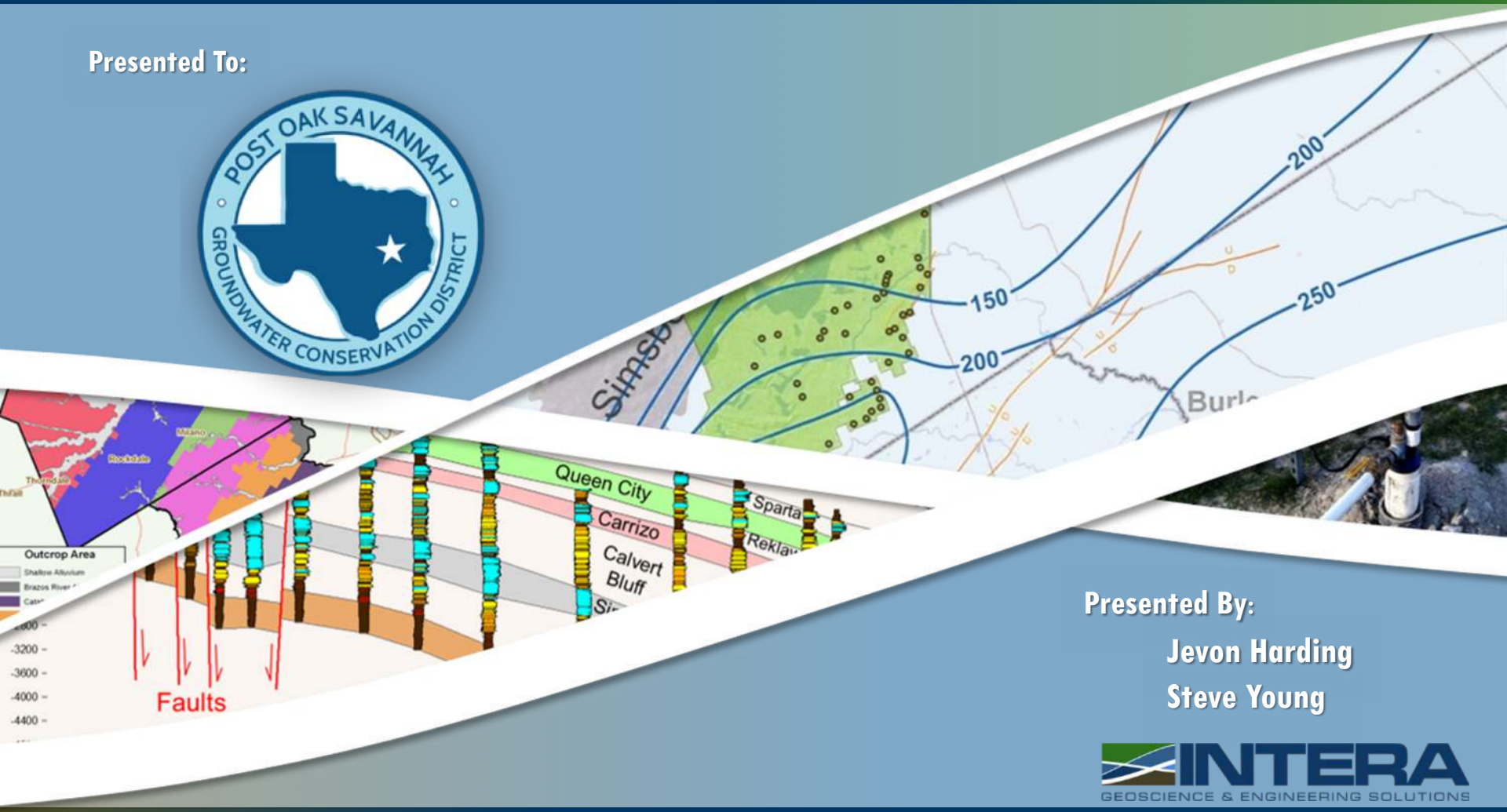
Evaluating Compliance with DFCs and Shallow PDLs

Presented To:

POST OAK SAVANNAH GROUNDWATER CONSERVATION DISTRICT



Presented By:

