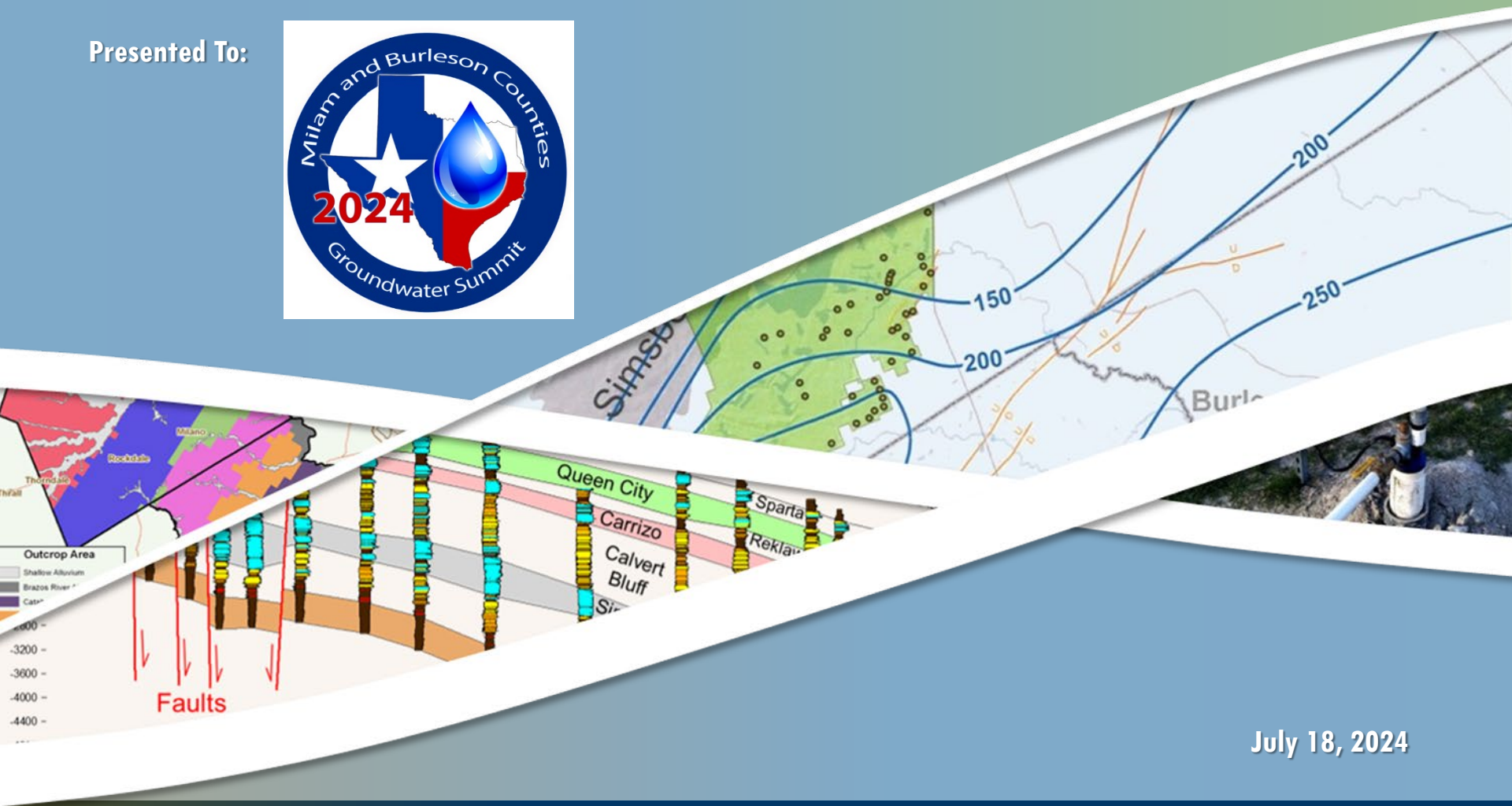
Aquifer Status, DFC Compliance, and Monitoring Update

Presented To:

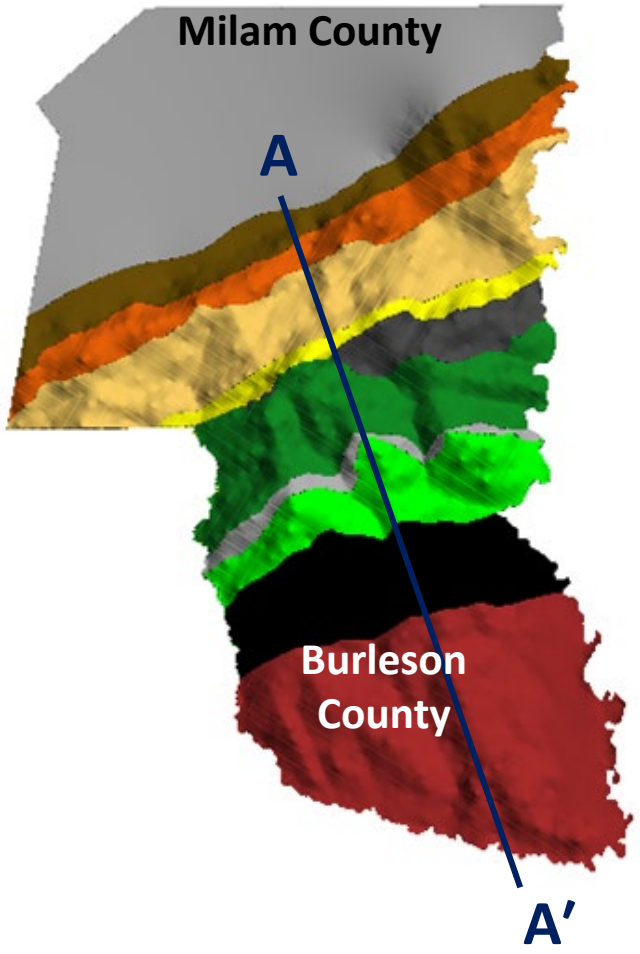
Milam and Burleson Counties 2024 Groundwater Summit



