the model's development and a map of the aquifer. A red-bordered box highlights a warning: "The current groundwater availability model, which includes the Carrizo-Wilcox Aquifer can be accessed at Carrizo-Wilcox, Queen City, Sparta Aquifers Groundwater Availability Model. However, model users interested in details about the development of the Carrizo-Wilcox Aquifer Groundwater Availability Model should still refer to the groundwater availability model report (Version 1) listed below." Below this is a "Stakeholder Advisory Forums (SAF)" section with a table listing a forum on 5/9/2017 in Nacogdoches, Texas.

**Texas Water Development Board**

Home Board SWIFT Financial Assistance Water Planning Groundwater Surface Water Flood Conservation Innovative Water

### Northern Portion of the Carrizo-Wilcox Aquifer

#### Groundwater Availability Model (GAM)

In 2017, the Texas Water Development Board (TWDB) contracted with GSI Environmental, Inc. to update the groundwater availability model of the northern part of the Carrizo-Wilcox, Queen City, and Sparta aquifers in Texas. A final report and model will be released in late 2019.

In 2002, the TWDB contracted with Intera, Inc. (who teamed with Parsons Engineering Science, Inc., Waterstone Environmental Hydrology and Engineering, Inc., and several individual experts) to develop a model of the northern portion of the Carrizo-Wilcox Aquifer in Texas. A final report and model were delivered in 2003.

**The current groundwater availability model, which includes the Carrizo-Wilcox Aquifer can be accessed at Carrizo-Wilcox, Queen City, Sparta Aquifers Groundwater Availability Model. However, model users interested in details about the development of the Carrizo-Wilcox Aquifer Groundwater Availability Model should still refer to the groundwater availability model report (Version 1) listed below.**

**Northern portion of the Carrizo-Wilcox Aquifer GAM Update**

#### Stakeholder Advisory Forums (SAF)

Send us an email if you would like to receive SAF notifications.

ID	Date	Location
<a href="#">SAF_1</a>	5/9/2017	Nacogdoches, Texas

**Aquifers**

- Groundwater Management Areas
- Desired Future Conditions
- Groundwater Conservation Districts
- Groundwater Data
- Groundwater Models
  - Groundwater Availability Models
  - Alternative Models
  - Research Projects
  - Analytical Methods

**Groundwater Educational Videos**

- Regional Water Planning Areas
- Special Projects
- Rules and Statutes
- Frequently Asked Questions
- External Resources
- Groundwater Staff

State Water Implementation Fund for Texas (SWIFT)

## Conceptual Model Progress

- Developing hydrostratigraphic framework for aquifer layering
- Compiling and evaluating hydrologic data