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Steve Young

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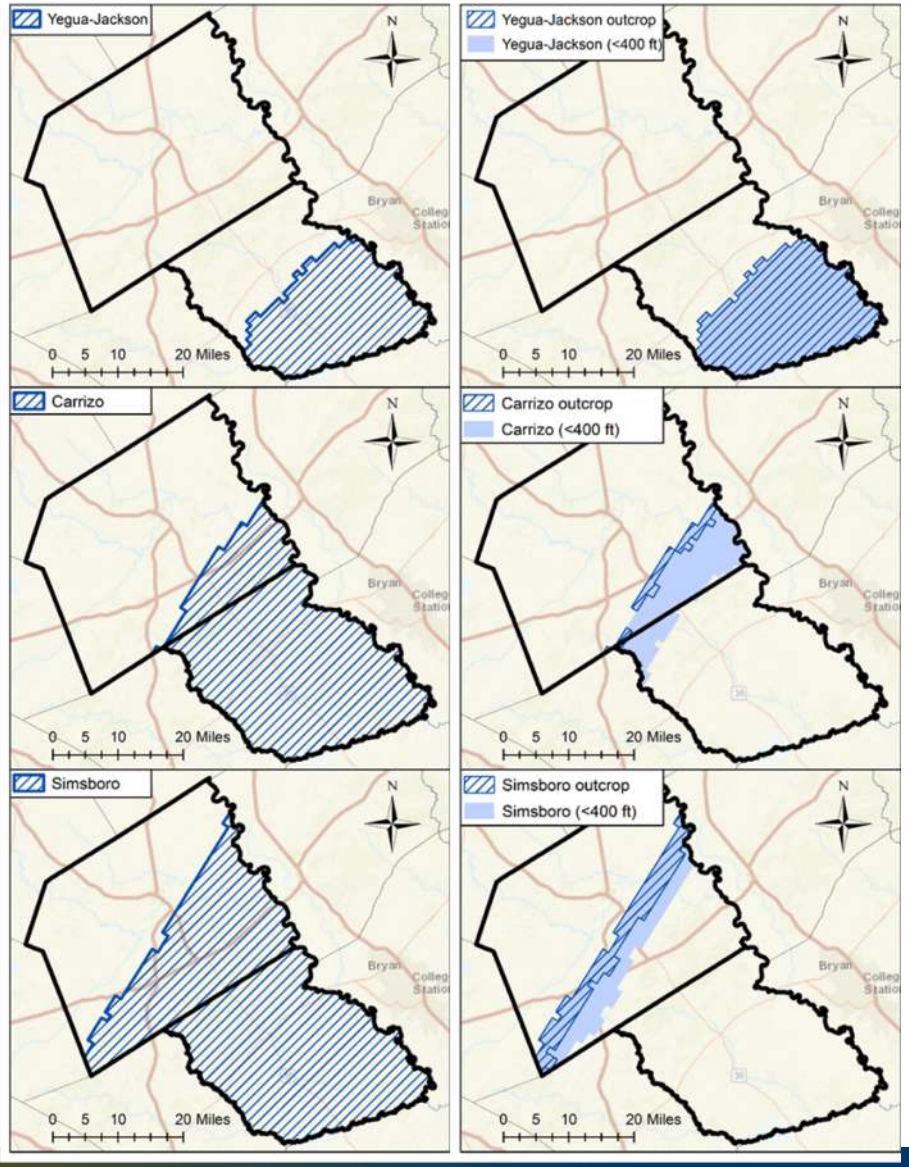
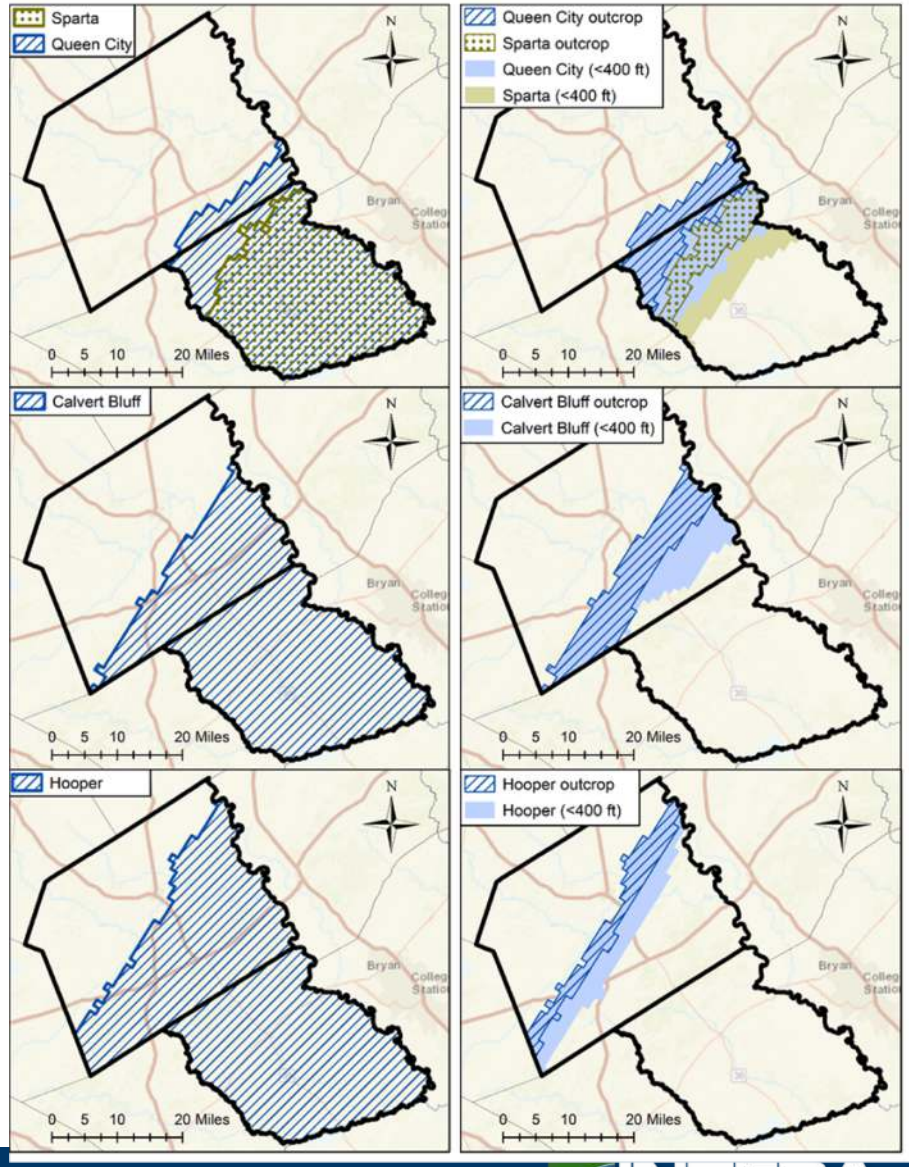
June 5, 2018

Outline

- Footprints of Aquifer and Shallow (400 foot) Management zones
- Review data and compliance methodology
- Evaluate Compliance with DFCs (2017 update)
- Evaluate Compliance with shallow PDLs (2017 update)