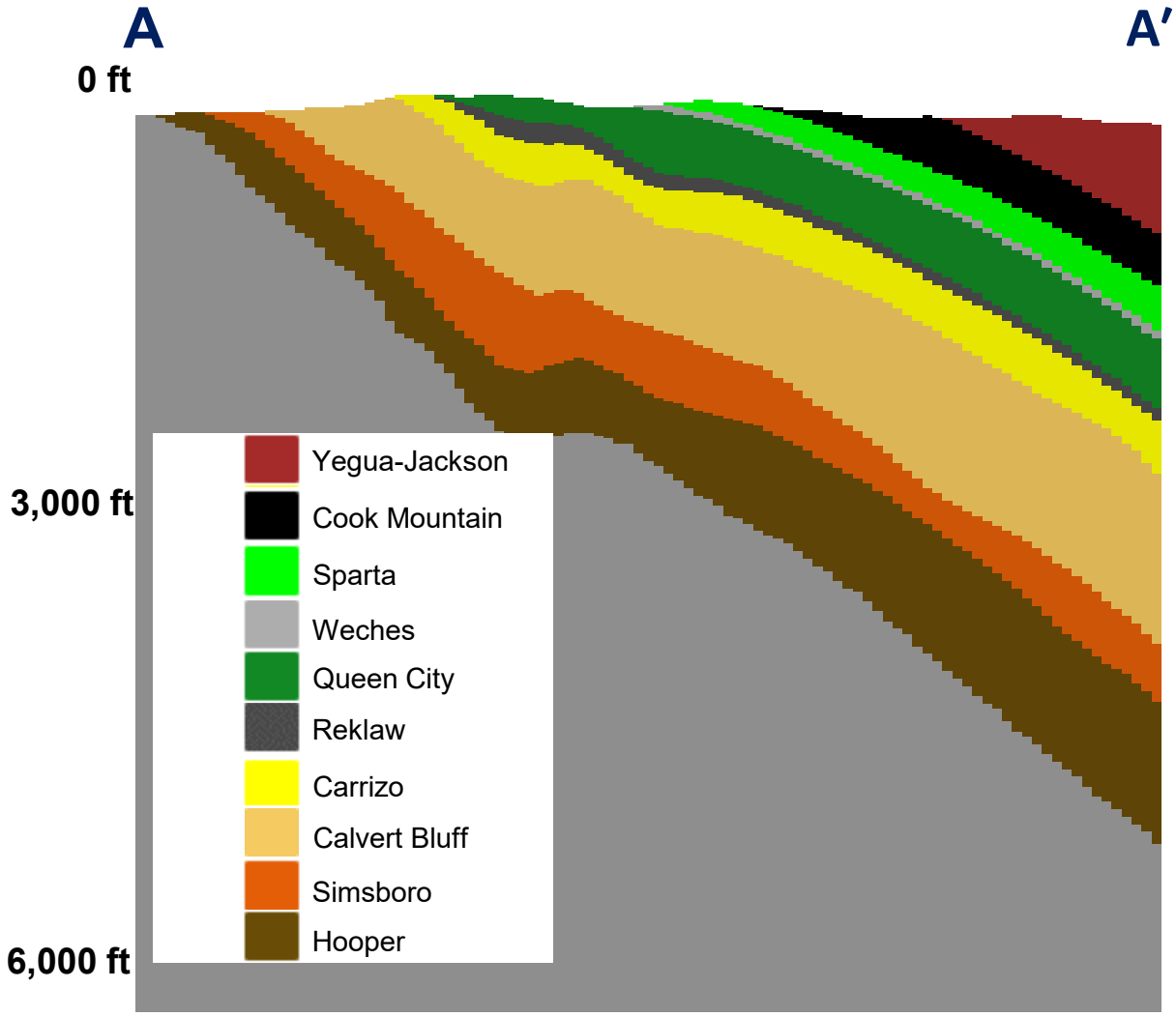
July 18, 2024

District Aquifers

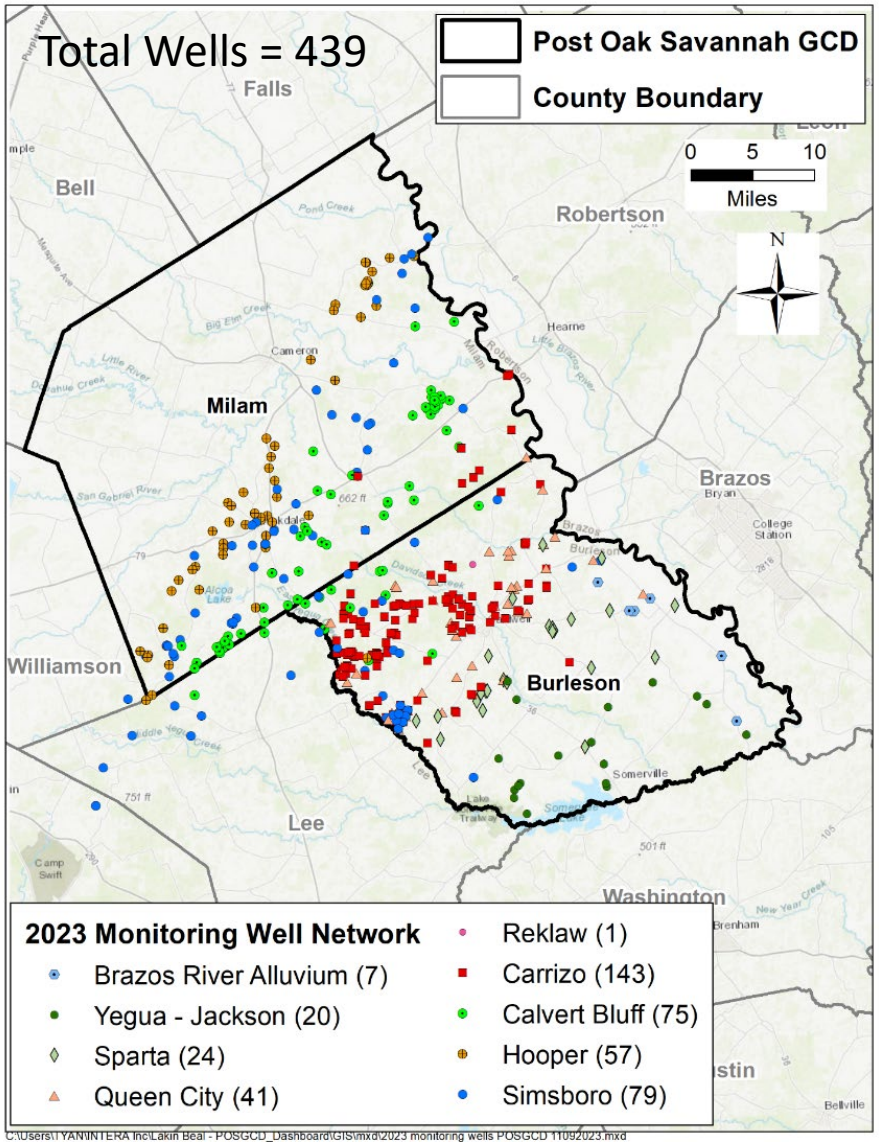
Aerial View
Outcrop of Different Aquifers



