SJRA
SAN JACINTO RIVER AUTHORITY

GRP REVIEW COMMITTEE
MINUTES OF REGULAR MEETING

March 20, 2023

The San Jacinto River Authority ("SJRA") GRP Review Committee Meeting was held at 11:30 a.m., March 20, 2023, at the SJRA G&A Building – Boardroom 1577 Dam Site Rd, Conroe, Texas 77304. The meeting was also available for viewing only via a livestream on www.sjra.net/grp/meetings. Notice of said meeting was duly posted per GRP Contract requirements.

The following Review Committee Members participated:

Present:	GRP Review Committee:	Representing:
Rick Moffatt	Chair	MUDs East of I-45
Mike Mooney	Vice Chair	Woodlands Water Agency
Jackie Chance		MUDs West of I-45
Mike Stoecker		Investor-Owned Utilities
Harry Hardman		City of Conroe
James Corn		Cities other than City of Conroe

Also present:

Name:	Title:
Ed Shackelford, P.E.	SJRA Director of Operations
Mitchell Page	Schwartz, Page & Harding, L.L.P., SJRA General Counsel
Chris Meeks	SJRA Utility Enterprise Manager
Summer Hvasta	SJRA UE Customer Service Manager
Jason Williams	SJRA UE Operations Manager
Kelli Stormer	SJRA Senior Accountant
Joy Homewood	SJRA Administrative Assistant III
Tom Michel	SJRA Director of Financial and Administrative Services
Jace Houston	SJRA General Manager
Samantha Reiter	Lone Star Groundwater Conservation District (LSGCD), General Manager
Jim Spigener	Lone Star Groundwater Conservation District (LSGCD), President
James Beach	Hydrogeologist, Advanced Groundwater Solutions, LLC
David Smith	Citizen
Mike Keester	Hydrogeologist, R.W. Harden Associates
Steve Young	Intera
Webb Melder	Citizen
Jason Miller	City of Conroe
Norm McGuire	City of Conroe
John Ellis	United States Geological Survey (USGS)
Erich Peterson	Citizen

1. CALL TO ORDER

Mr. Moffatt called the meeting to order at 11:30 am.

2. PUBLIC COMMENTS

There were no public comments.

3. APPROVAL OF MINUTES

Mr. Hardman moved to approve the minutes from February 21, 2023. Mr. Corn seconded the motion and it was carried unanimously.

4. GRP DIVISION UPDATES

Mrs. Hvasta talked about two recent tours of the GRP Surface Water Treatment Plant, one with the Leadership Montgomery Class and another with several students from Coulson Tough Elementary. She highlighted how the students won at the regional level of the "Destination Imagination" program, and they will be competing at the State Tournament on March 25th.

5. PRESENTATION AND DISCUSSION OF THE GRP DIVISION'S FISCAL YEAR 2024 10-YEAR PROJECT PLAN

Mr. Meeks outlined the procedure for this annual item, briefly reviewed the provided handouts, and reminded the members there is no required approval of the plan as any needed funds are included in the fiscal year budget that will be presented at the April Review Committee meeting and approved at a subsequent meeting.

The presentation started with a quick overview of the GRP system and assets, a note about the methodology used to score assets for business risk exposure, and the numeric thresholds for either replacement or monitoring in the project plan. Mr. Chance asked a question on the air release valves (ARVs). Mr. Meeks confirmed we have around 270 total, the preventative maintenance cycle runs about every 3 years, and we are in the middle of an active project that aims to assess the current status for all the ARVs and address any issues or necessary replacements. He then moved to the next slide and reviewed the details on the membrane replacement project, which has been on the 10-year project plan for a few years at this point. Mr. Meeks covered the cost differences from last year and the process for evaluating the current state of the membranes themselves in order to accurately judge the remaining useful life on the asset.

