

The background is a solid blue color with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance. They are located in the top-left, top-center, bottom-left, bottom-center, and bottom-right areas of the slide.

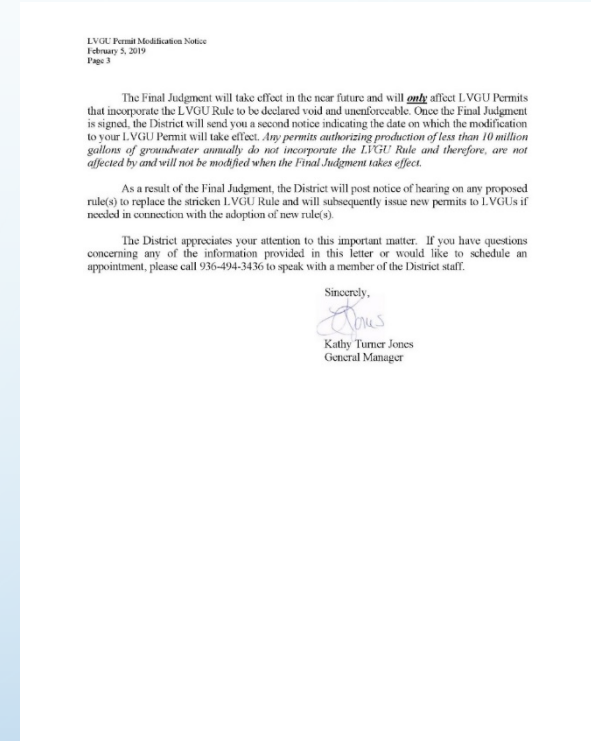
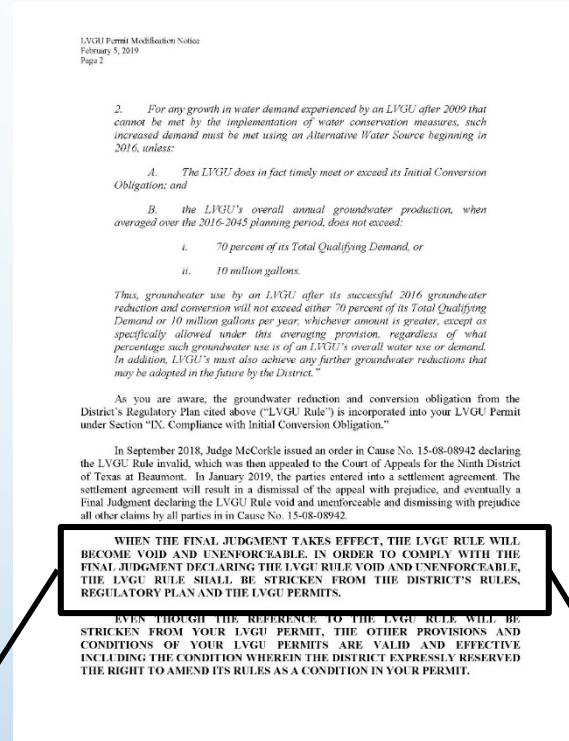
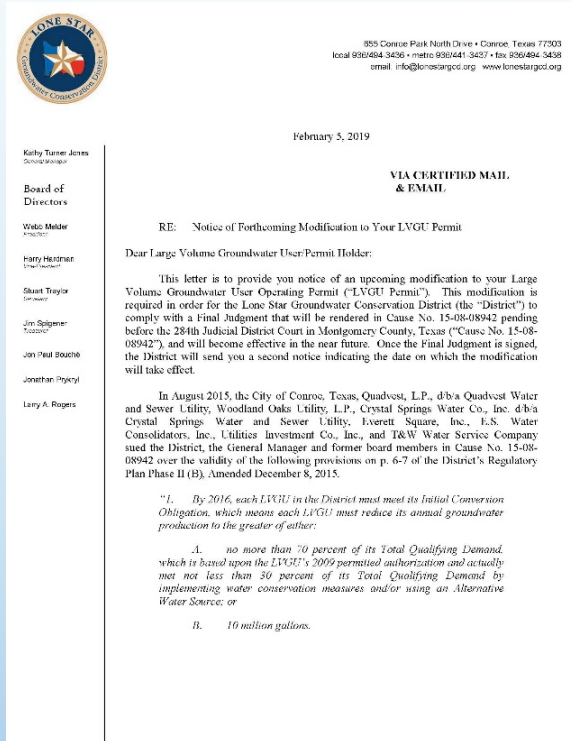
GROUNDWATER MANAGEMENT STATUS

BUDGETING DURING UNCERTAINTY

APRIL 2019

LONE STAR GROUNDWATER CONSERVATION DISTRICT ACTION

FEBRUARY 5, 2019



“When the final judgment takes effect, the LVGU rule will become void and unenforceable, in order to comply with the final judgment declaring the LVGU rule void and unenforceable, the LVGU rule shall be stricken from the District’s rules, regulatory plan and LVGU permits.”

LSGCD GROUNDWATER MANAGEMENT PLAN

RELEASED FOR COMMENTS FEBRUARY 2019



GROUNDWATER MANAGEMENT PLAN

Month, day, 2019

Draft for Public Comment

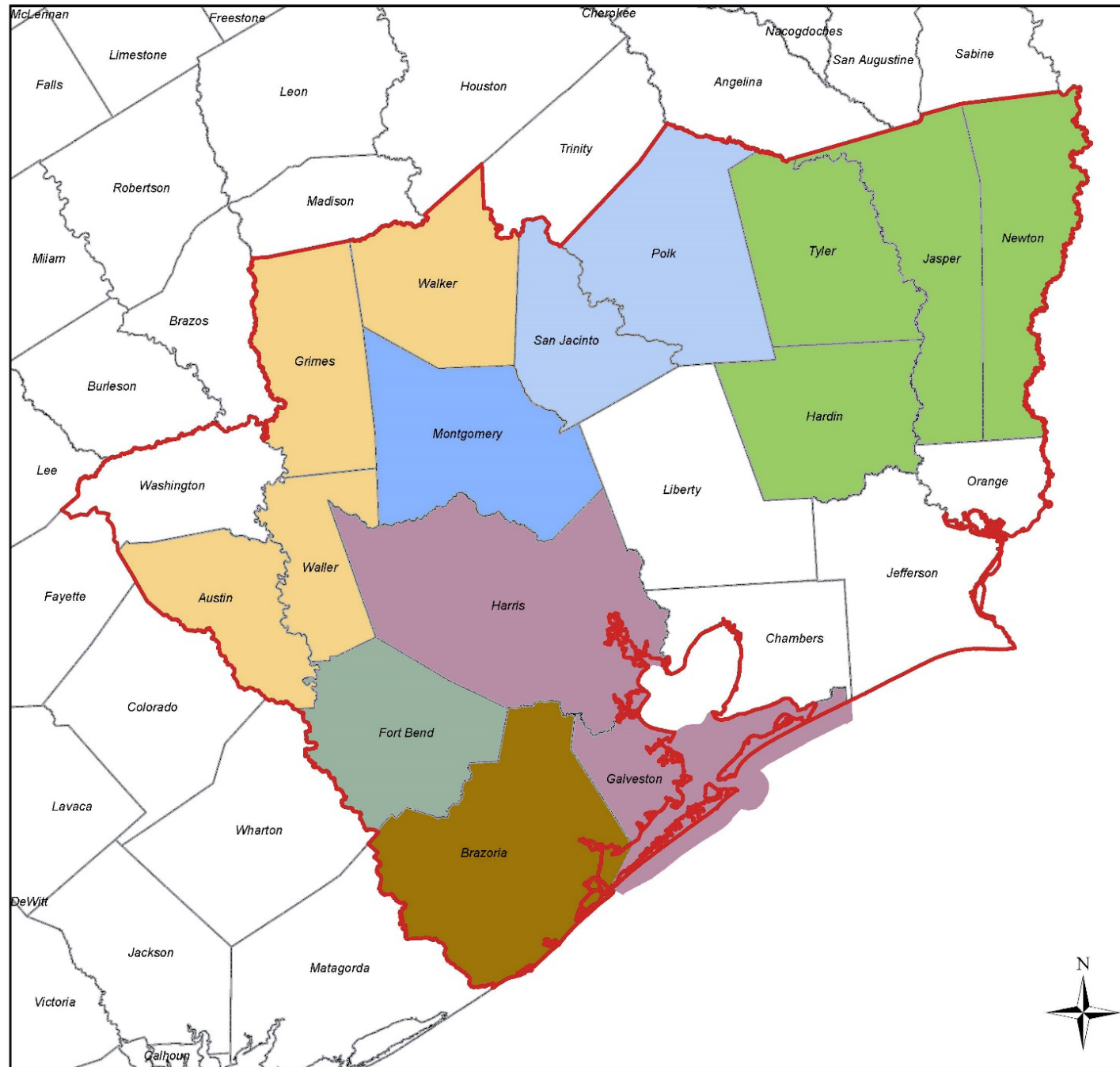
Section 6 – The *District* will adopt rules to regulate groundwater withdrawals by means of well spacing and production limits, as authorized in Chapter 36.116, as appropriate to implement this Plan. In issuing new permits or amending existing permits, the District will manage total groundwater production on a long-term basis to achieve an applicable desired future condition.

Section 7 - Given these circumstances, the *DFCs* that apply to the District remain unresolved. Thus, no reasonable DFCs are available for inclusion into this Management Plan. When the District and GMA 14 successfully adopt DFCs that are deemed reasonable, then the District will update this plan.