Vertical Cross-Section View Looking From Side



2023 Monitoring Well Network



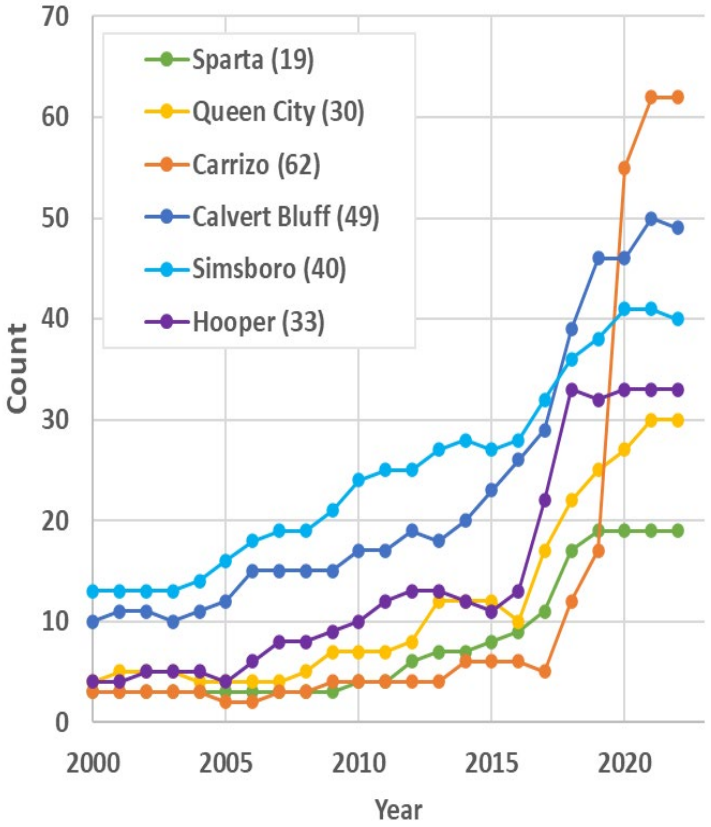
Well Network Expansion

2000 (33)

2010 (70)

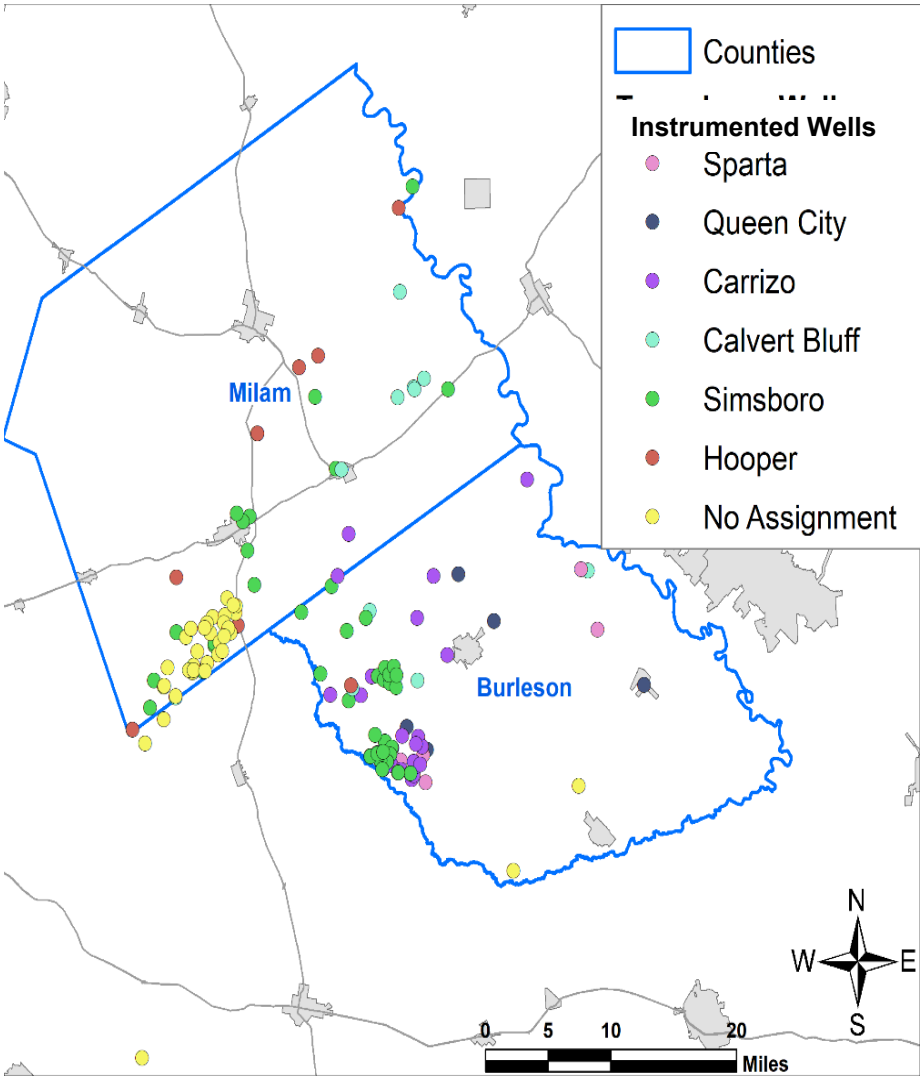
2020 (203)

2023(411)



When are Measurements Made?

- All monitoring wells are measured manually at least once per year
  - Site visit by POSGCD
  - Winter months are priority
- 112 wells are instrumented with continuous measurement devices
  - Levels are recorded at a frequency of every 4 hrs.
  - 65 wells with monitoring program
  - 47 wells associated with permitted (Vista Ridge, SLR)



How is Data collected?