On the next slide, Mr. Meeks introduced a new project, Process Water Discharge Optimization, related to improving the current process for handling our discharge water, based on the results from a feasibility study completed last year. After describing the various advantages, potential disadvantages, and current quotes, the review committee members and staff discussed some of the aspects and further examination that may be needed. Due to the fully funded nature of the reserves after last month's vote, the current proposal may involve funding this project from the available cash flow as opposed to including it in any proposed rate order changes. A preliminary engineering report with the potential O&M cost will be presented to the Review Committee in FY24. Mr. Meeks then presented the last slide for the 10-year project plan and summarized both the final project costs and various funding sources over the next ten fiscal years.

6. LONE STAR GROUNDWATER CONSERVATION DISTRICT REPORT

Several representatives from LSGCD were in attendance. Mr. Spigener introduced himself and provided an overview of the background of the current board, their three primary mandates, their view on subsidence and its relation to flooding, and a brief history of various events in Montgomery and Harris country. He also touched on the upcoming Gulf 2023 model and the Spring Creek Study.

There were two hydrologists present, and Mr. Spigener introduced Mr. James Beach first. Mr. Beach touched upon some of the history of the LSGCD, Chapter 36 of the Texas Water Code, Desired Future Conditions, and the development of the Groundwater Reduction Plan over the last several years. He also acknowledged the respective importance of subsidence and the LSGCD Board's reasons for moving forward with the proposed subsidence study and proposing extensometers. He then turned the presentation over to Mr. Mike Keester with R.W. Harden Associates.

Mr. Keester provided details around the previous phrases, data gathered, future projections, and the primary goals of the study. He displayed maps showing various aspects of the Gulf Coast Aquifer System. Mr. Keester then reviewed data and differences around each aquifer, potential benefits of phase 3 of the study, and the six proposed locations for an extensometer in phase 3. Over the next several slides, he touched upon geophysical logging, the process for the lab analysis of core samples, and the current and proposed extensometers in Houston. To close out, he summarized the goal and focus of phase 3 overall. At this point, the representatives from LSGCD took questions from the Review Committee members. Questions and subsequent discussions were related to costs for the proposed extensometer in phase 3, previous flooding events and their impact on previous decisions by LSGCD, data provided by GPS locations and benchmarks, impact of drainage on the overall situation, and potential funding sources for additional extensometers.

7. GRP ITEMS FOR CONSIDERATION BY THE SJRA BOARD OF DIRECTORS

No items for the SJRA BOD at this time.

8. ATTORNEY'S UPDATE

Mr. Page provided an update on GRP related legal matters.

9. FUTURE GRP REVIEW COMMITTEE MEETING AGENDA ITEMS

No items recommended for April's meeting at this time.

10. FUTURE MEETING SCHEDULE

a. Monday, April 24, 2023.

11. ADJOURN

Mr. Moffatt adjourned the meeting at 12:37 PM.

Chris Meeks
SJRA Utility Enterprise Manager / GRP Administrator

Lone Star Groundwater Conservation District

UPDATE ON LSGCD SUBSIDENCE STUDY

MARCH 20, 2023

OUTLINE

- Abbreviated History and Timeline for LSGCD
- Why Study Subsidence in Montgomery County?
- Phase 3 Update

LONE STAR GCD HISTORY AND TIMELINE

Formed with appointed board	2001	
	2005	Chapter 36 update -Joint Planning, DFCs
GRP development begins	2006	
First GRP contracts	2010	First DFCs adopted based on 64,000 afy recharge

LONE STAR GCD HISTORY AND TIMELINE

	2011	Chap. 36 update – balancing test
	2012	Supreme Court issues Day decision
large users sue LSGCD alleging reduction rule is illegal	2015	
LSGCD DFCs are petitioned	2016	