Under the current schedule, *GMA 14* will have proposed DFCs for adoption by *May 1, 2021*.

Within sixty (60) days of the District and GMA 14 successfully adopting DFCs that are deemed reasonable, the District will forward those to the Executive Administrator for the purpose of setting the Modeled Available Groundwater for the District.

Groundwater Management Area 14



MAP LEGEND

Groundwater Management Area 14

Counties

Groundwater Conservation Districts

Bluebonnet GCD

Brazoria County GCD

Lone Star GCD

Lower Trinity GCD

Southeast Texas GCD

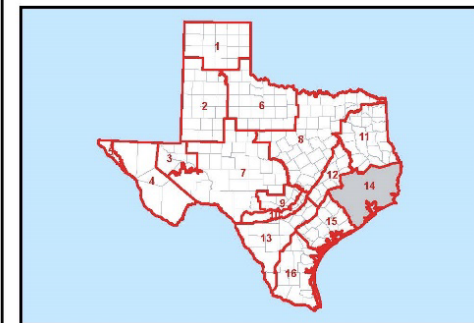
Subsidence Districts

Harris-Galveston Subsidence District

Fort Bend Subsidence District

DISCLAIMER
This map was generated by the Texas Water Development Board. No claims are made to the accuracy or completeness of the information shown herein nor to its suitability for a particular use. The scale and location of all mapped data are approximate. Boundaries for groundwater conservation districts are approximate and may not accurately depict legal descriptions.

Updated 8/26/2015



0 5 10 20 30 40
Miles

1 in = 14 miles

Groundwater Management Area 14 – Desired Future Conditions

County	Aquifer	Desired Future Condition (DFC) Summary	Date DFC Adopted	Notes
All Counties	Chicot	From estimated year 2009 conditions, the average draw down of the Chicot Aquifer should not exceed approximately 28.3 feet after 61 years.	4/29/2016	
All Counties	Evangeline	From estimated year 2009 conditions, the average draw down of the Evangeline Aquifer should not exceed approximately 23.6 feet after 61 years.	4/29/2016	
All Counties	Burkeville	From estimated year 2009 conditions, the average draw down of the Burkeville confining unit should not exceed approximately 18.5 feet after 61 years	4/29/2016	
All Counties	Jasper	From estimated year 2009 conditions, the average draw down of the Jasper Aquifer should not exceed approximately 66.2 feet after 61 years.	4/29/2016	

Montgomery	Chicot	From estimated year 2009 conditions, the average draw down of the Chicot Aquifer should not exceed approximately 26 feet after 61 years.	4/29/2016	Lone Star GCD
Montgomery	Evangeline	From estimated year 2009 conditions, the average draw down of the Evangeline Aquifer should not exceed approximately -4 feet after 61 years.	4/29/2016	Lone Star GCD
Montgomery	Burkeville	From estimated year 2009 conditions, the average draw down of the Burkeville confining unit should not exceed approximately -4 feet after 61 years.	4/29/2016	Lone Star GCD
Montgomery	Jasper	From estimated year 2009 conditions, the average draw down of the Jasper Aquifer should not exceed approximately 34 feet after 61 years.	4/29/2016	Lone Star GCD

CONCERNS REGARDING LSGCD GROUNDWATER MANAGEMENT PLAN

The draft management plan being proposed by the District does not meet the minimum requirements of state law for an approved management plan.



San Jacinto River Authority

ADMINISTRATIVE OFFICE
P.O. Box 629 - Conroe, Texas 77305
(713) 586-5863 (T) - (713) 958-5863 (F)

March 11, 2019

Board of Directors
Lone Star Groundwater Conservation District
655 Conroe Park North Drive
Conroe, Texas 77303

Re: Comments on Draft Groundwater Management Plan for Public Comment

Dear Lone Star Groundwater Conservation District Directors:

I thank you for the opportunity to provide comments on the Draft Groundwater Management Plan (the "Draft Plan") to be considered by the Lone Star Groundwater Conservation District ("District") Board of Directors at its hearing on March 12, 2019. As you know, the San Jacinto River Authority ("SJRA") owns and operates 37 groundwater wells within the boundaries of the District that supply water for over 100,000 Montgomery County citizens and countless businesses. SJRA has been actively involved for the last two decades in working with the District and numerous other stakeholders in Montgomery County to address the rapidly declining water levels in local aquifers, decreasing well yields, and the prevention and mitigation of land subsidence by promoting responsible water resources planning and management and the conjunctive use of groundwater and surface water resources to support continued population growth and economic growth in the county. SJRA has commended the District's efforts historically to promote the long-term viability of local aquifers, even when it was not the most politically expedient path to take.

SJRA appreciates that the new Board of Directors of the District maintained a number of the management goals, objectives, and performance standards in the Draft Plan that were in previously-adopted management plans of the District. However, two key elements of the plan required by state law and the rules of the Texas Water Development Board ("TWDB") appear to be missing: (1) management goals and objectives addressing achievement of the desired future conditions ("DFCs") for the aquifers adopted through the joint planning process; and (2) estimates of the modeled available groundwater in the District as provided by the executive administrator of the TWDB based on those DFCs.

While the Draft Plan makes reference to the DFCs adopted in 2016 through the joint planning process and the modeled available groundwater estimates that correspond to those DFCs, those references are made only in the context of how the District plans to disregard them. Section 36.1085, Texas Water Code, requires the District "to ensure that its management plan contains goals and objectives consistent with achieving the desired future conditions of the relevant aquifers as adopted during the joint planning process." The Draft Plan contains no such goals and objectives. Rather, Section 7 of the Draft Plan states that "no reasonable DFCs are available for inclusion into (sic) this Management Plan," and further asserts that "the District presently does not have a justifiable value for the Modeled Available Groundwater for the District's regulatory purpose."

The TWDB clearly advised the District in the fall of 2018 that it will not approve any management plan submitted by the District that does not address achievement of either the 2016 or 2010 DFCs previously

Board of Directors
Lone Star Groundwater Conservation District
March 11, 2019
Page 2

approved by Groundwater Management Area ("GMA") 14, which are substantially similar to each other.¹ Yet, the Draft Plan fails both to embrace one of those two options and to address how the District will achieve that option. Unless and until GMA 14 approves new or amended DFCs applicable to the District, the District must continue to ensure that its management plan contains goals and objectives that are consistent with DFCs previously approved by GMA 14, as well as adopt and enforce rules to achieve those DFCs.

The Texas Legislature has unequivocally decided that DFCs are to be adopted on a regional basis by a two-thirds majority of the groundwater conservation district ("GCD") representatives of a GMA (Section 36.108, Texas Water Code). A single GCD cannot unilaterally decide that the DFCs do not apply to it, nor declare them "no longer reasonable" or even "unreasonable" as a way to escape the groundwater management responsibilities and duties that the legislature has imposed on GCDs. Were this not the correct interpretation of the law, any GCD that did not support a DFC adopted by the requisite two-thirds majority of the GMA representatives could simply do an end-run around the process mandated by the legislature by (i) working to declare the DFCs applicable to that GCD unreasonable and then (ii) ignoring the requirements of state law to address achievement of the DFC in its management plan and rules.

The District's previous board of directors understood that it could not unilaterally disregard the DFCs that had been approved by the GMA and that it could only pursue a different set of management goals and objectives if it could successfully prevail upon the GMA 14 representatives to adopt different DFCs applicable to the District, which is why all of its statements on the topic in the DFC appeal settlement documents and final order contemplate seeking GMA 14's approval for the change in policy instead of deciding the change unilaterally. Furthermore, the District's previous board of directors never declared the 2016 DFCs "unreasonable," as incorrectly stated on page 10 of the Draft Plan, but rather stated in all instances that the DFCs were "no longer reasonable" because of that board's change in policy goals for aquifer management, which necessarily implies that the DFCs were indeed reasonable at the time they were adopted by GMA 14 and by the District.

In addition to the essential management plan elements described above that the District still needs to address in the Draft Plan, SJRA offers the following additional comments:

- Section 7, on page 10, states "Under the current schedule, GMA 14 will have proposed DFCs for adoption by May 1, 2021...the DFCs that apply to the District remain unresolved. Thus, no reasonable DFCs are available for inclusion into this Management Plan. When the District and GMA 14 successfully adopt DFCs that are deemed reasonable, then the District will update this plan." The District's recent actions announcing its intent to void groundwater regulations in Montgomery County, coupled with these statements in the Management Plan indicating the potential for significant delays in adoption of meaningful DFCs, threaten to increase the risks of serious water-level declines, subsidence, and flooding.
- Management Objective 10.3.1 does not appear to be a specific and time-based statement of future outcomes as required by 31 Texas Administrative Code Section 356.52(a)(2) of the TWDB rules.
- Section 10.4 refers to "Conjunctive Surface Water Management Issues" as "Management goals, objectives and performance standards," however the only management objectives that are provided are attendance at Region H meetings, review of the State Water Plan, and coordination

¹ Refer to page 3 of the minutes of District's Board of Directors meeting held September 18, 2018.

Board of Directors
Lone Star Groundwater Conservation District
March 11, 2019
Page 3

of conjunctive use with "public water suppliers, stakeholders and surface water management entities on conjunctive use." The performance standards are simple reporting of meeting attendance and discussion in an annual report. The referenced 2017 State Water Plan clearly reflects use of surface water from Lake Conroe to meet current and future water demands. The Groundwater Management Plan should include more substantial and meaningful management objectives and performance standards in actually using surface water conjunctively with groundwater as anticipated by the 2017 State Water Plan.