## Hydrostratigraphic Framework

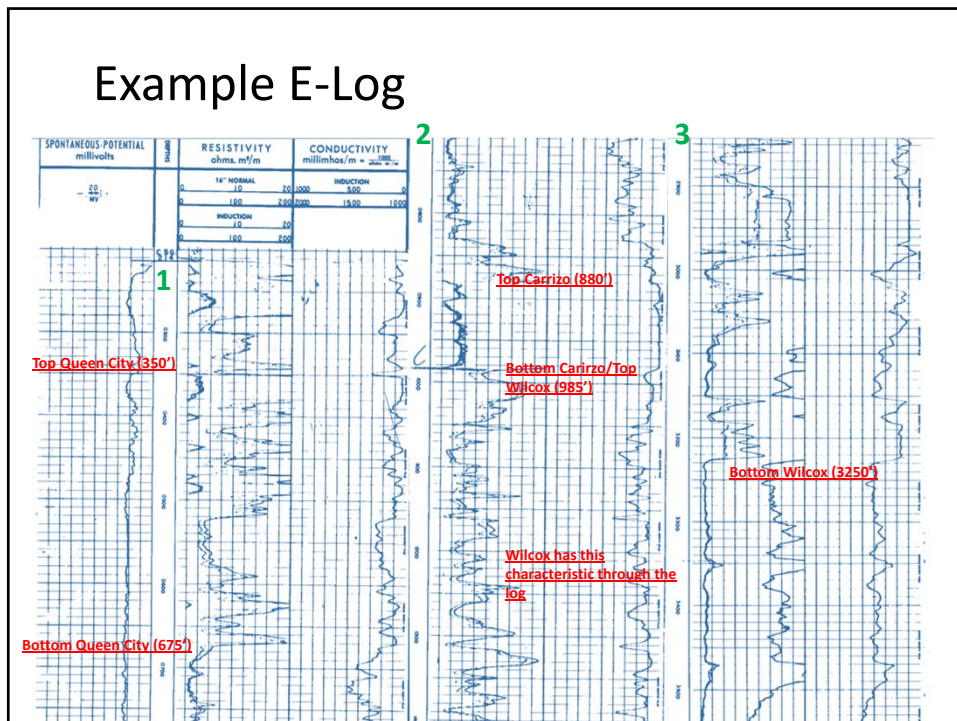
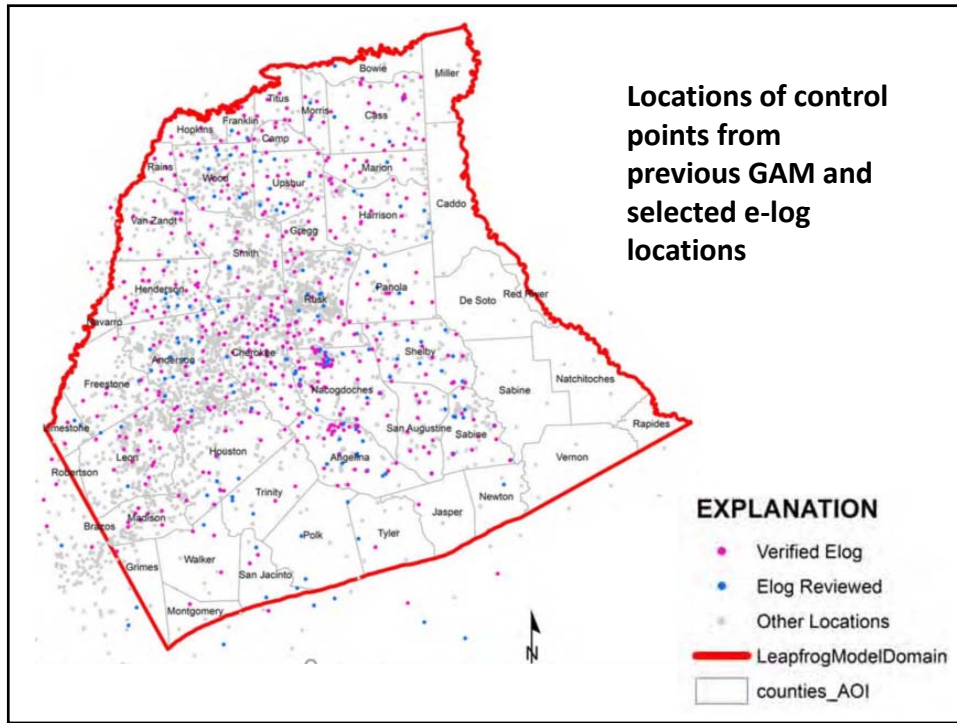
- Constructing 3D geologic model from:
  - Surficial geologic maps (outcrop areas)
  - Aquifer layer contacts
    - Geologic reports (maps, contact summary tables, cross-sections)
    - Geospatial datasets (TWDB GAMs)
    - BRACS geophysical logs (e-logs)
- Verified aquifer layer contacts from current GAM using e-logs from TWDB BRACS datasets
- Constructed using Leapfrog software

## Model Layers (Current GAM)

1. Sparta
2. Weches
3. Queen City
4. Reklaw
5. Carrizo
6. Upper Wilcox
7. Middle Wilcox
8. Lower Wilcox

## Verification of Layering

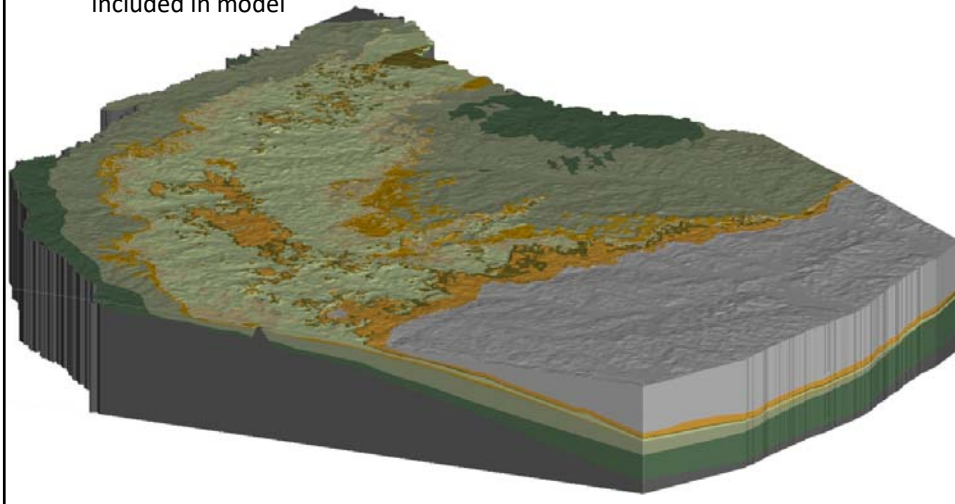
- 3,700 locations with elevations of aquifer contacts in current GAM
- 714 BRACS e-logs in proximity to contact locations were selected to verify elevations
  - 453 good matches
  - 261 poor matches to e-logs that were available
- 107 new contact locations were added for this update
  - These will be submitted to BRACS