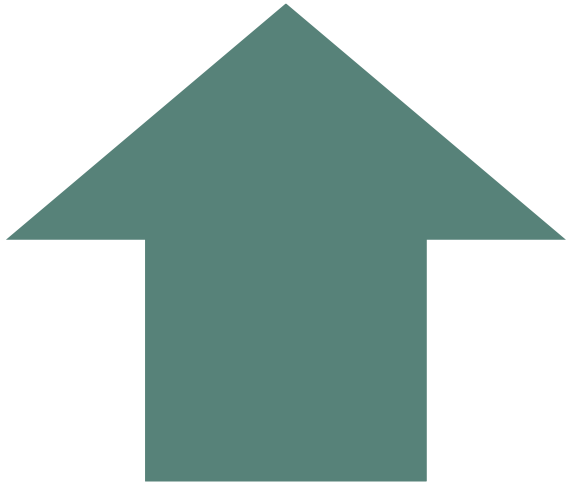
LONE STAR GCD HISTORY AND TIMELINE

Legislature changes LSGCD from appointed to elected board DFC Petition successful	2017	LSGCD concludes that 100,000 afy pumping is feasible based on "Strategic Planning Study"
Elected board takes office in November	2018	

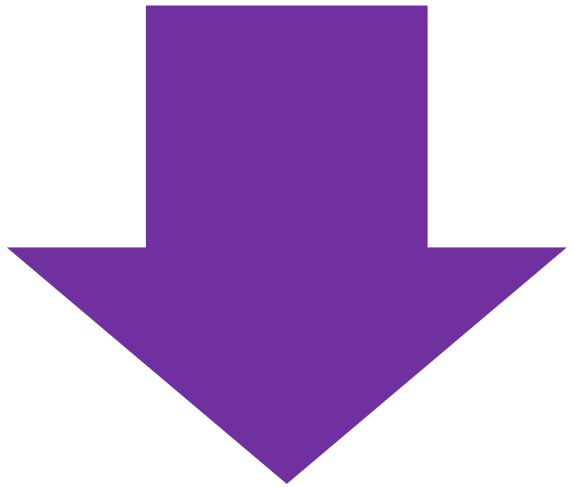
LONE STAR GCD HISTORY AND TIMELINE

	2019	State court invalidates LSGCD GRP rules
	2020	LSGCD amends rules to eliminate GRP and reduction rules
	2022	GMA 14 approves DFC with ~ 97,000 afy pumping in LSGCD