- Section 10.7 states that "recharge enhancement" as a strategy is "not appropriate" for the District. What aspects of enhancing aquifer recharge are not acceptable to the LSGCD?
- Section 12.4 refers to numerous "water management strategies.....included in the 2017 State Water Plan for Montgomery County...," however surface water use is not included, yet the "Lake Livingston/Wallisville Reservoir project," which is located east of Montgomery County, is identified. Since the use of surface water from Lake Conroe is included in the 2017 State Water Plan for Montgomery County, why has the District failed to identify it in this section?
- Appendix G refers to "Evidence of Coordination with Surface Water Management Entities" but does not include any documentation. We note that the District has not coordinated with SJRA regarding the Draft Plan.
- On page 9, in the first bullet at the top of the page, the word "adopts" appears to be a typographical error and should be changed to "adopted."

In conclusion, the Draft Plan as written is incomplete and should be amended to include goals and objectives to achieve either the 2016 or 2010 DFCs previously approved by GMA 14 and the District, as well as the modeled available groundwater estimates that correspond with those DFCs, consistent with previous directives given to the District by the TWDB as a condition of its approval of the plan.

Thank you for the opportunity to provide these comments on the Draft Plan. We look forward to continuing to work with the District to proactively address the water needs of the citizens, businesses, and public water suppliers in Montgomery County.

Sincerely,


Trace A. Houston
General Manager

cc: Mr. Jeff Walker, Executive Administrator, Texas Water Development Board
Mr. Toby Baker, Executive Director, Texas Commission on Environmental Quality
Mr. Mike Turco, General Manager, Harris-Galveston Subsidence District
Mr. John Martin, General Manager, Southeast Texas GCD
Mr. Zach Holland, General Manager, Bluebonnet GCD
Mr. Gary Ashmore, General Manager, Lower Trinity GCD
Ms. Sherry Plenti, General Manager, Brazoria County GCD

GRP DIVISION	LAKE CONROE DIVISION	HIGHLANDS DIVISION	WOODLANDS DIVISION
PO Box 250 Conroe, Texas 77305 (713) 586-5863	PO Box 250 Conroe, Texas 77305 (713) 586-5863	PO Box 250 Conroe, Texas 77305 (713) 586-5863	PO Box 250 Conroe, Texas 77305 (713) 586-5863

This incomplete management plan, coupled with the District's recent action announcing its intent to void all groundwater regulation in Montgomery County, is setting up our county for significant delays in having meaningful and appropriate groundwater regulations, which threatens to increase the risks of serious consequences such as water level declines, reduced well reliability, subsidence, and flooding.

LSGCD GROUNDWATER MANAGEMENT PLAN

- LSGCD Board adopted March 12, 2019
- LSGCD submitted to TWDB
- TWDB Action ??
- TCEQ Action ??



GROUNDWATER MANAGEMENT PLAN

As adopted March 12, 2019

LSGCD ACTIONS LEAD TO **UNCERTAINTY**

- LSGCD *may* develop a new groundwater management plan and groundwater withdrawal restrictions in late 2021 or 2022 after the desired future conditions have been identified
- The contents of the LSGCD groundwater management plan and associated rules that may be developed are *unknown* at this time

OR DOES IT?

FROM THE LSGCD BOARD

REMARKS DURING GMA 14 MEETING ON MARCH 26, 2019

- Mike Thornhill (Consultant) – “its been out there that everybody is talking about this **unlimited pumping ...couldn't be further from the truth...we want to manage properly**”
- Harry Hardman (Director) – “...the common thought with this new board of Lone Star is that ... hey lets just **pump baby pump**, lets turn it on and let it go and as Mike said **its nothing further from the truth..**”
- Webb Melder (Director) – “we want the truth...we have been accused of pump baby pump ...its propaganda...its political attacks against a new board...that is all it is...and ya'll need to understand that...we live here...we have family...we have grandchildren....we have a legacy...**we are not just going to open the spigot...that is not what it is about...**”

ALSO FROM THE LSGCD BOARD

REMARKS DURING GMA 14 MEETING ON MARCH 26, 2019

- Harry Hardman (Director) – “... 180 million acre feet of groundwater just in Montgomery County seems like a fair amount of water just in our little section...so I don’t perceive any type of scenario where that would not be enough...”
- Webb Melder (Director) – “Mr. Martin...explain to me...your concern for a specific drawdown level and how you are gonna explain that to the Supreme Court when it comes to a well owner’s private property rights” “....if you go down a path where you are going to do something or you are going to tell a well owner that he can only go down so many feet, I feel that is dangerous territory...”

MORE FROM THE LSGCD BOARD AND GM

REMARKS DURING WJPA TRUSTEE MEETING APRIL 10, 2019

- Larry Rogers (Director) – “We are in the process now of changing our rules”
- Samantha Reiter (Interim General Manager) – “The **rules** are already being worked on it’s going to be a lengthy process”. Regarding timing of implementation of new rules “I think the Board is probably hoping for **2019**”.

There is 180 million acft of water beneath Montgomery County.

Your metrics need to consider the negative impacts of removing that water!



LSGCD



**Counter
Argument**



**Property losses
due to flooding in
subsidized areas**



**Cost\$ to rehab or
redrill wells to chase
declining aquifer
levels**



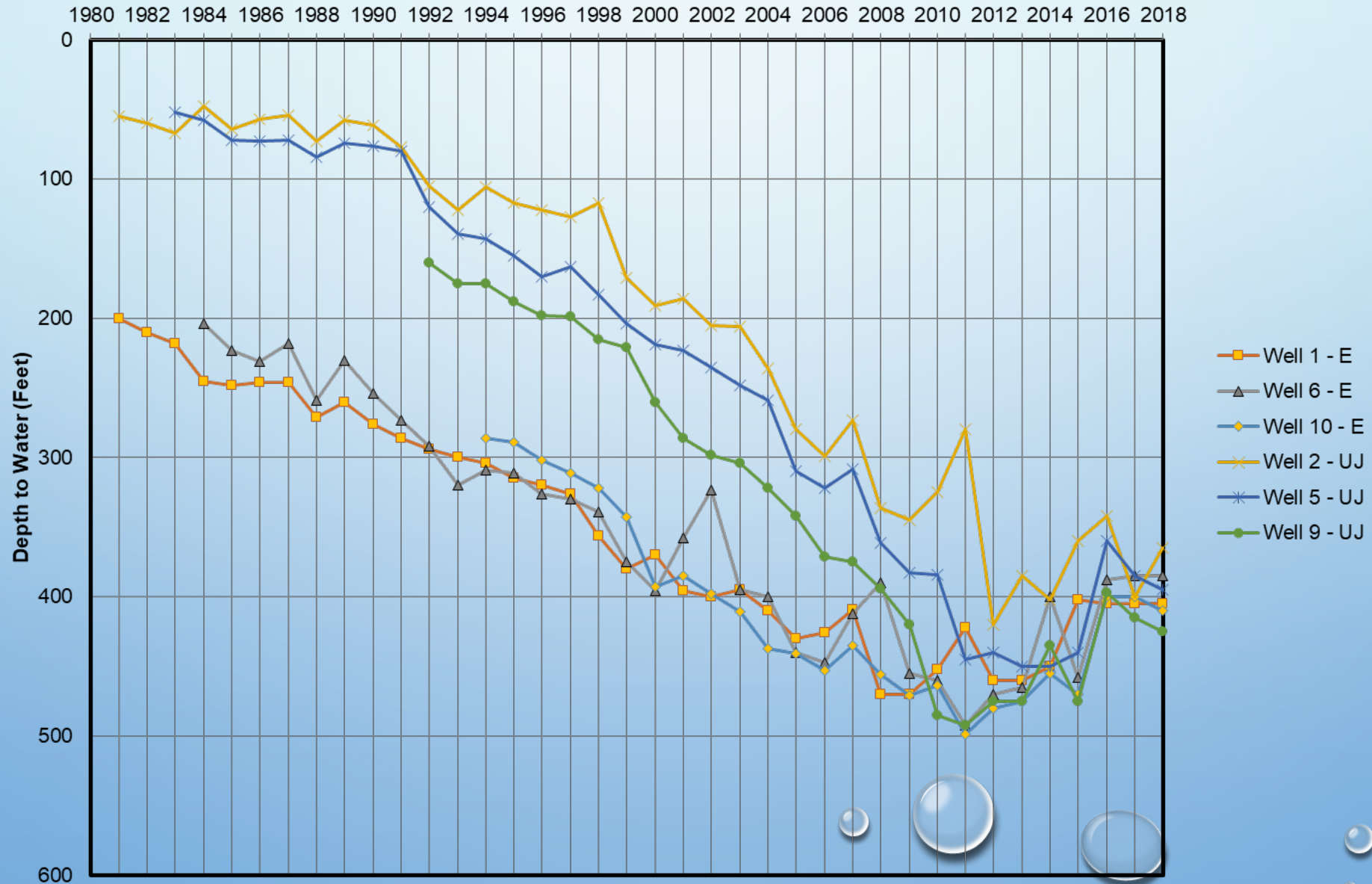
**Negative
impact to water
supplies for
future
generations!**