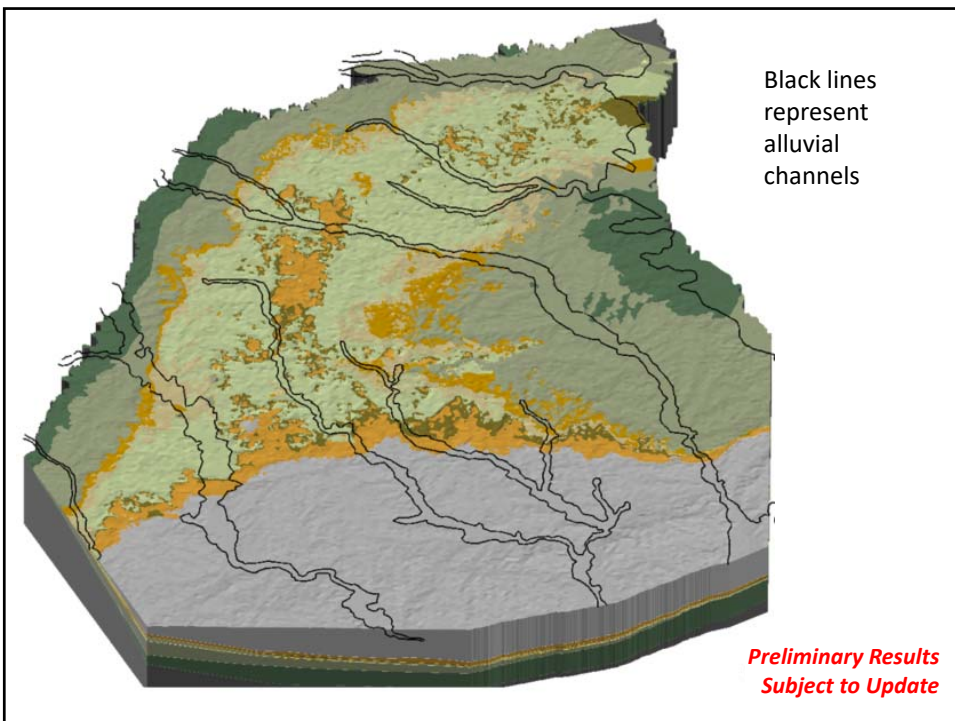
Highlights in this View:

- Dipping beds
- Surficial geology (outcrops)
- “Islands” of Sparta
- Gray is undifferentiated younger units (i.e. Yegua-Jackson) not included in model

*Preliminary Results  
Subject to Update*



Black lines  
represent  
alluvial  
channels



*Preliminary Results  
Subject to Update*

## Data Compilation (TWDB and BRACS databases)

- Well locations
- Well construction information
- Lithologic information
- Well use categories
- Historic groundwater elevations

## Geospatial Datasets

- Vegetation
- Soils
- Surface water features
- Geopolitical boundaries
- Reference features (e.g. roads, towns)

## Next Steps

- Complete hydrostratigraphic framework
  - End of November 2017
- Develop remaining components of Conceptual Model
  - Physiography and climate
  - Groundwater levels
  - Recharge
  - Rivers, springs, and reservoirs
  - Aquifer hydraulic properties
  - Groundwater discharge
  - Groundwater quality

## Project Schedule

- Conceptual Model Draft Report Deadline
  - June 28, 2018
- Calibrated Model Draft Report Deadline
  - June 27, 2019
- Final Report Deadline
  - October 31, 2019



# Questions and Discussion

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