CHAPTER 36 BALANCING TEST – THE DFC MUST PROVIDE A BALANCE BETWEEN



highest practicable level of groundwater production

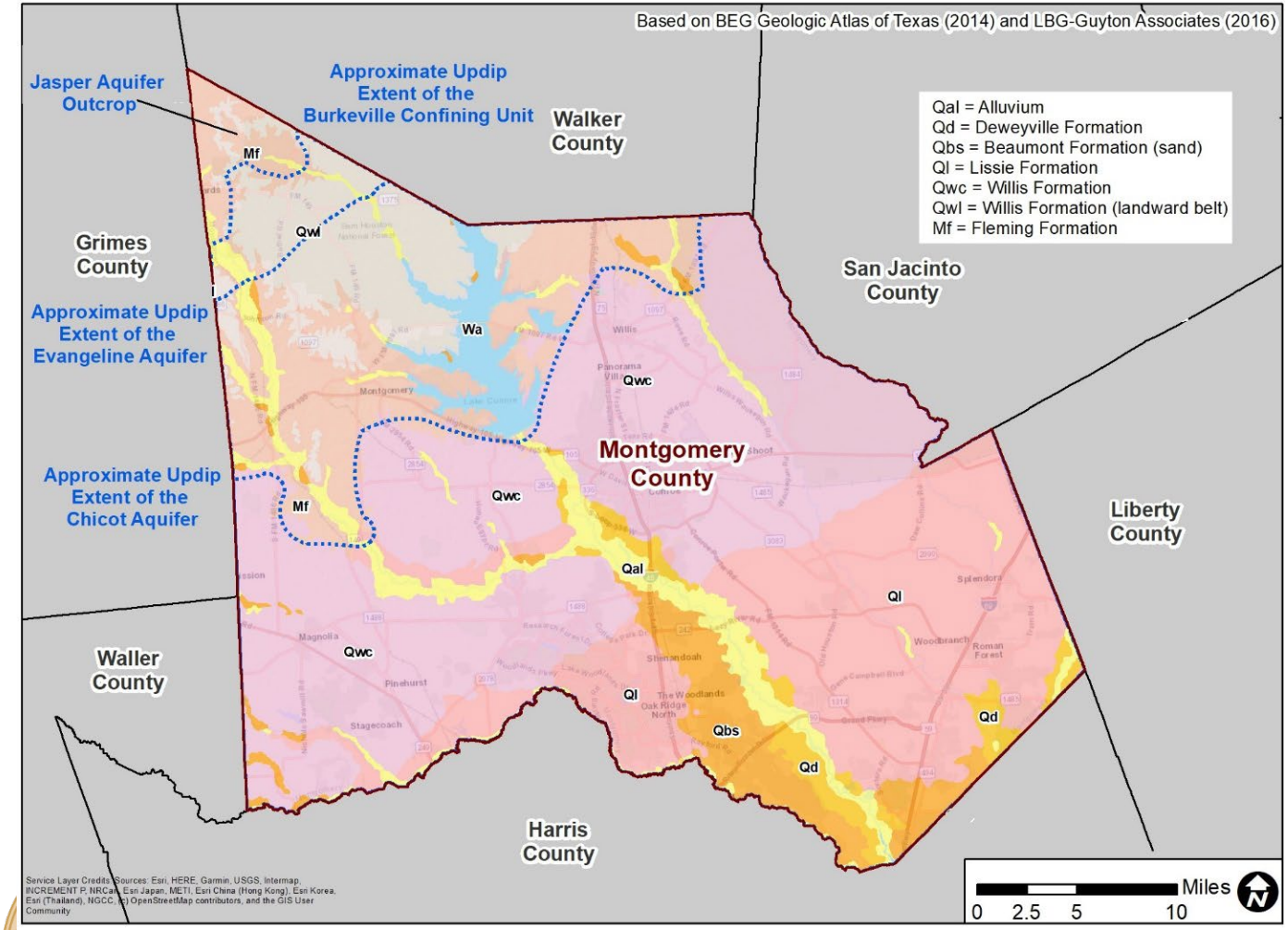


conservation, preservation, protection, recharging, and prevention of waste of groundwater and control of subsidence

9 FACTORS TO CONSIDER IN DEVELOPING DESIRED FUTURE CONDITIONS

Aquifer Uses or Conditions	Supply Needs and Management Strategies	Hydrological Conditions
Environmental Impacts	Subsidence Impacts	Socioeconomic Impacts
Private Property Rights	DFC Feasibility	Other Relevant Information