Manual Measurements (electric tape)

Measurement Devices

Transducer

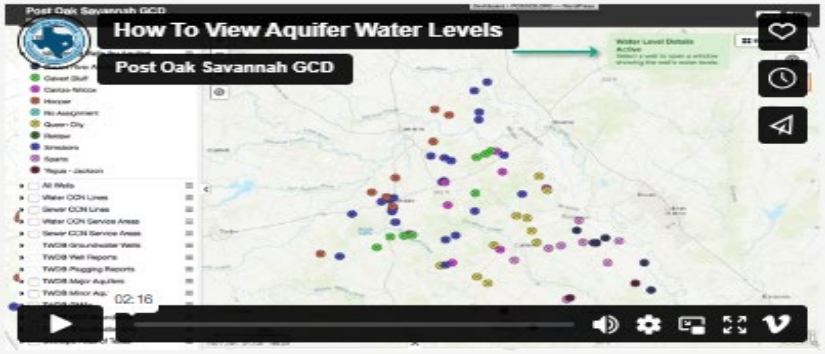
WellIntel

How Data Can Be Assessed?

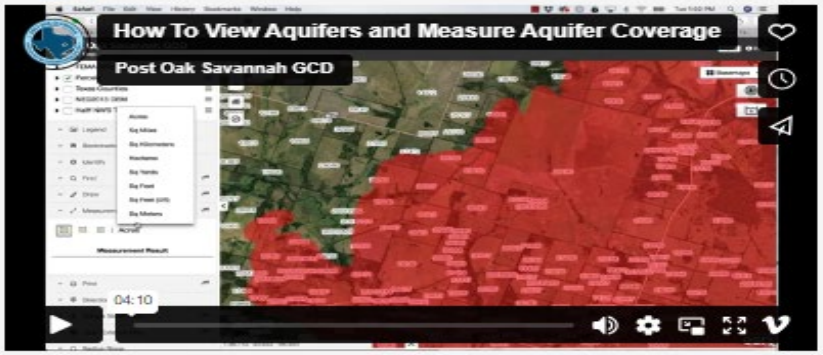
https://posgcd.org/public-maps/

POSGCD TUTORIALS

Public Interface Introduction



How To View Aquifer Water Levels



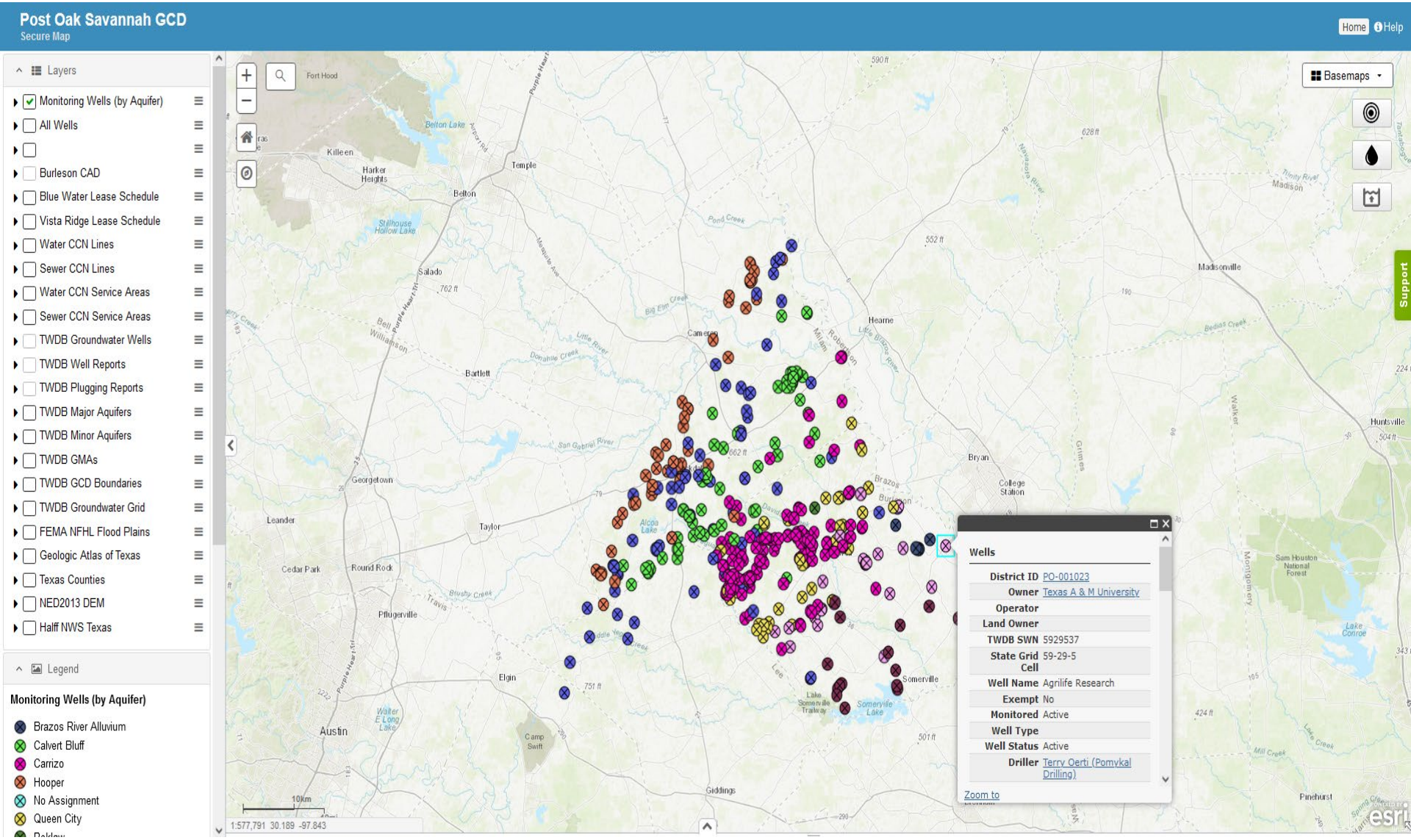
How to View Aquifers and Measure Aquifer Coverage

Come Back for More...

Check Back Often for More Tutorials.