Footprints of Aquifer and 400-ft Zone





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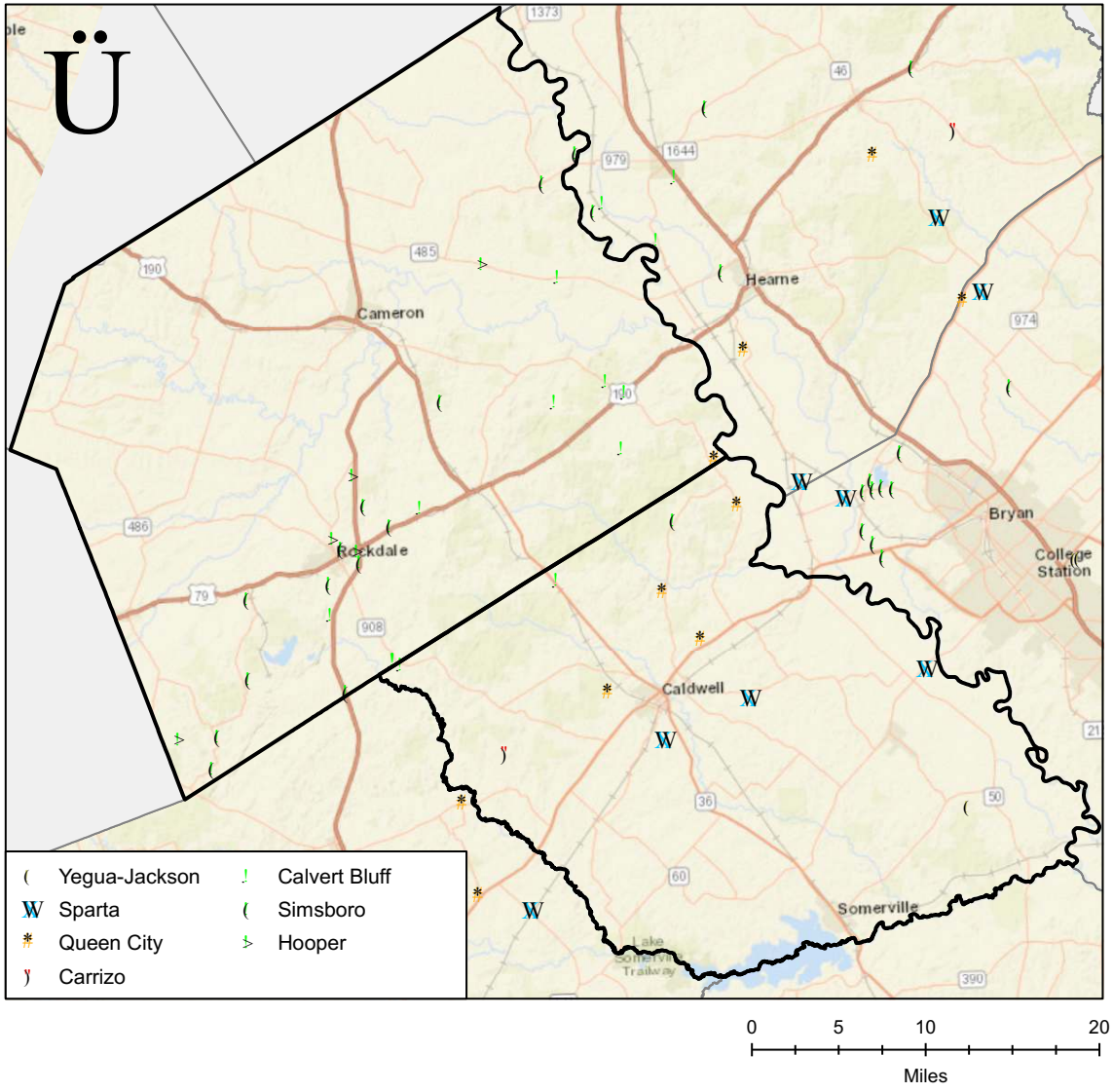
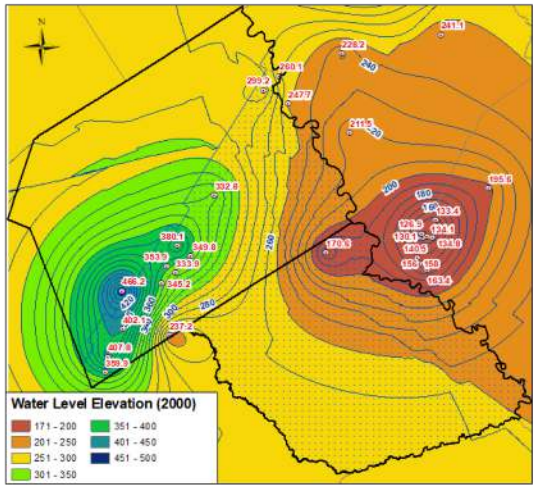
Location of Wells used for DFC calculation