GULF COAST AQUIFER SYSTEM



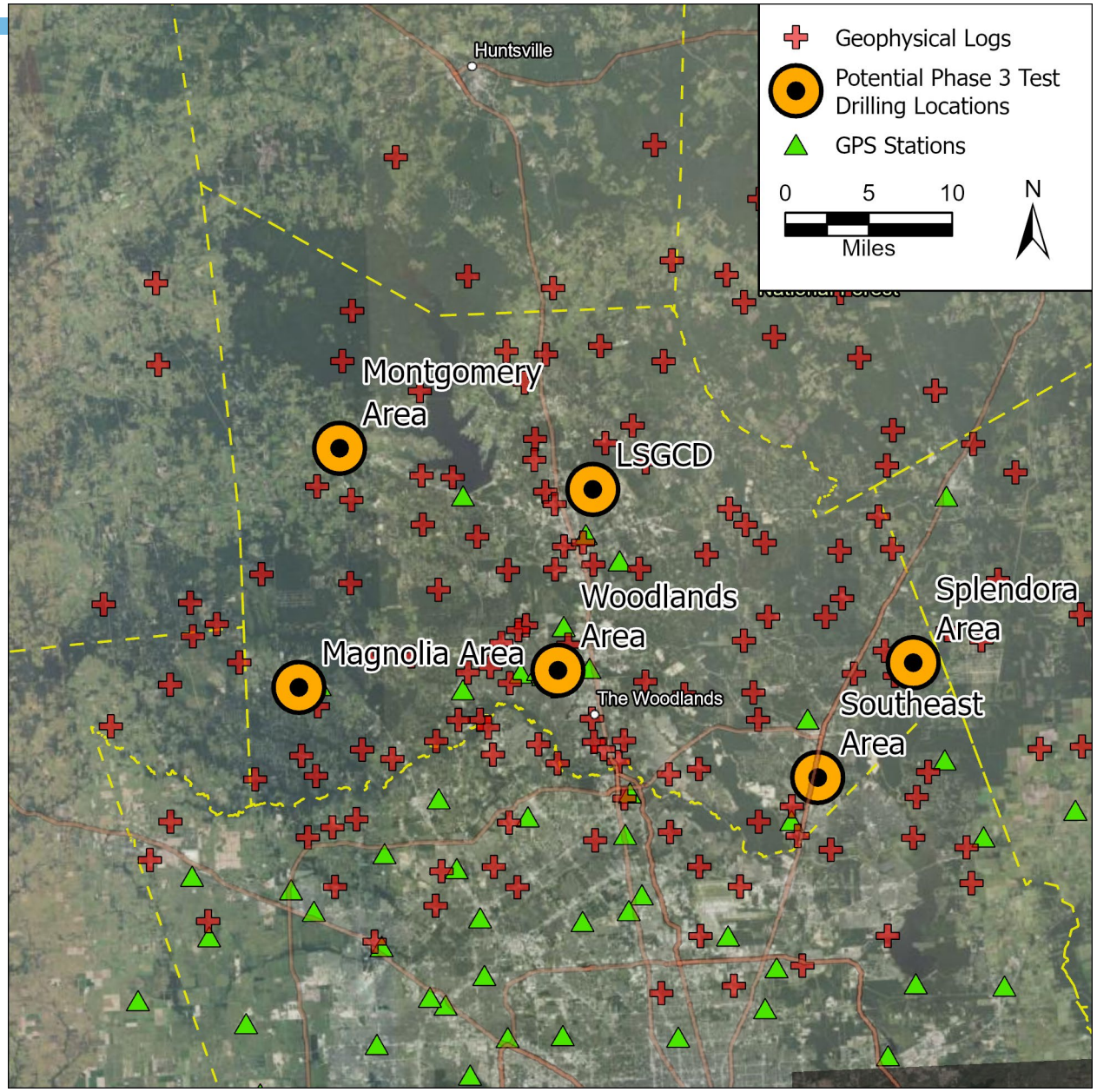
Epoch	Hydrogeologic Unit	Geologic Unit	
Holocene	Alluvium		
Pleistocene	Chicot Aquifer	Beaumont Clay	
		Lissie Formation	
Pliocene		Willis Formation	
Miocene	Evangeline Aquifer	Goliad Sand	Upper
			Lower
	Burkeville Confining Unit	Fleming Formation	Lagarto Upper
			Lagarto Middle
	Upper Jasper Aquifer		Lagarto Lower
	Lower Jasper Aquifer		Oakville
Oligocene	Catahoula		Catahoula

PHASE 3 BENEFITS

- Obtain site-specific data in Montgomery County related to compaction
- Inform our understanding of past compaction
- Improve regulatory groundwater models
- Directly relates to data-driven resource management