Back to Public Interface

POSGCD Public Map: Monitoring Wells with Data



POSGCD Public Map: Example Hydrograph

Post Oak Savannah ≡ Log In

Main Navigation

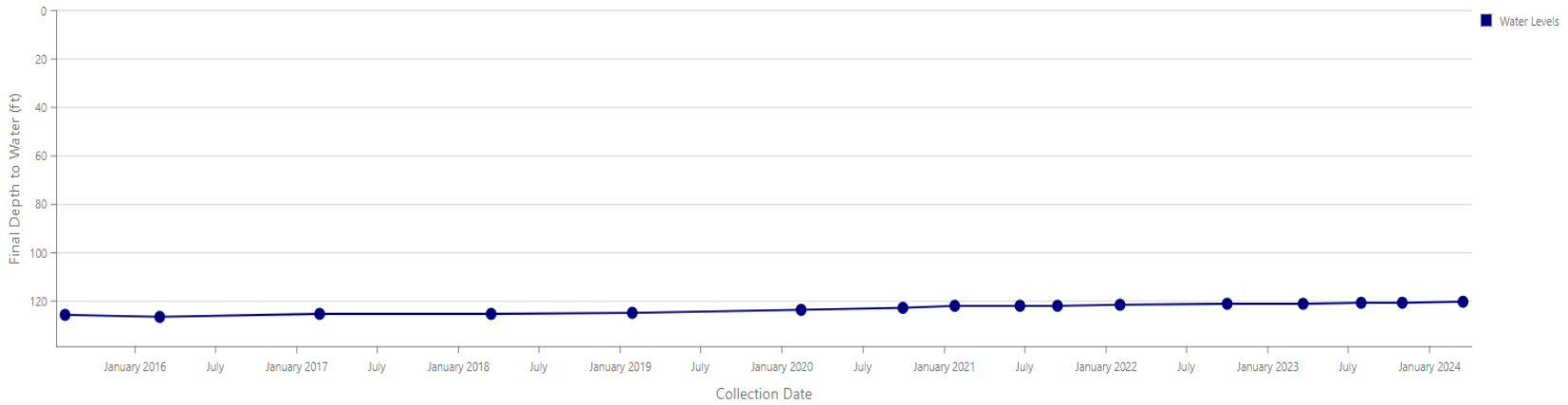
- Home
- Production Reporting
- Public Map

Water Levels for Well: PO-009745

Water Level Details

Hint: If there are too many data points in the chart, you can pan & zoom by clicking and dragging your mouse pointer in the chart over the desired range. You can also zoom in with your mouse wheel. Once zoomed, you can pan the range by holding Shift while dragging the mouse pointer left or right. Touch-enabled devices operate similarly using your fingers.

Disclaimer: The display of this data is not scaled and not suitable for scientific purposes. The spacing of datapoints does not take into account gaps or extra data.



Measurement Date	Method	Measurement Source	Pumping Status	Final Depth to Wa...	Quarter Mile Wells Exist
07/28/2015	Electrical Line	B. Bazan	Static	126.00	false
02/26/2016	Steel tape	B. Bazan	Static	126.80	false
02/22/2017	Steel tape	B. Bazan	Static	125.70	false
03/15/2018	Electrical Line	R. Sifuentes	Static	125.40	false
01/28/2019	Electrical Line	R. Sifuentes	Static	125.14	false
02/13/2020	Electrical Line	C. Andrews	Static	124.06	false
09/30/2020	Electrical Line	R. Sifuentes	Static	122.90	false
01/26/2021	Electrical Line	J. Aldridge	Static	122.35	false
06/21/2021	Electrical Line	C. Andrews	Static	122.10	false
09/14/2021	Electrical Line	C. Andrews	Static	122.08	false

Groundwater Well Assistance Program (GWAP)

The Groundwater Well Assistance Program (GWAP) was created to assist owners of water wells in Burleson and Milam Counties by identifying water wells expected to experience loss of service due to water levels dropping below the pump which is caused by aquifer wide pumping and take corrective actions to prevent that loss of service.

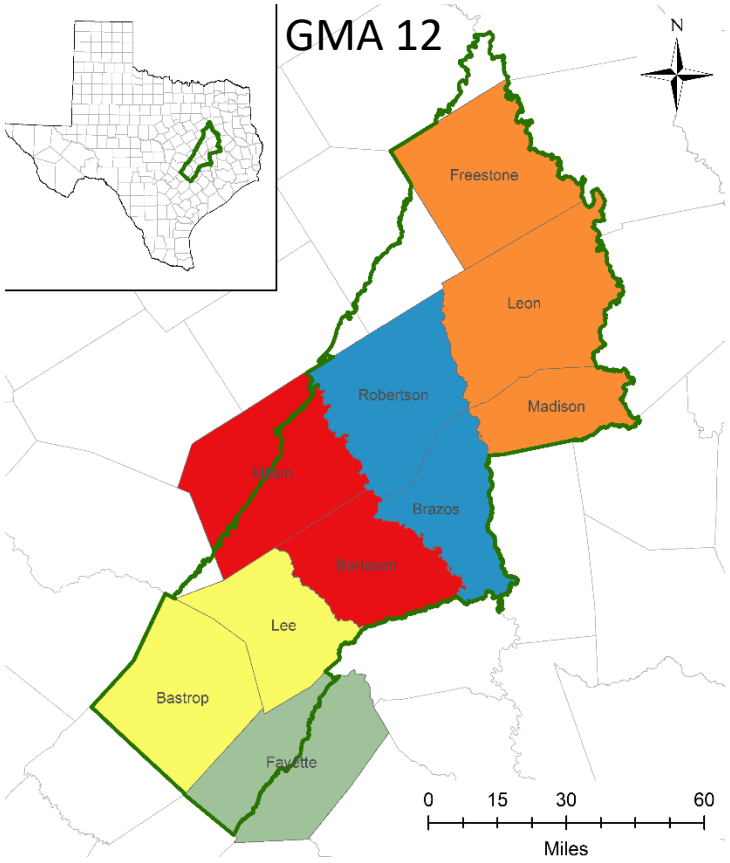
Not Including Science	2020	2021	2022	2023	2024	June
Wells Serviced	20	44	39	25	13	1
Total POSGCD Spent	$76,161	$233,954	$448,481	$338,667	$178,008	4,318
Total Reimbursed to POSGCD From Vista Ridge & I-130 Projects	$17,653	$95,025	$72,729	$57,825	$5,911	$5,911