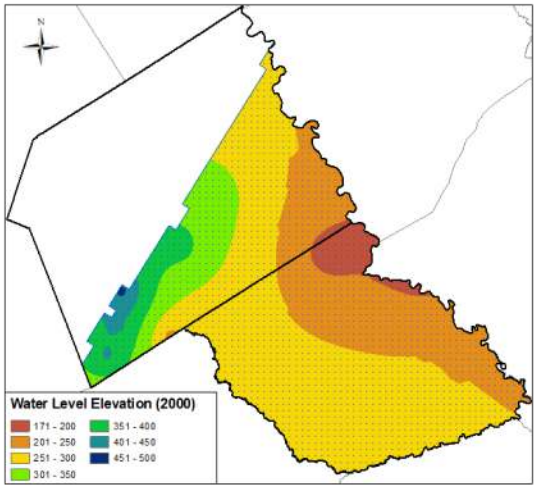


Drawdown Calculation for DFC

Interpolate Baseline (2000) Simsboro Water Level Surface

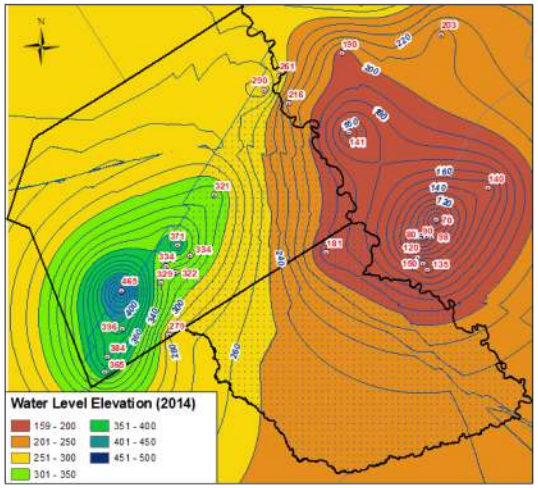


Clip Baseline (2000) Water Level Surface to Simsboro Zone

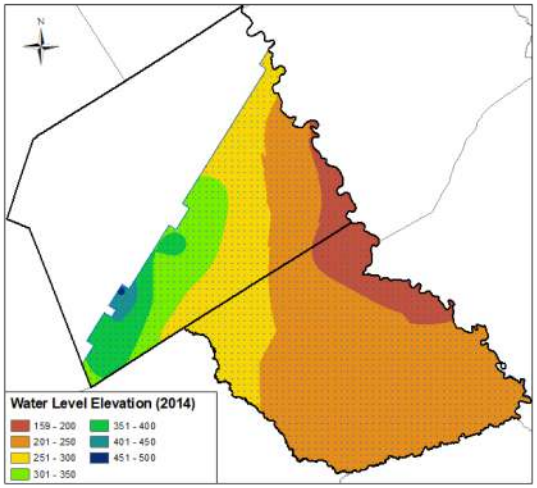


Calculate Average Baseline (2000) Water Level Elevation

Interpolate Evaluation Year (2014) Simsboro Water Level Surface



Clip Evaluation Year (2014) Water Level Surface to Simsboro Zone



Calculate Average Evaluation Year (2014) Water Level Elevation

Average Drawdown = Baseline WL (2000) – Evaluation Year WL (2014)

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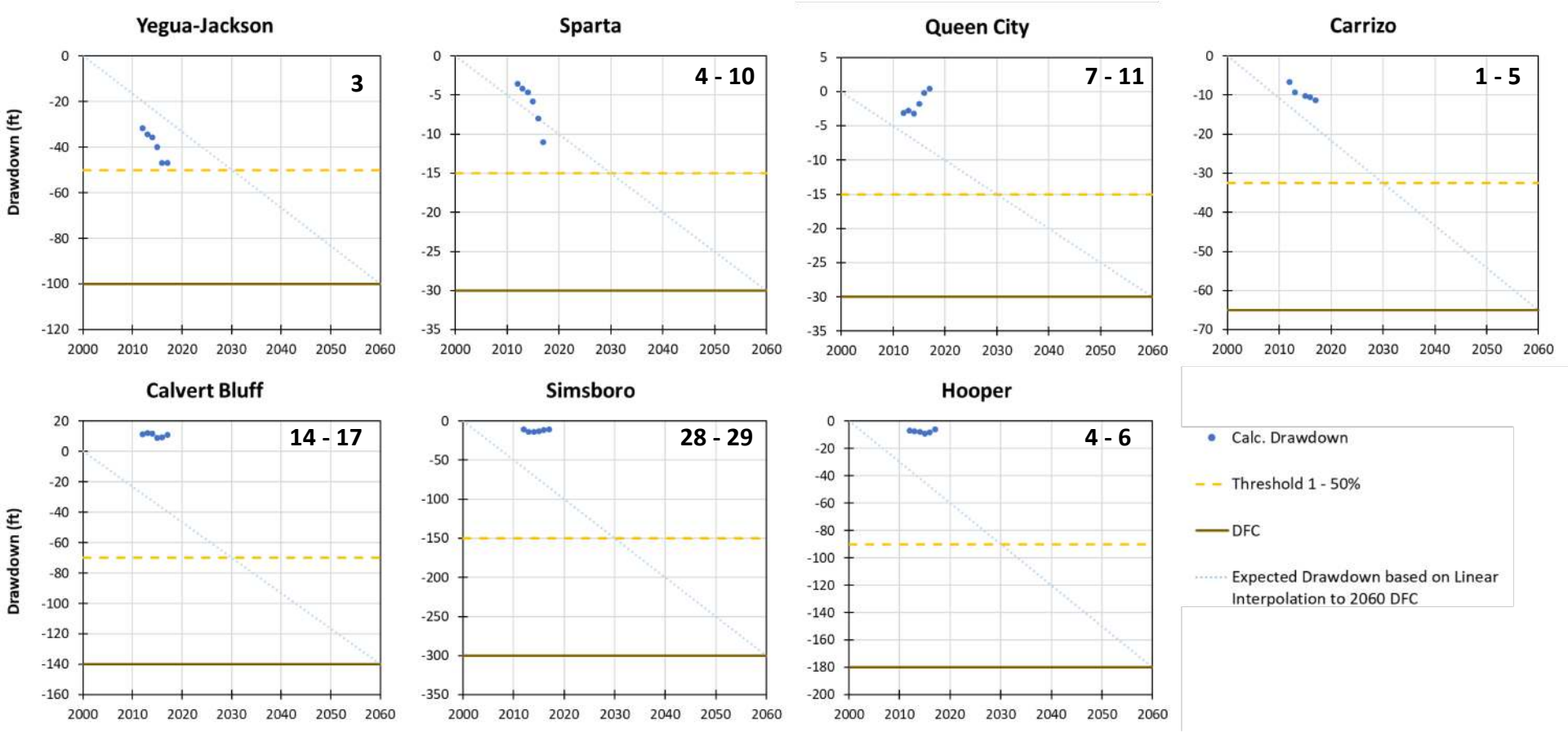
Compliance with POSGCD DFCs