CHASING DECLINING AQUIFER LEVELS



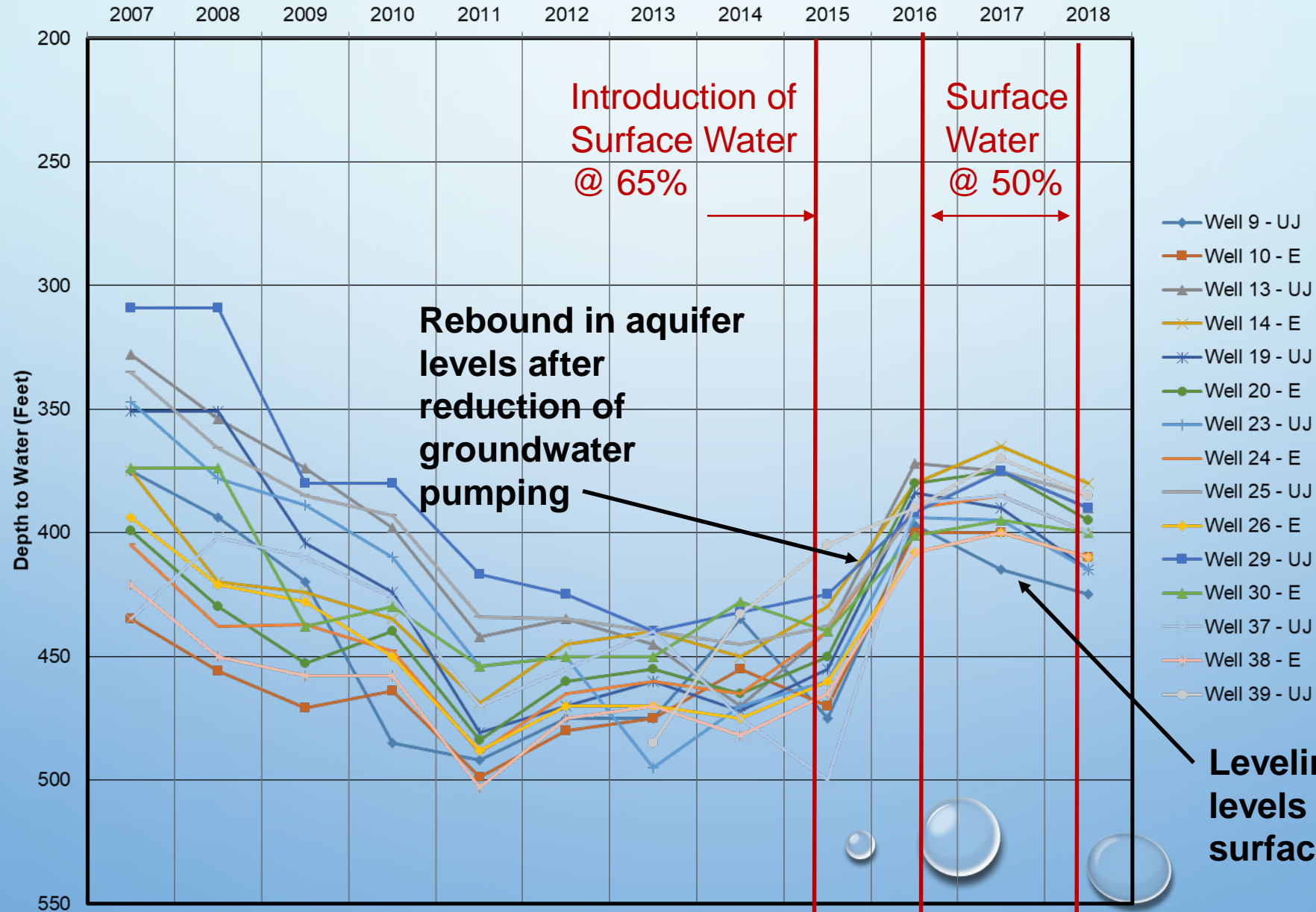
HISTORIC STATIC GROUNDWATER LEVELS

SJRA - The Woodlands Static Groundwater Well Levels (1980 - 2018)

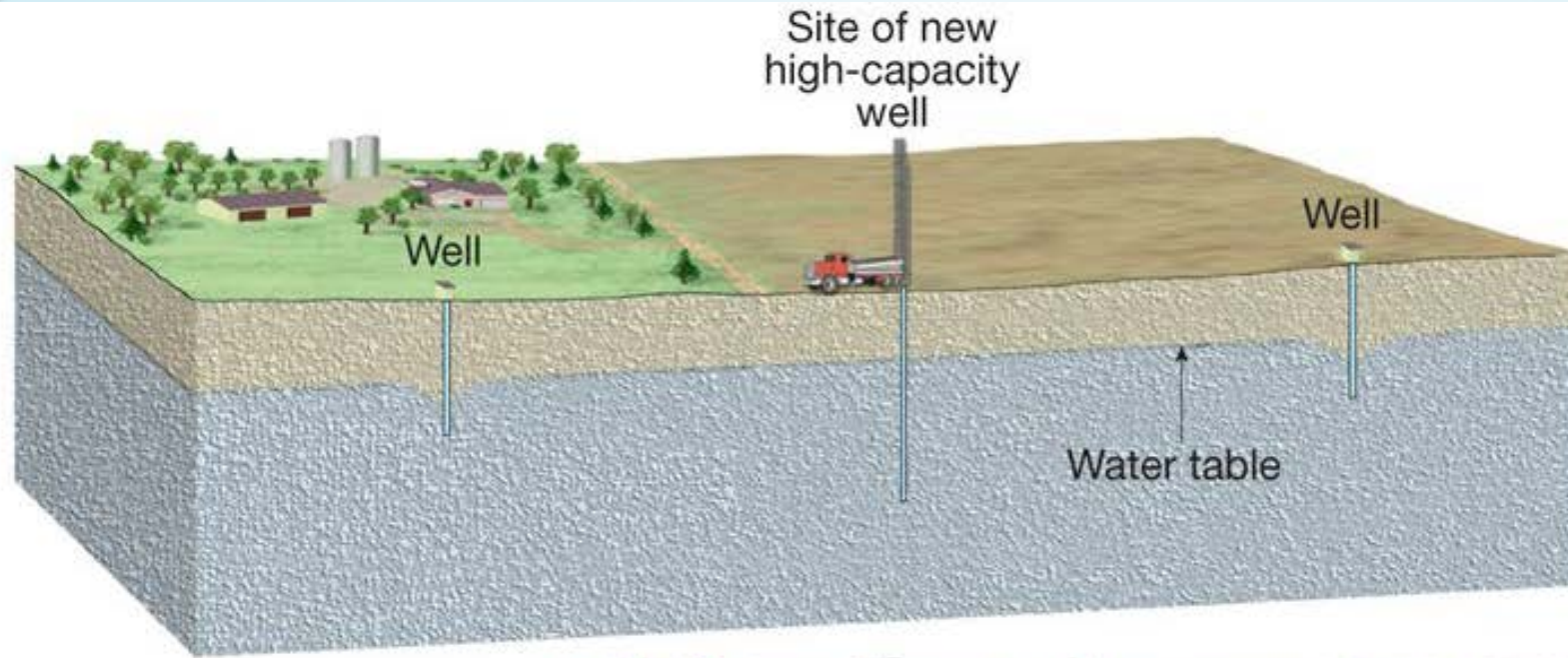


IMPACTS OF RECENT GROUNDWATER REDUCTION

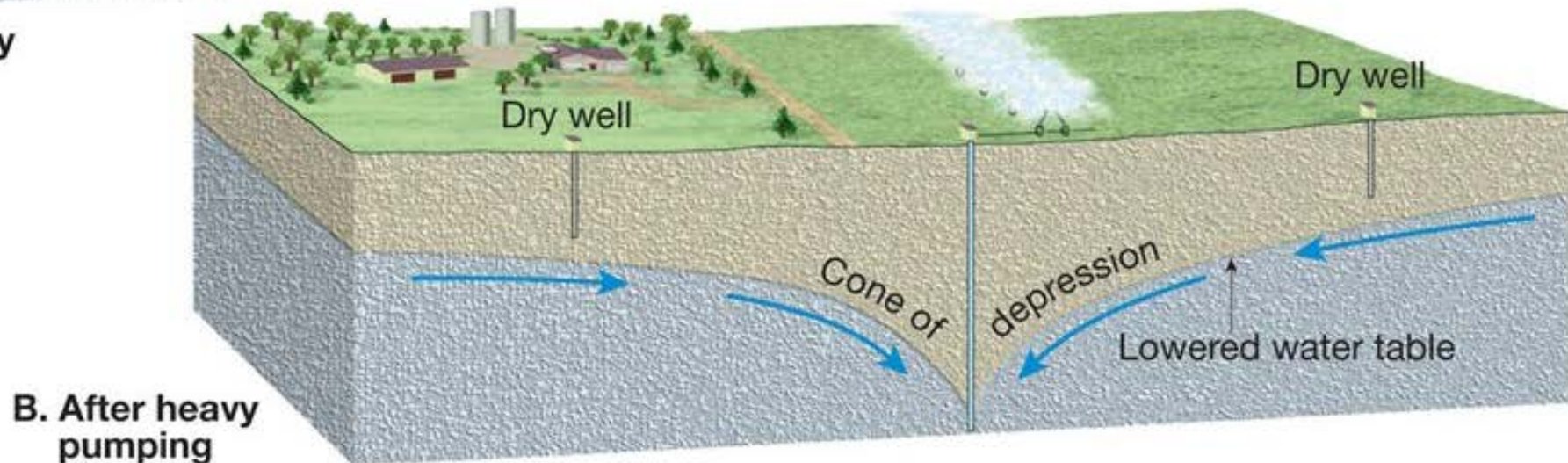
SJRA - The Woodlands UPP Static Groundwater Well Levels (2007 - 2018)