Compliance

Desired Future Conditions

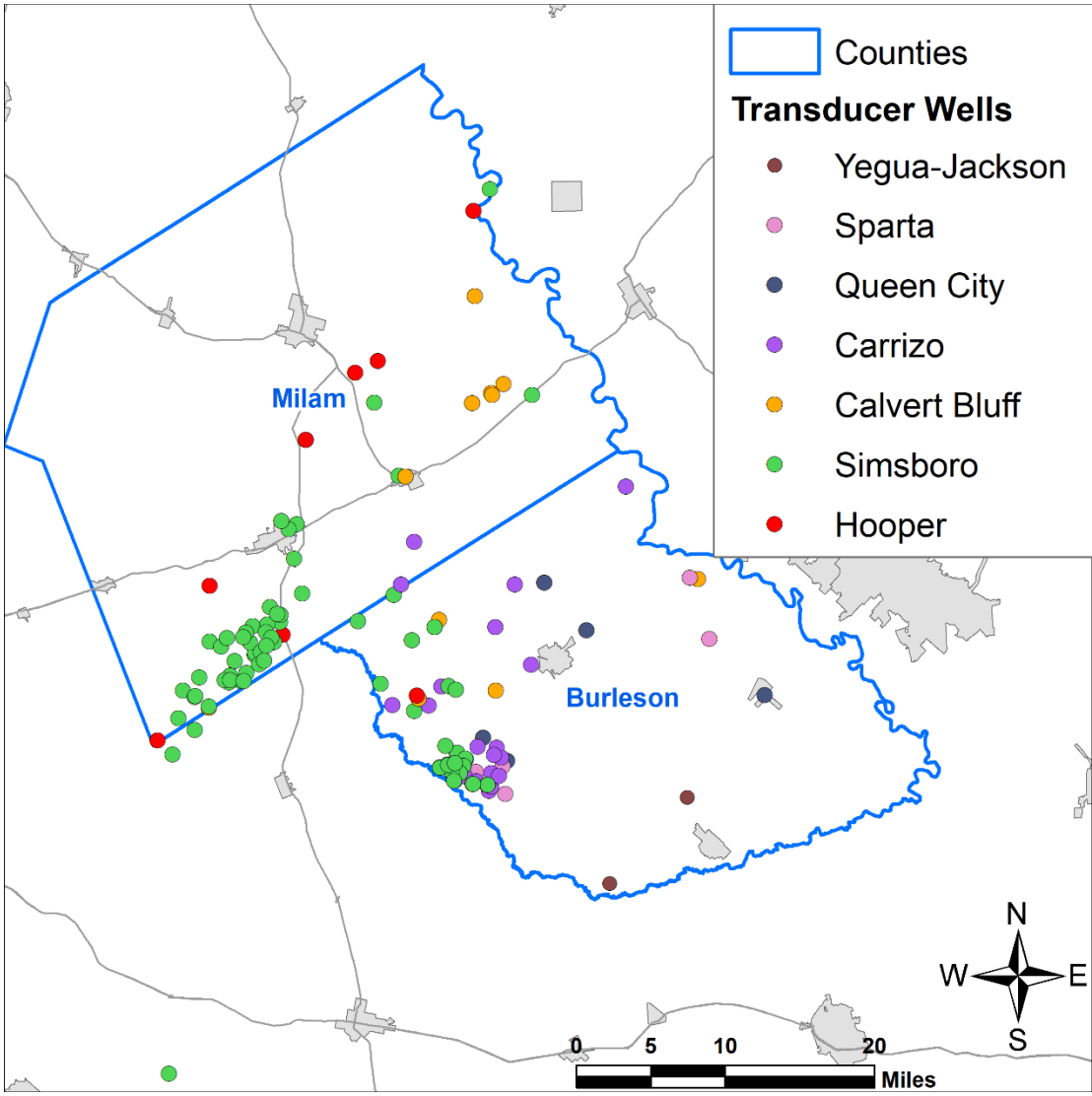
- Desired Future Conditions (DFC)
  - Average drawdown across aquifer in POSGCD from January 1, 2011 to December 31, 2069
  - For Management Zones
  - Established every five years by GMA 12

Aquifer	POSGCD DFC
	Average Drawdown (ft) between January 2011 and December 2069
Sparta	32
Queen City	30
Carrizo	146
Calvert Bluff (Upper Wilcox)	156
Simsboro (Middle Wilcox)	278
Hooper (Lower Wilcox)	178



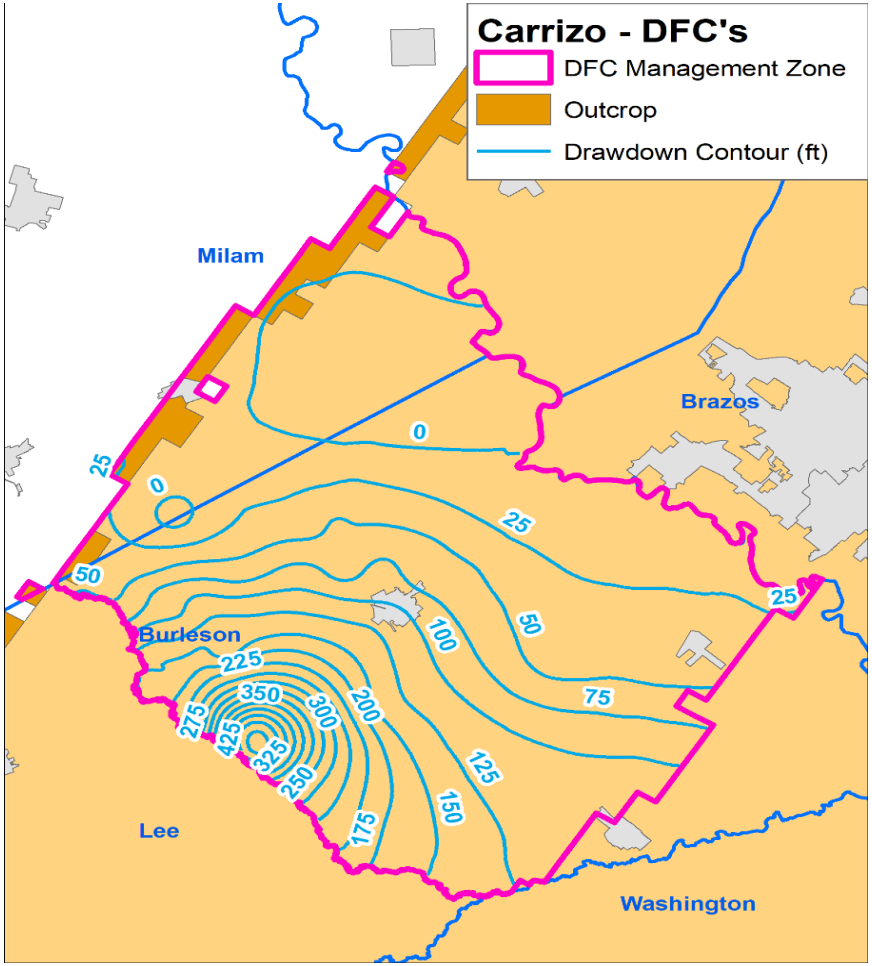
2023 Compliance Evaluations: DFCs

- Compliance is Evaluated Based on the Analysis of Measured Water Levels
  - 439 measured in POSGCD
  - 164 measured in BVGCD & LPGCD
  - Total 603 measurements