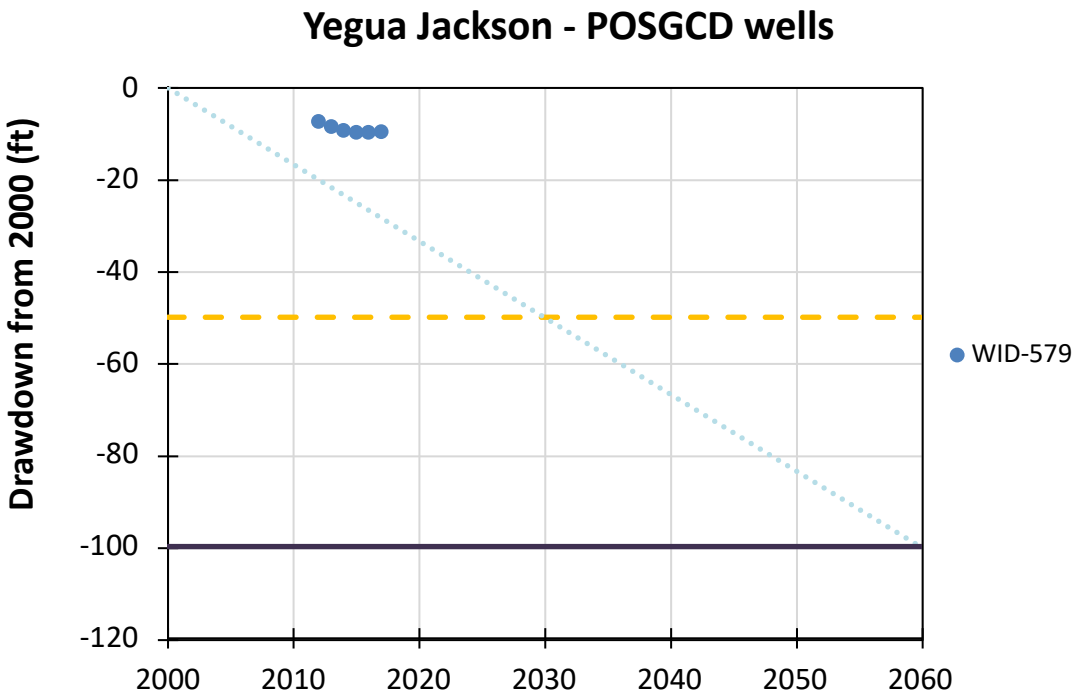
Management Zone	DFC	Drawdown from 2000 to 2012		Drawdown from 2000 to 2013		Drawdown from 2000 to 2014		Drawdown from 2000 to 2015		Drawdown from 2000 to 2016		Drawdown from 2000 to 2017	
		feet	*%*	*feet*	*%*	*feet*	*%*	*feet*	*%*	*feet*	*%*	*feet*	*%*
Yegua Jackson	100	31.8	**32%**	34.5	**34%**	35.7	**36%**	40.0	**40%**	47.0	**47%**	46.9	**47%**
Sparta	30	3.5	**12%**	4.2	**14%**	4.6	**15%**	5.8	**19%**	8.0	**27%**	11.0	**37%**
Queen City	30	3.1	**10%**	2.8	**9%**	3.2	**11%**	1.8	**6%**	0.2	**1%**	-0.4	**-1%**
Carrizo	65	6.7	**10%**	9.3	**14%**	--	**--**	10.2	**16%**	10.6	**16%**	11.4	**18%**
Calvert Bluff (Upper Wilcox)	140	-11.4	**-8%**	-11.9	**-9%**	-11.5	**-8%**	-8.9	**-6%**	-9.2	**-7%**	-10.9	**-8%**
Simsboro (Middle Wilcox)	300	10.9	**4%**	14.0	**5%**	14.2	**5%**	13.2	**4%**	11.6	**4%**	11.1	**4%**
Hooper (Lower Wilcox)	180	7.1	**4%**	7.3	**4%**	8.0	**4%**	9.1	**5%**	8.6	**5%**	6.0	**3%**