IMPACTS OF HIGHER PUMPING RATES ON ADJACENT WELLS



A. Before heavy pumping

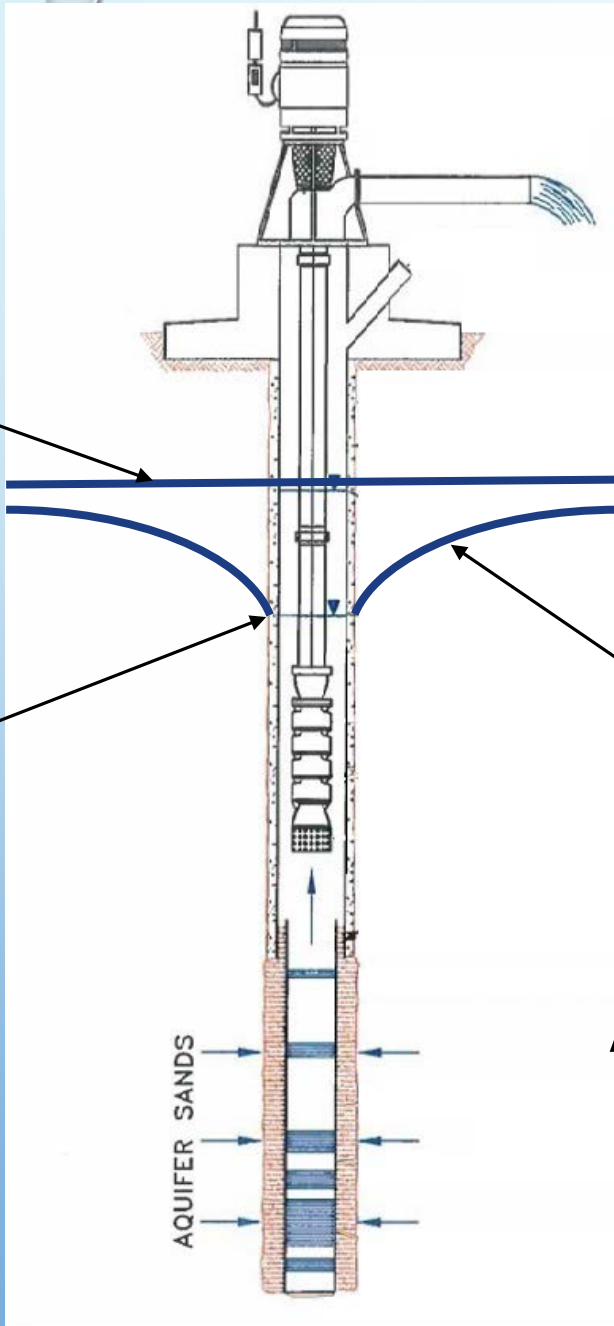


B. After heavy pumping

DECLINING AQUIFER IMPACTS

Initial Static Level

Aquifer Level During Pumping

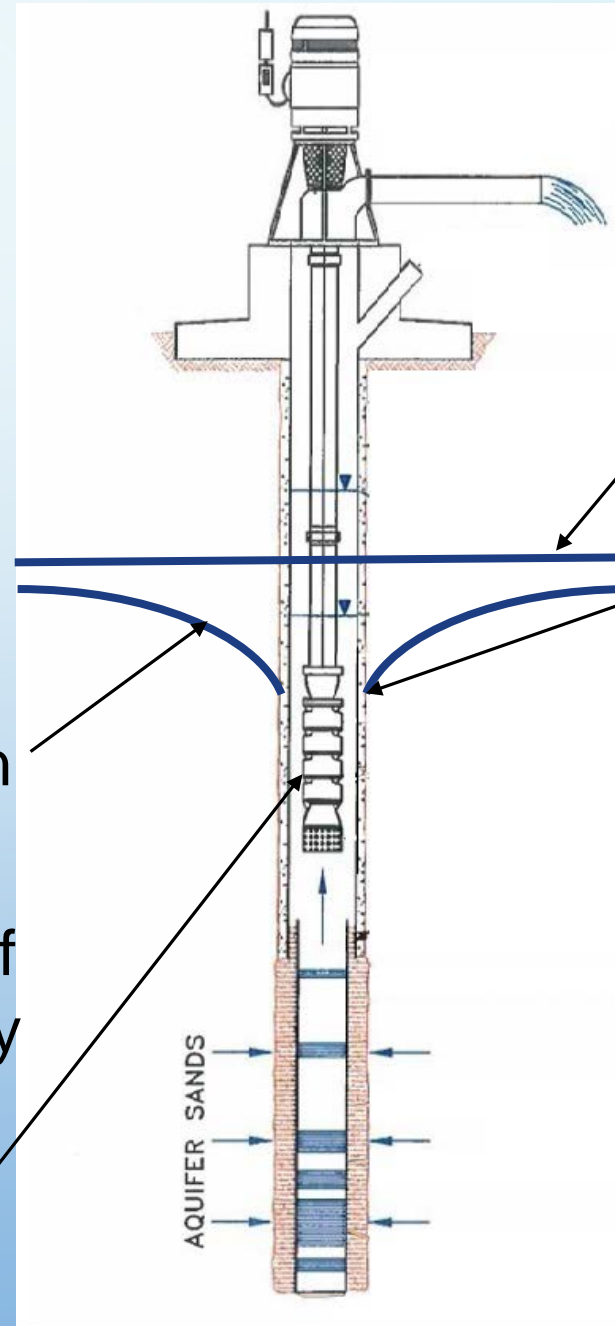


Cone of Depression

Excess Lowering of Aquifer May Result in Dry Well

Declining Static Level

Declining Aquifer Level Reduces Well Yield, Requires Lowering of Pumps, Increase Motor Size



WELL REHABILITATION/REPLACEMENT COSTS

Average well costs (in 2018 dollars)	
Rehab w/o lowering	\$150,000
Rehab w/ lowering	\$180,000
Lower well (only)	\$115,000
Increase electrical size	\$600,000
Larger motors	\$70,000
Total Rehab, lower and increase electrical size	\$850,000
New well (without land acquisition)	\$2,500,000

SUBSIDENCE



RECENT SUBSIDENCE INFORMATION



THE PAST, PRESENT, AND FUTURE OF SUBSIDENCE IN THE HOUSTON REGION

Harris-Galveston Subsidence District

Michael J. Turco – General Manager

SUBSIDENCE RISK ASSESSMENT AND REGULATORY CONSIDERATIONS FOR THE BRACKISH JASPER AQUIFER

Harris-Galveston and Fort Bend Subsidence Districts

Final Report

Prepared for:



Harris-Galveston Subsidence District



Fort Bend Subsidence District

Prepared by:



INTERA Incorporated
9600 Great Hills Trail
Suite 300W
Austin, TX 78759
512.425.2000

May 2018

SUBSIDENCE BASICS

When long-term withdrawals lower groundwater levels and raise pressure on the clay and silt layers beyond a threshold amount, the silt and clay layers compact, and the land-surface elevation decreases permanently

Original predevelopment potentiometric surface

Original predevelopment aquifer sediment thickness prior to groundwater withdrawals

Magnified view

Granular silt and clay skeletal matrix defining fluid-filled interstitial pore spaces that store groundwater

Rearranged and compacted granular silt and clay skeletal matrix with reduced porosity and groundwater storage capacity

Original land-surface elevation

Resultant land-surface elevation

Recoverable land-surface elevation caused by reversible elastic deformation (cyclic shrinking and swelling of fine-grained surficial sediments)

Permanent decrease in land-surface elevation caused by irreversible inelastic deformation accompanied by an increase in the effective stress on the aquifer