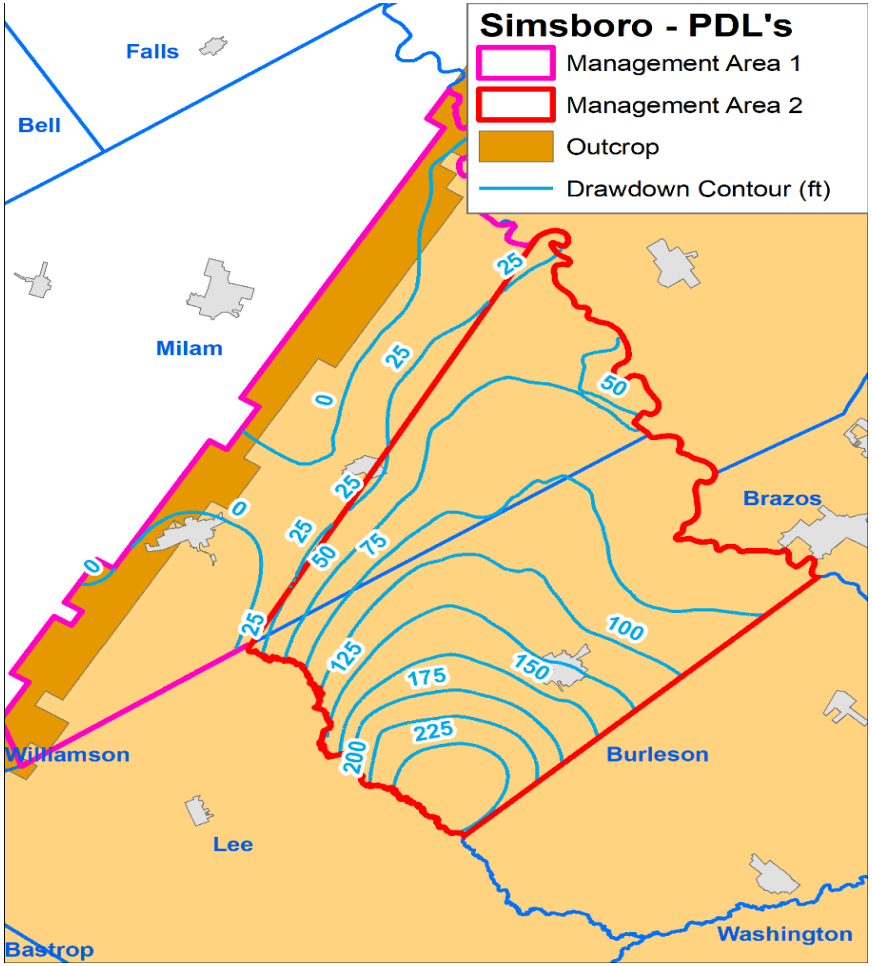


Average 2011-2023 Drawdown: DFC Zones

Carrizo
Average Drawdown = 73.2 ft



Simsboro
Average Drawdown = 69.3 ft



Evaluation of DFC Compliance

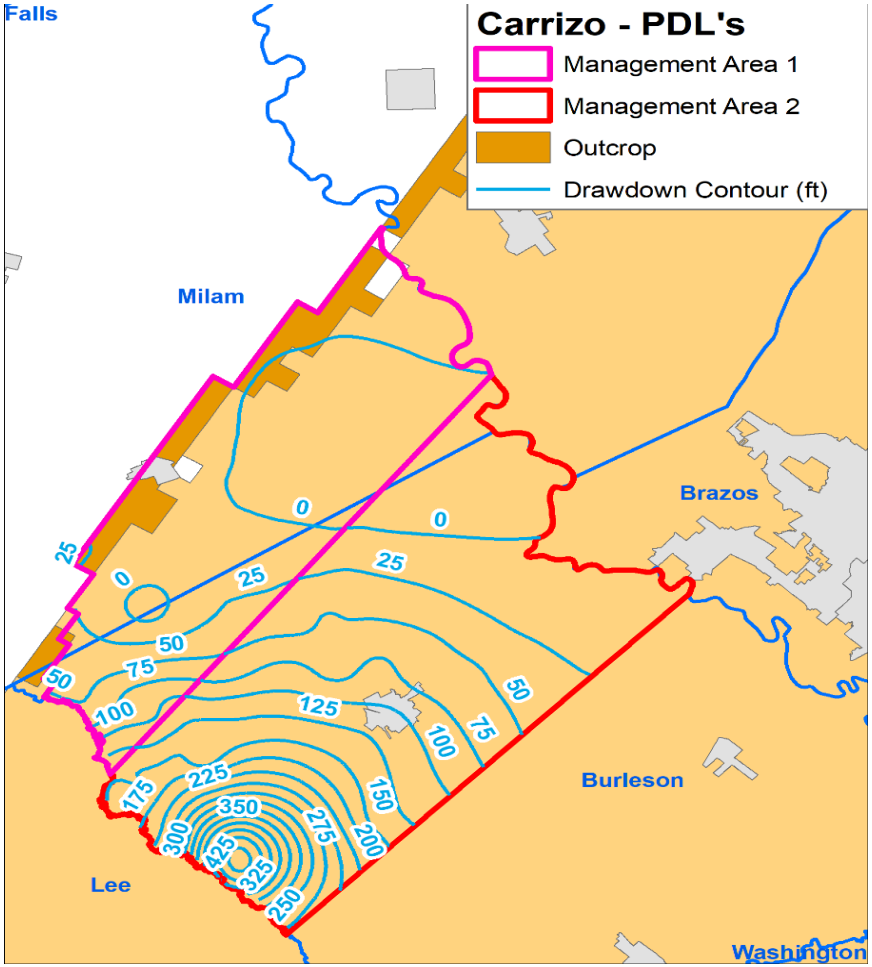
Management Zone	DFC	2011 to 2023 Drawdown	Compliant with DFC	Below Threshold Level		
				1	2	3
		Avg. Drawdown (ft) / % of DFC		50%	60%	75%
Sparta	32	11.8 / (37%)	Yes	Yes	Yes	Yes
Queen City	30	14.3 / (47.6%)	Yes	Yes	Yes	Yes
Carrizo	146	73.2 / (50.1%)	Yes	No	Yes	Yes
Calvert Bluff (Upper Wilcox)	156	60.0 / (38.5%)	Yes	Yes	Yes	Yes
Simsboro (Middle Wilcox)	278	69.3 / (24.9%)	Yes	Yes	Yes	Yes
Hooper (Lower Wilcox)	178	18.1 / (10.2%)	Yes	Yes	Yes	Yes
Yegua Jackson	61	-30.2 / (-49.4)	Yes	Yes	Yes	Yes