Compliance with POSGCD DFCs

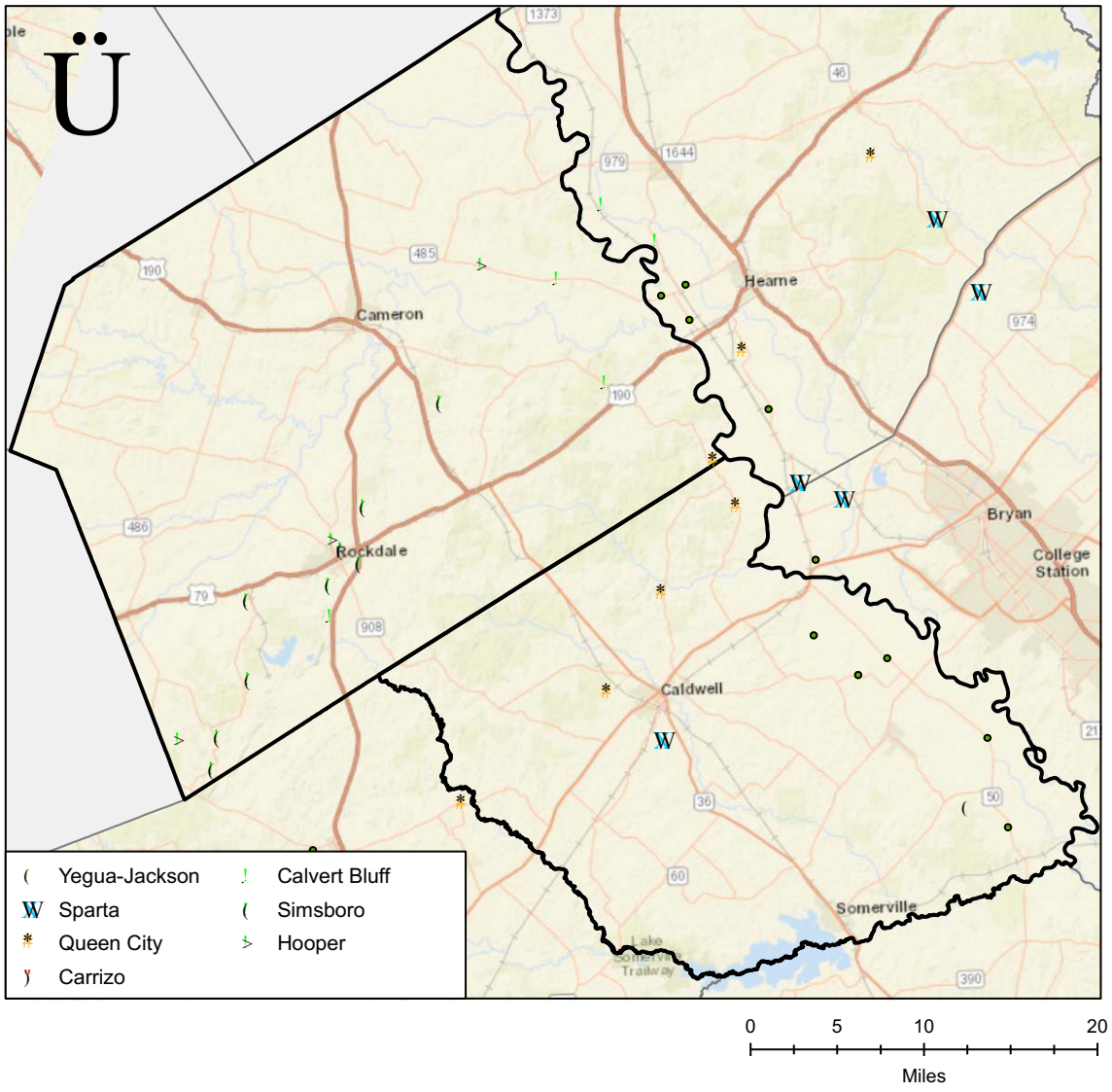


Considerations for Discussion

- Adequacy of Coverage
- Consistency between GCD protocols, methodology, and well aquifer assignments
- Statistical significance
- Example: Yegua-Jackson



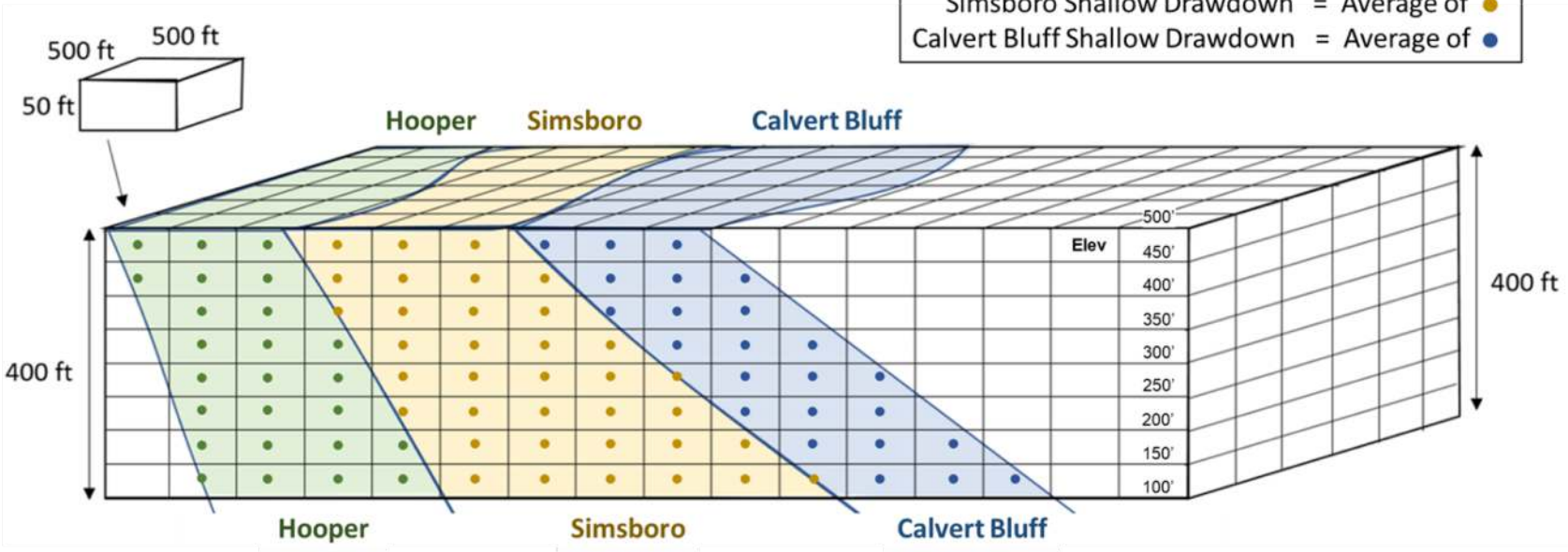
Location of Wells used for PDL calculation