Resultant potentiometric surface

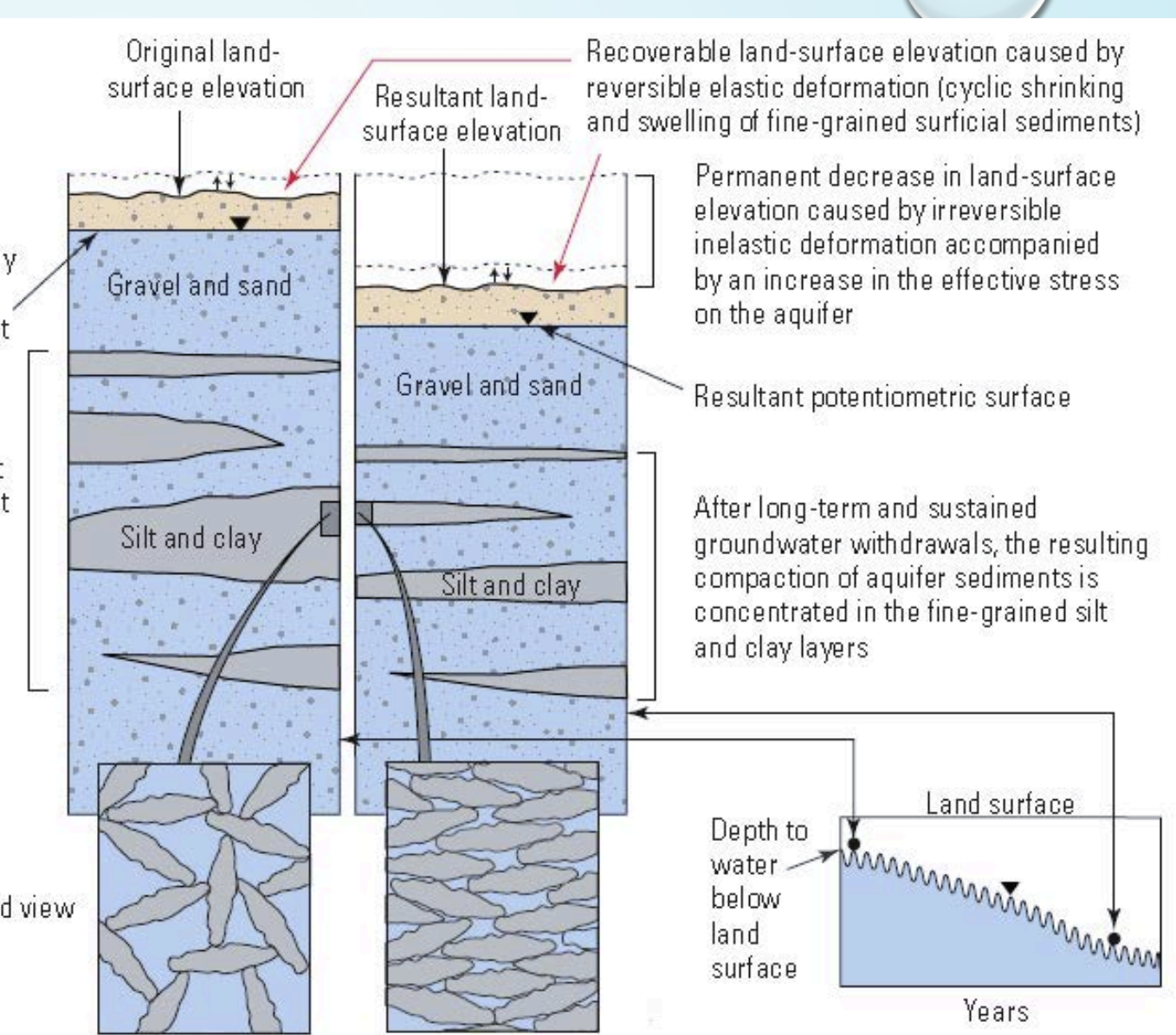
After long-term and sustained groundwater withdrawals, the resulting compaction of aquifer sediments is concentrated in the fine-grained silt and clay layers

Depth to water below land surface

Land surface

Years

Hydrograph of long-term water-level decline modulated by seasonal cycles of increased and decreased groundwater withdrawals



Estimated Subsidence 1906-2016

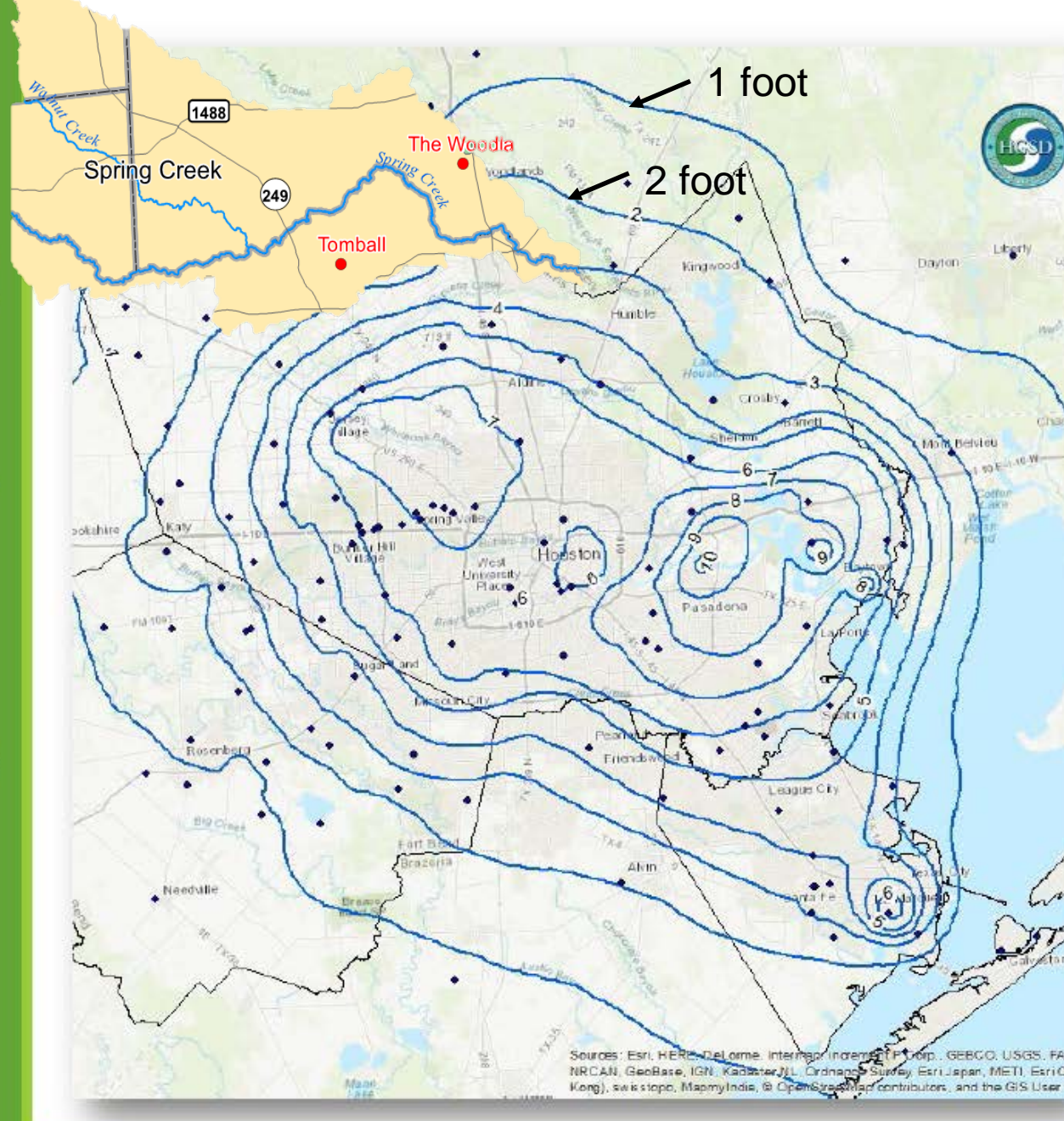
Developed through the assumption that current subsidence rates (2011-2016) remained constant from 2000-2016. Estimated total subsidence was then added to the 1906-2000 surface.

Little change is noted in the areas to the east of downtown Houston, where full conversion has completed.

The area of subsidence expands to include Montgomery and Waller counties. Western Harris County, Northern Fort Bend County, Northern Harris county show change from the 1906-2000 comparison.

This data was developed by the Subsidence District

This map is preliminary and subject to revision.