Threshold Levels for Compliance & Curtailment

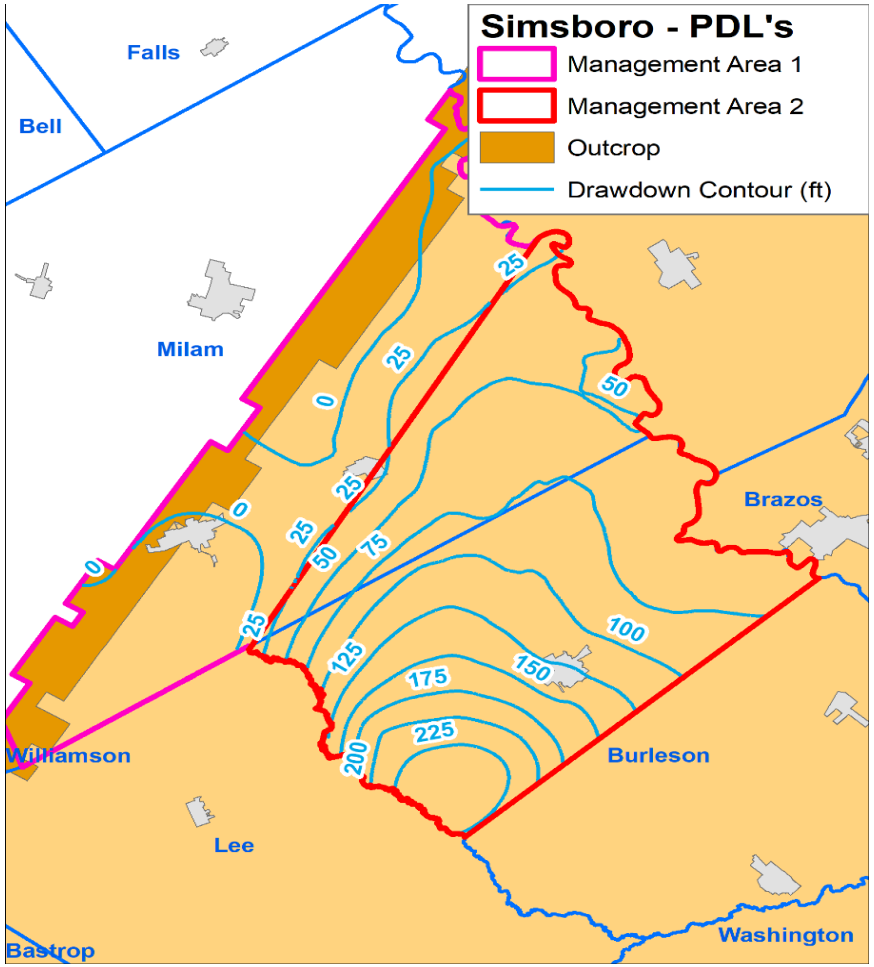
Threshold 1 (50%)	Perform studies to better understand the effects of pumping and impact on the use of the aquifer, improve characterization of aquifer and prediction of changes in future water levels,
Threshold 2 (60%)	1. Re-evaluate the Management Plan and rules regarding management zones, collection and analysis of monitoring data 2. Assess need for curtailment, possibly develop approach for curtailment
Threshold 3 (75%)	1. Conduct public hearing to discuss aquifer conditions. 2. Adopt possible approaches for curtailment 3. GM and District hydrogeologist report findings to the Board, Board determines how and when to implement curtailment

Average 2011-2023 Drawdown: PDL Areas

Carrizo
Management Area 1= 17.1 ft
Management Area 2 = 98.3 ft



Simsboro
Management Area 1= -10.1 ft
Management Area 2 = 100.7 ft



Evaluation of PDL Compliance

Management Area		2070 PDL (ft)	2011 to 2023 Drawdown	Compliant with PDL	Below Threshold Level		
			Avg. Drawdown (ft) / % of DFC		1	2	3
					50%	60%	70%
Sparta	Area 1	28	-2.1 (-7.6%)	Yes	Yes	Yes	Yes
Queen City	Area 1	19	-4.2 (-22.1%)	Yes	Yes	Yes	Yes
Carrizo	Area 1	75	17.1 (22.8%)	Yes	Yes	Yes	Yes
	Area 2	175	98.3 (56.2%)	Yes	No	Yes	Yes
Calvert Bluff	Area 1	88	23.6 (26.8%)	Yes	Yes	Yes	Yes
	Area 2	223	65.4 (29.3%)	Yes	Yes	Yes	Yes
Simsboro	Area 1	91	-10.1 (-11%)	Yes	Yes	Yes	Yes
	Area 2	335	100.7 (30.1%)	Yes	Yes	Yes	Yes
Hooper	Area 1	210	1.7 (0.8%)	Yes	Yes	Yes	Yes

Summary

- Threshold Level 1 Exceedances for Carrizo DFC and Carrizo PDL
  - DFC compliance is 50.1%
  - PDL compliance is 56.2% for Management Area 2
- On-going Projects
  - Operational Groundwater Model
  - Guidance Document for Implementing Curtailment

Planned Enhancement of Management and Visualization of Measured Water Level Data from Instrumented Wells