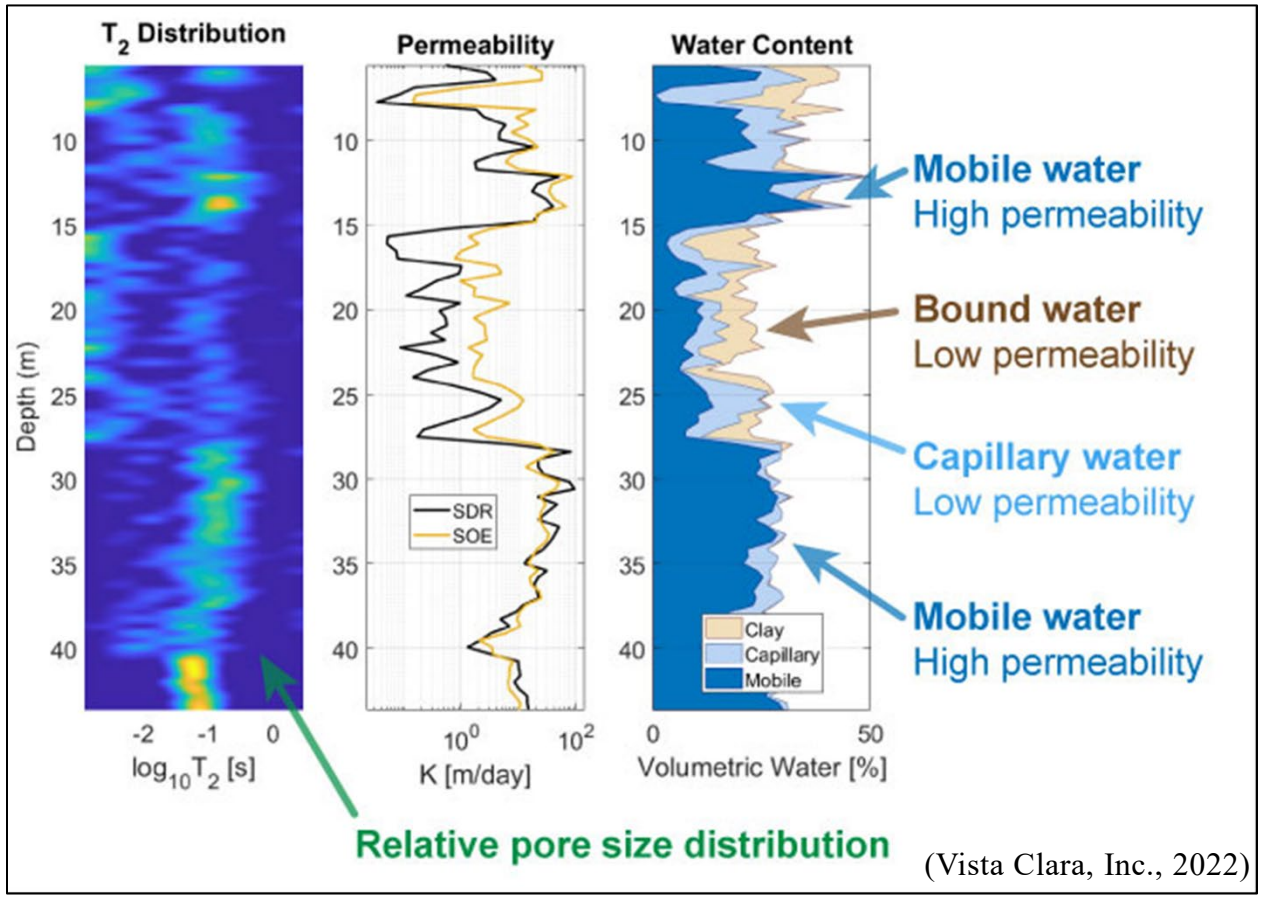
PROPOSED LOCATIONS

- Six sites
- Spread across the county



GEOPHYSICAL LOGGING

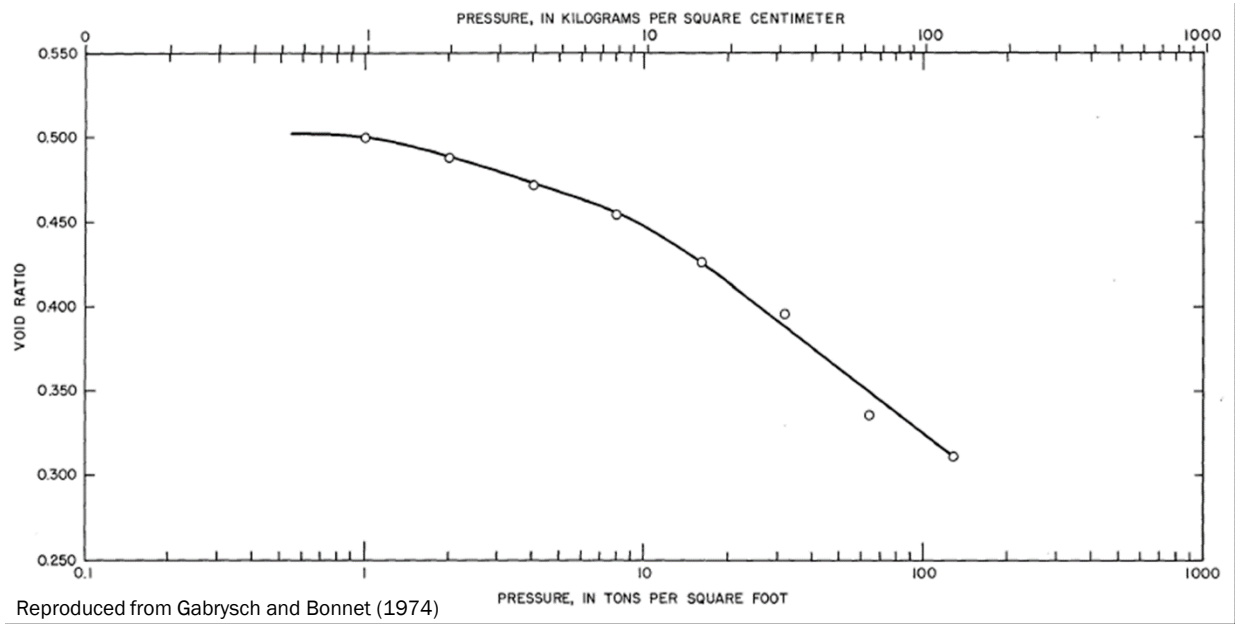
- Triple Combo (Resistivity, Natural Gamma, and Neutron/Density porosity)
  - Lithology
  - Water quality
  - Porosity
- Micro-normal/micro-inverse resistivity
  - Relative permeability (qualitative)
  - Water quality
- Spectral Gamma
  - Lithology
  - Clay mineral composition
- Magnetic Resonance
  - Permeability (quantitative)
  - Porosity
  - Movable water



(Vista Clara, Inc., 2022)

LAB ANALYSIS OF CORE SAMPLES

- Vertical permeability
- Clay mineralogy
- Oedometer testing
  - Void ratio change with increased pressure
  - Calculate porosity and compressibility change with increased pressure

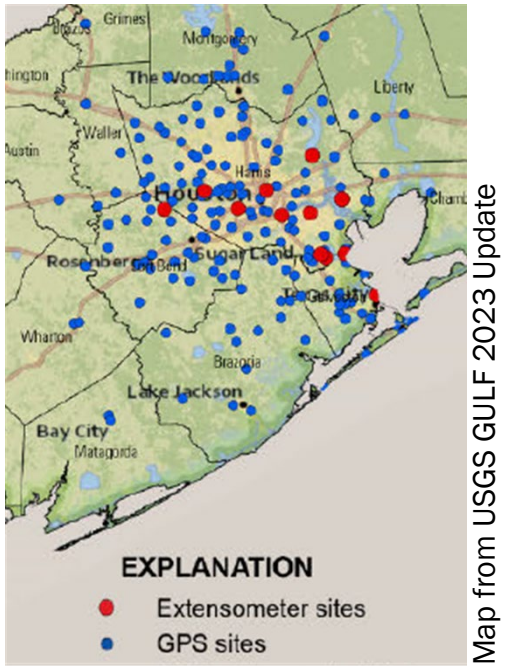


Reproduced from Gabrysch and Bonnet (1974)


https://videohive.net/item/geology-rock-drill-core-samples-in-wooden-box/25738481

EXTENSOMETER

- Used to measure compaction of aquifer sediments above the anchor point in the subsurface
- Currently 12 sites in Houston area
- Proposed extensometers
  - Anchored at top of the Burkeville
  - Measure compaction of the Chicot & Evangeline
  - Measure water levels in the deep Evangeline
  - Use local GPS station data for total compaction
- Paired water-level monitoring well completed in the Upper Jasper



Map from USGS GULF 2023 Update

PHASE 3 SUMMARY

- Obtain site-specific data in Montgomery County related to compaction
  - Advanced geophysics
  - Core sampling
  - Extensometers
- Inform data-driven resource management

THANK YOU

QUESTIONS?