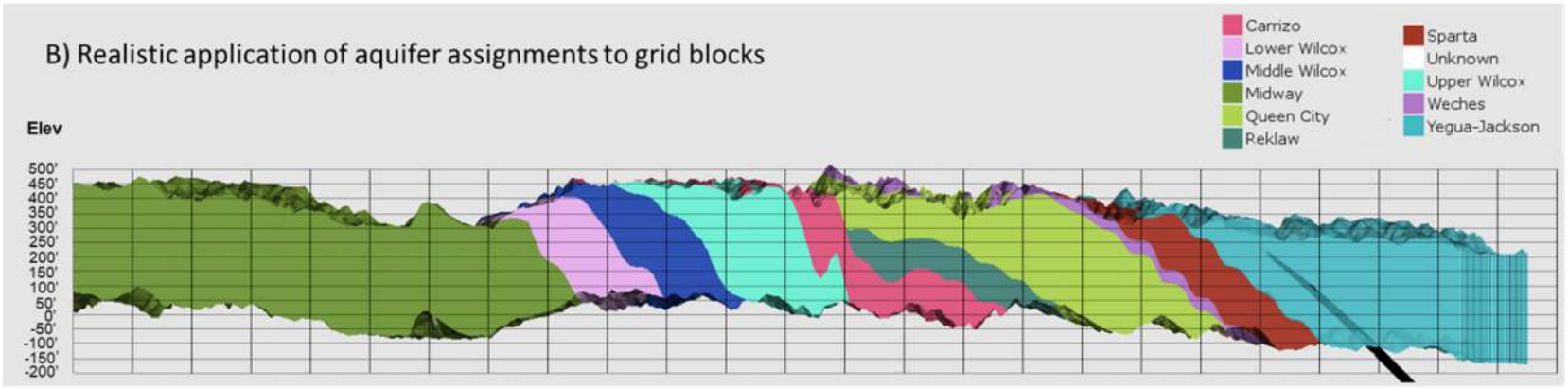
Drawdown Calculation for PDL

A) Idealized schematic of aquifer assignments to grid blocks

Hooper Shallow Drawdown = Average of
Simsboro Shallow Drawdown = Average of
Calvert Bluff Shallow Drawdown = Average of