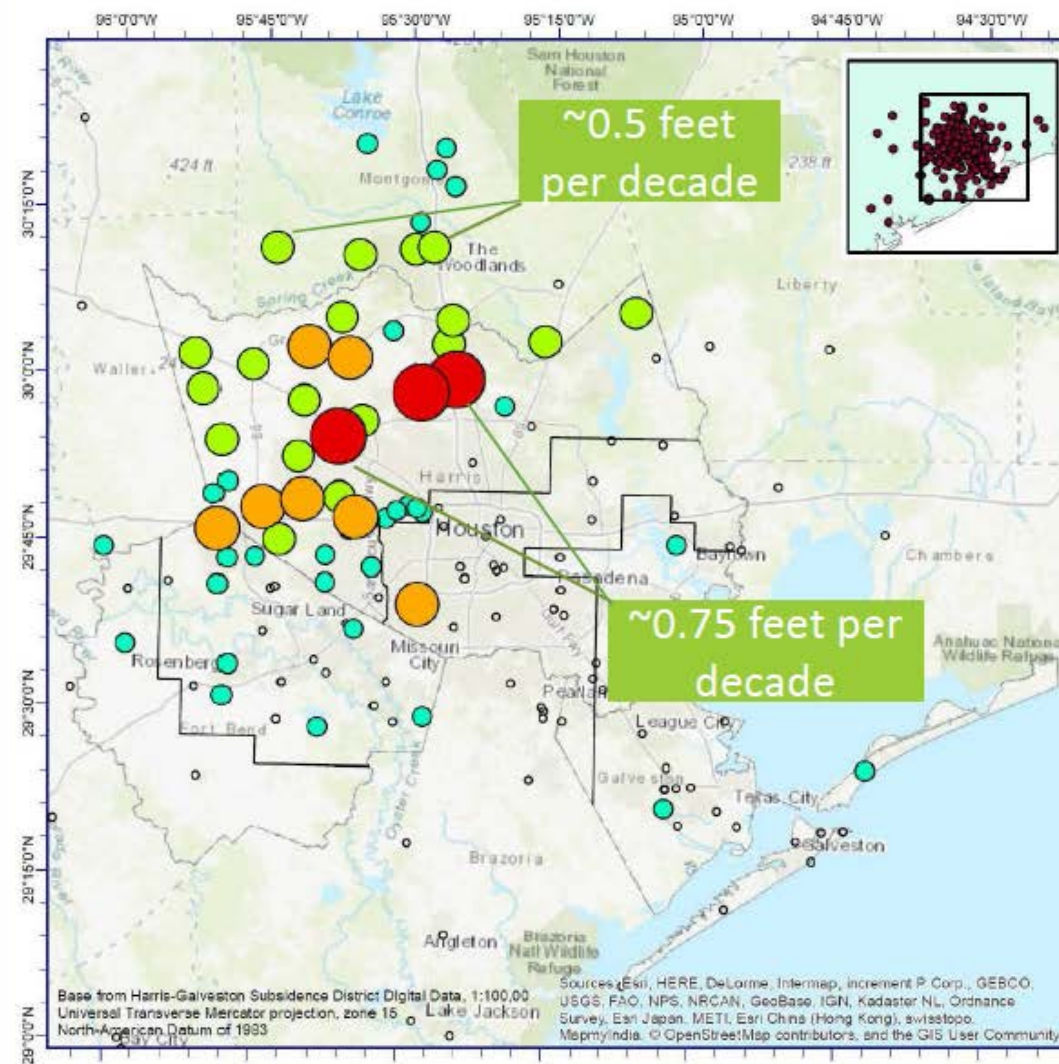


Annual Subsidence Rate 2013-2017

The highest subsidence rates observed today in the region are located in Southern Montgomery County, Northern and Western Harris County, North-eastern Fort Bend County.

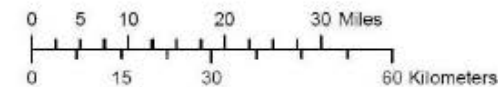
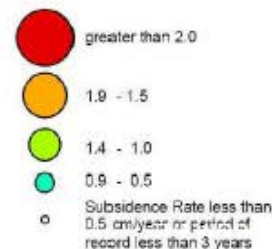
The City of Houston in cooperation with the Regional Water Authorities are currently undertaking the largest water infrastructure project in the US to supply alternative water to these areas.

Subsidence has generally ceased in areas where conversion has been completed and groundwater use has been reduced.



EXPLANATION

Subsidence Rate (2013-2017)
cm/year



HGSD EXHIBIT 18. Annual estimated subsidence rate, in centimeters per year, from GPS data measured from 2011-2017 at monitoring locations with more than three years of data.

FUTURE WATER NEEDS



WHAT WILL BE THE SOURCE WATER TO MEET FUTURE DEMANDS?

TWDB Region H
Planning

2021 Regional Water Plan County Population Projections for 2020-2070

County	2020	2030	2040	2050	2060	2070
MONTGOMERY County Total	627,917	811,252	1,019,278	1,267,916	1,576,135	1,946,063

2021 Regional Water Plan Water Demand Projections by County for 2020-2070 in Acre-Feet

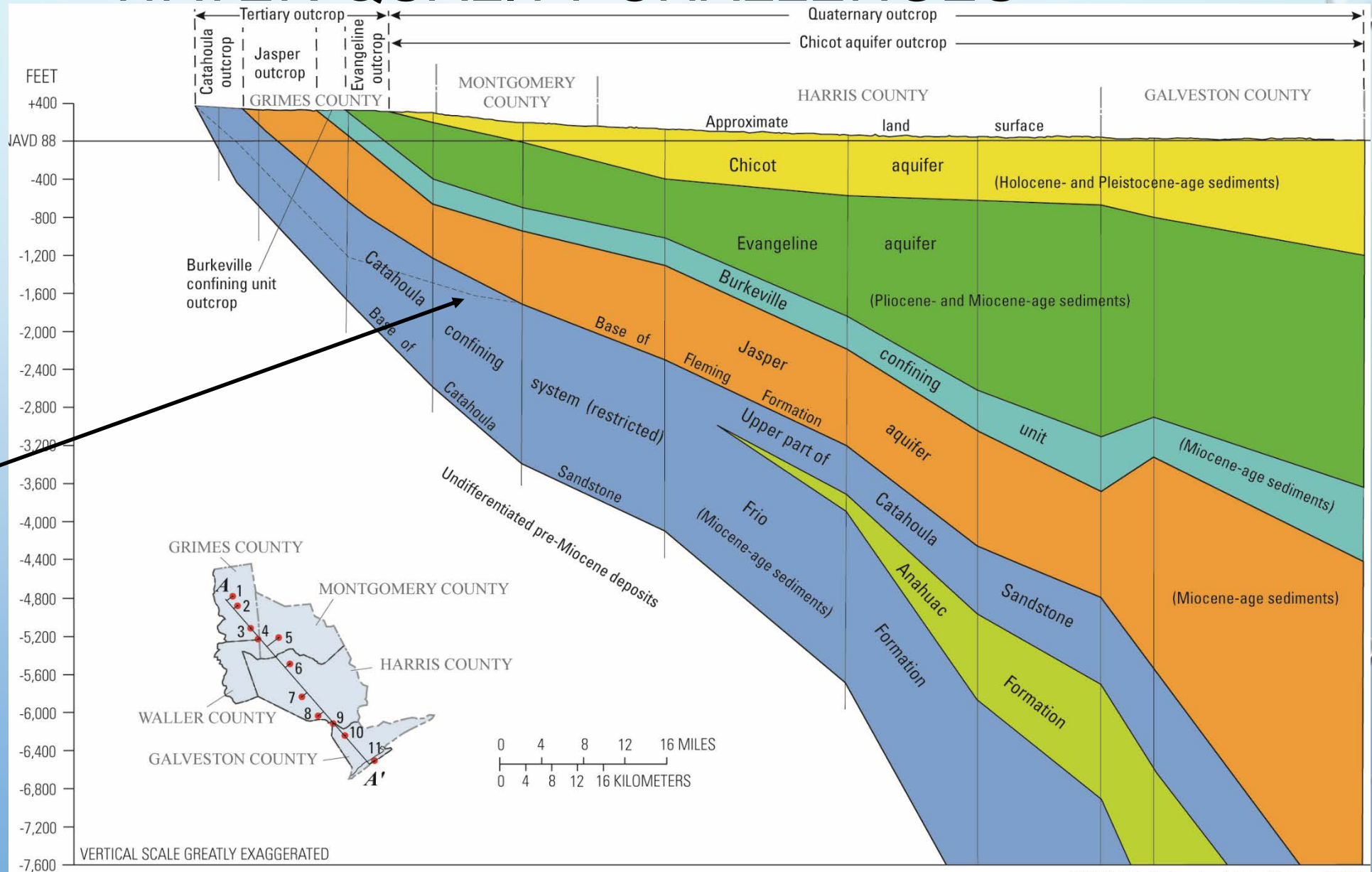
Total Water Demand for MONTGOMERY County

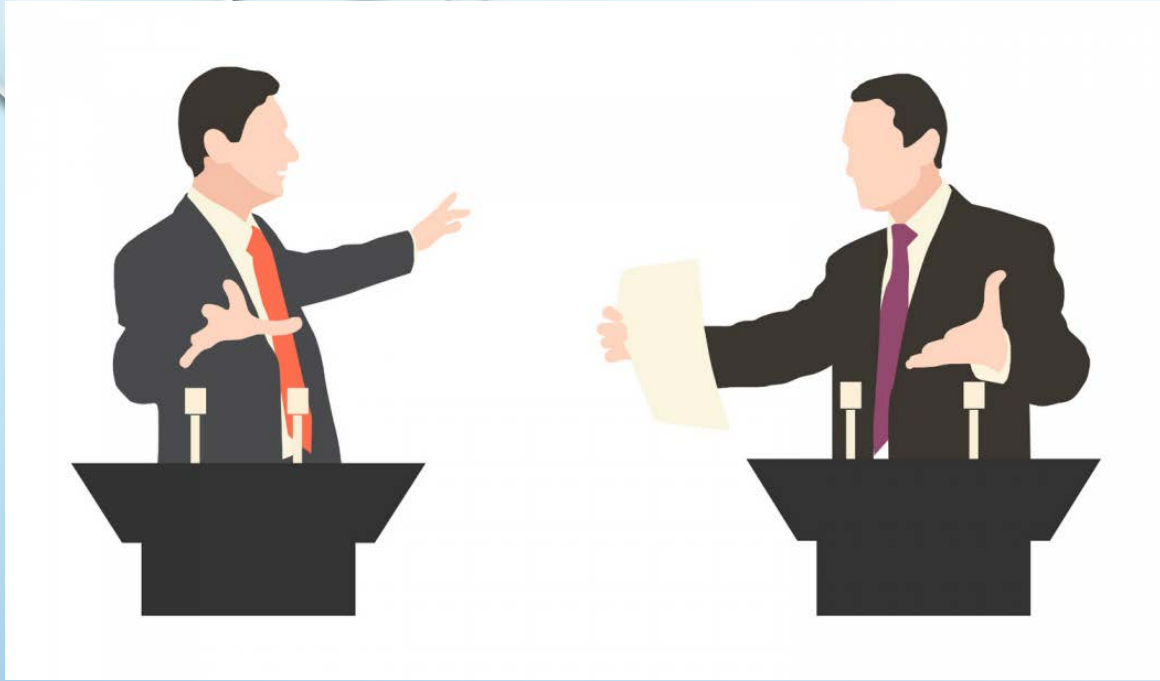
County	Category	2020	2030	2040	2050	2060	2070
MONTGOMERY	IRRIGATION	5,642	5,642	5,642	5,642	5,642	5,642
MONTGOMERY	LIVESTOCK	537	537	537	537	537	537
MONTGOMERY	MANUFACTURING	2,135	2,413	2,413	2,413	2,413	2,413
MONTGOMERY	MINING	1,453	1,363	1,077	921	806	728
MONTGOMERY	MUNICIPAL	101,024	125,960	152,557	184,295	224,165	272,018
MONTGOMERY	STEAM ELECTRIC POWER	4,845	4,845	4,845	4,845	4,845	4,845
MONTGOMERY County Total		115,636	140,760	167,071	198,653	238,408	286,183

AQUIFERS OF MONTGOMERY COUNTY

WATER QUALITY CHALLENGES

Higher
Temperature,
TDS,
Fluoride, etc.