B) Realistic application of aquifer assignments to grid blocks

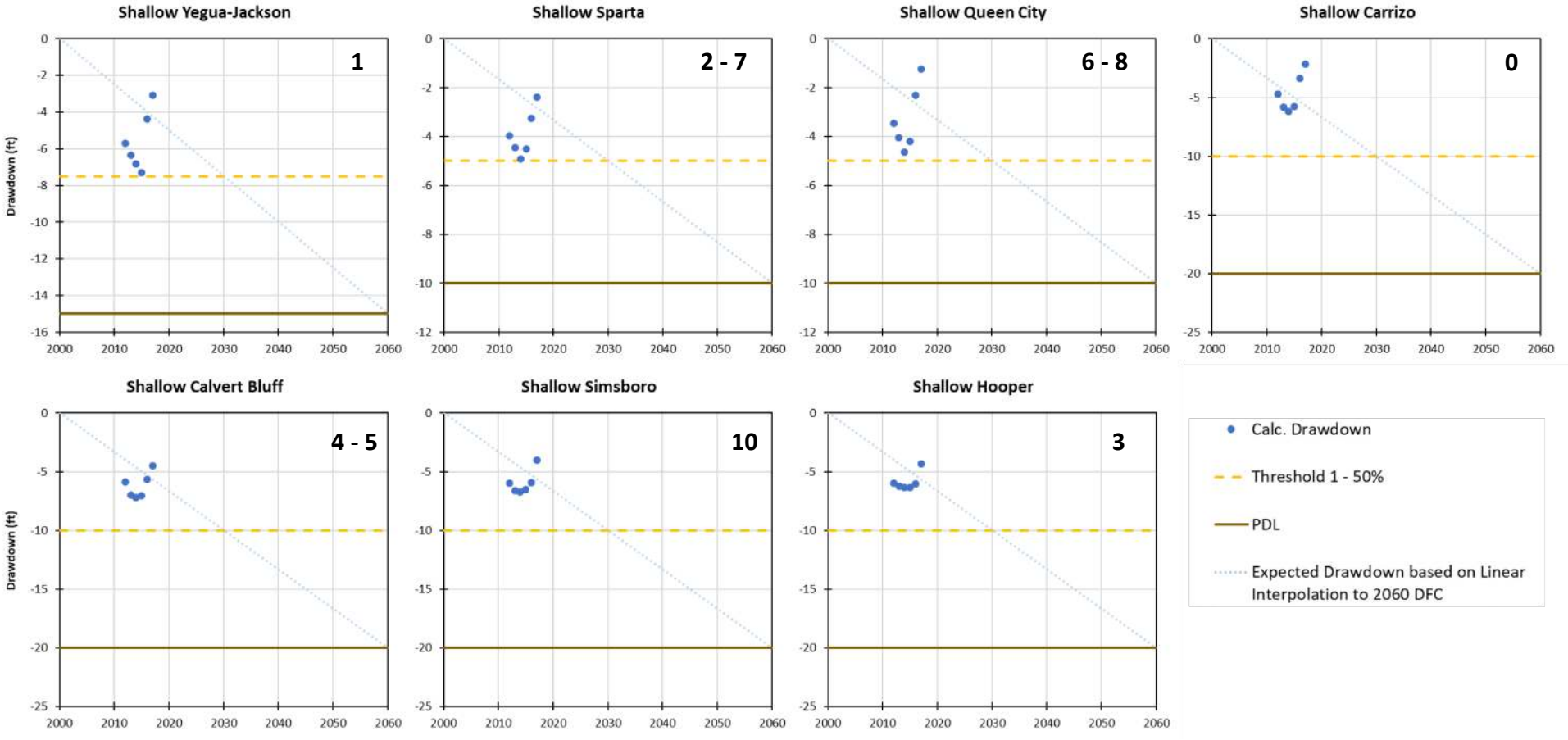


Each column of blocks has the same amount of drawdown

Compliance with POSGCD Shallow PDLs

Shallow Management Zone	PDL	Drawdown from 2000 to 2012		Drawdown from 2000 to 2013		Drawdown from 2000 to 2014		Drawdown from 2000 to 2015		Drawdown from 2000 to 2016		Drawdown from 2000 to 2017	
		feet	*%*	*feet*	*%*	*feet*	*%*	*feet*	*%*	*feet*	*%*	*feet*	*%*
Yegua Jackson	-15	-5.7	**38%**	-6.4	**42%**	-6.8	**46%**	-7.3	**49%**	-4.4	**29%**	-3.1	**21%**
Sparta	-10	-4.0	**40%**	-4.5	**45%**	-4.9	**49%**	-4.5	**45%**	-3.3	**33%**	-2.4	**24%**
Queen City	-10	-3.4	**34%**	-4.1	**41%**	-4.6	**46%**	-4.2	**42%**	-2.3	**23%**	-1.2	**12%**
Carrizo	-20	-4.7	**23%**	-5.8	**29%**	-6.2	**31%**	-5.8	**29%**	-3.4	**17%**	-2.2	**11%**
Calvert Bluff (Upper Wilcox)	-20	-5.9	**29%**	-7.0	**35%**	-7.2	**36%**	-7.0	**35%**	-5.7	**28%**	-4.5	**22%**
Simsboro (Middle Wilcox)	-20	-6.0	**30%**	-6.6	**33%**	-6.7	**33%**	-6.5	**33%**	-5.9	**30%**	-4.0	**20%**
Hooper (Lower Wilcox)	-20	-6.0	**30%**	-6.2	**31%**	-6.3	**32%**	-6.4	**32%**	-6.0	**30%**	-4.3	**22%**

Compliance with POSGCD Shallow PDLs



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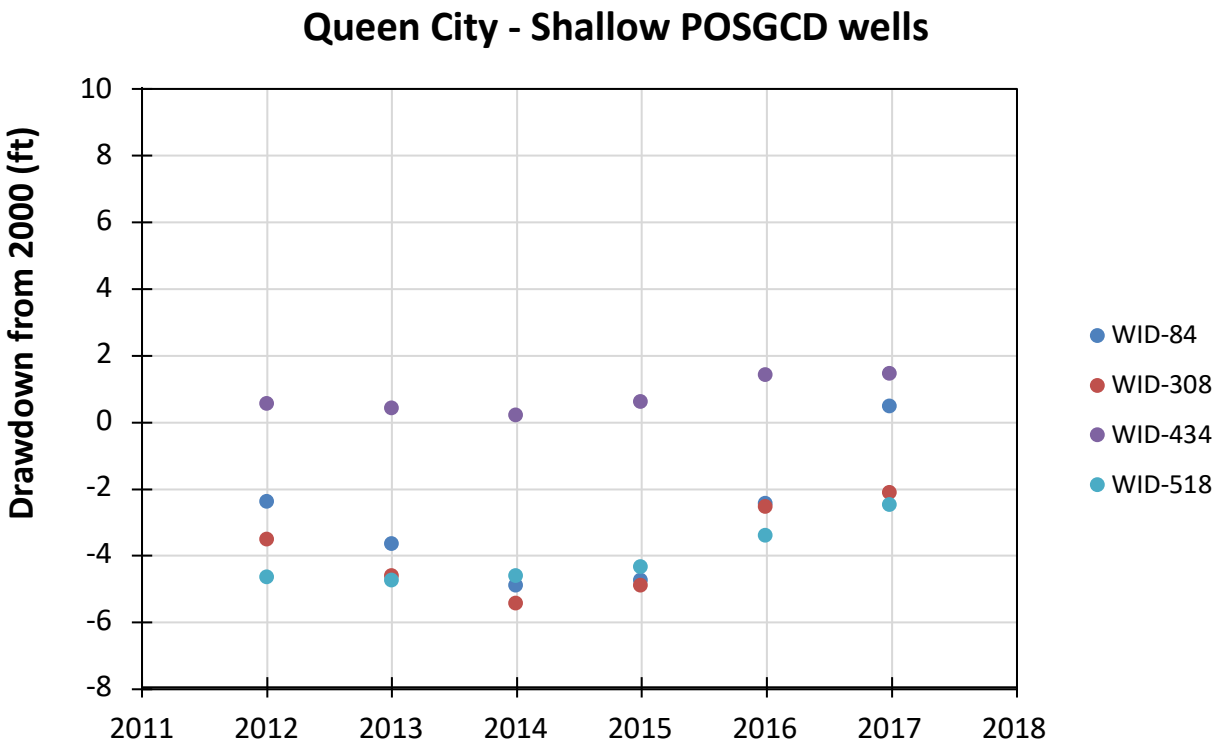
Further Analysis



Work in Progress

- Response to neighboring GCD comments
- Finalizing protocols for sampling
- Working with fellow GCDs to have revised methodology later this summer/fall
- Streamlining analyses for reproducibility and transparency