PATH FORWARD

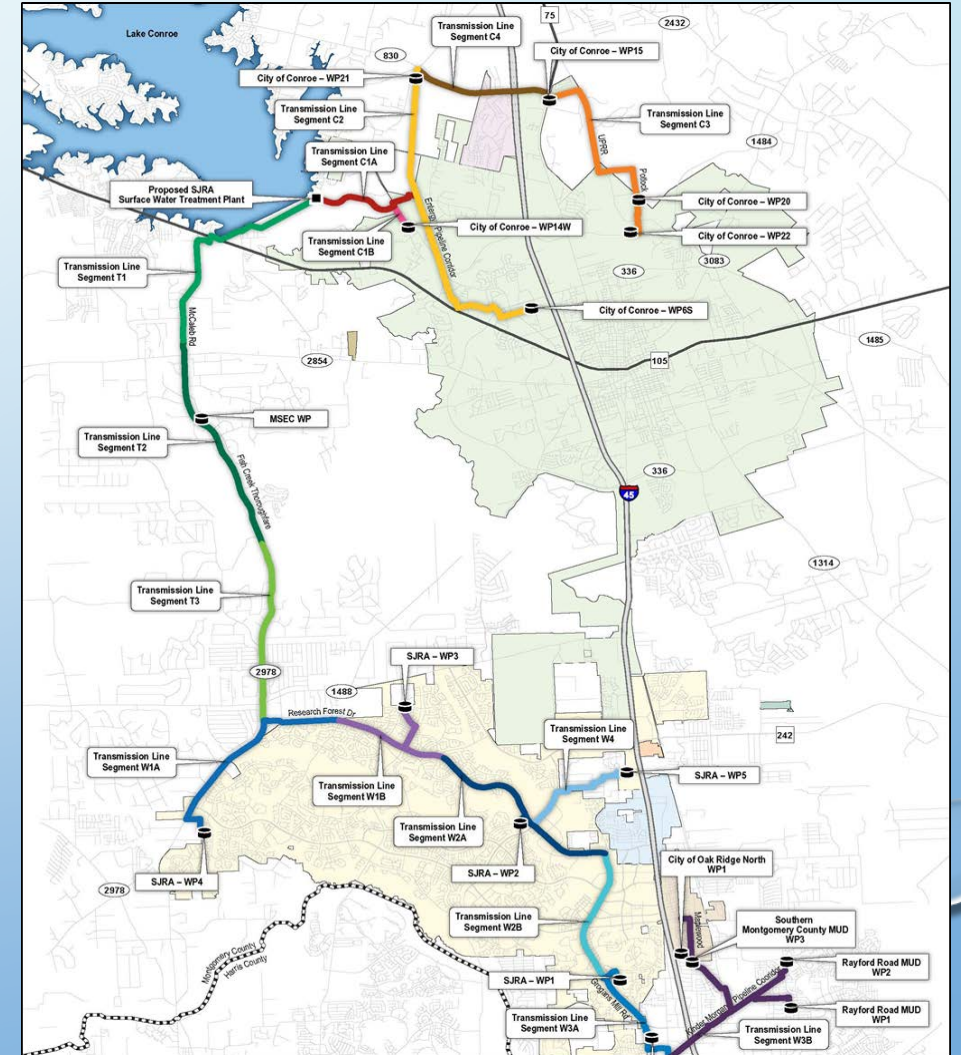
AS THE DEBATE CONTINUES

RESPONSIBLE ACTION FOR GRP

Properly operate, manage and maintain nearly **\$500 MM in assets** while LSGCD develops

- new desired future condition
- groundwater management plan
- set of rules

prior to making any decision regarding use or disposition of those assets.





P U M P S



OTHER ROTATING EQUIPMENT





PIPING & VALVES





MEMBRANES



OTHER PROCESS EQUIPMENT





CHEMICAL STORAGE



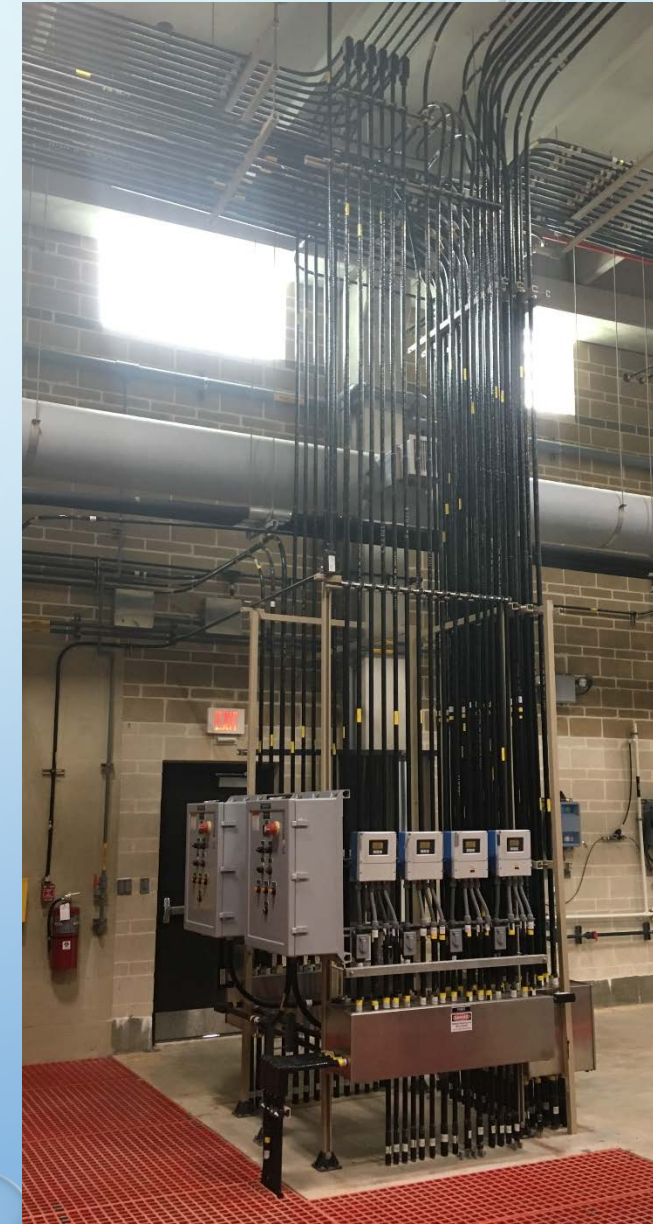
CHEMICAL METERING AND PUMPING



POWER EQUIPMENT



CABLING AND WIRING



INSTRUMENTATION & CONTROLS



BUILDINGS



WATER STORAGE AND SURGE PROTECTION



**WITHOUT RESPONSIBLE MANAGEMENT AND
MAINTENANCE OF THESE ASSETS**



**WE WILL END UP WITH USELESS FACILITIES
AND OVER \$480MM IN OUTSTANDING DEBT**

FY 2020 BUDGET AND RATE DEVELOPMENT

- SJRA will move forward in development of FY 2020 budgets following concept of responsible management of GRP assets
 - Produce and deliver 12 mgd surface water delivered to 7 Participants
 - City of Conroe
 - City of Oak Ridge North
 - Mid-South Energy Company
 - MUD 99
 - The Woodlands
 - Rayford Road MUD
 - South Montgomery County MUD
- GRP Pumpage Fee and Surface Water Fee assessed to meet revenue requirements

WE CANNOT AFFORD NOT TO MAINTAIN THESE ASSETS!



Chasing declining
aquifer levels



Subsidence

What Legacy Do You Want to Establish?



Future Water Needs

MEETINGS OF INTEREST

- LSGCD Town Hall Meetings

- April 22 – South Montgomery Community Center – 5:30 pm
- April 23 – City of Conroe City Hall – 5:30 pm
- April 24 – East Montgomery County Improvement District – 8:30 am
- April 24 – Montgomery Community Building – 5:30 pm
- April 25 – Magnolia Bear Branch Elementary – 5:30 pm

- LSGCD Board Meetings

- May 14, 2019, 6 pm (Anticipated)
- June 11, 2019, 6 pm (Anticipated)
- Generally second Tuesday of each month

- GMA 14 Meeting – Harris Galveston Subsidence District Office

- May 29, 2019, 10:00 am

The background is a light blue gradient. In the top-left corner, there are several water droplets of varying sizes, some overlapping. In the top-right corner, there is one small droplet. In the bottom-right corner, there is a cluster of droplets, including a large one and several smaller ones. In the bottom-center, there are two small droplets.

QUESTIONS?