

Item 7 | DFC Planning for all Managed Aquifers

GMA 12 met to discuss Desired Future Conditions in Milano, Texas on January 29, 2020. All managed aquifers were discussed at length following thorough presentations by the hydrologists representing the various groundwater districts.

The Yegua-Jackson (YJ) Aquifer had been a source concern for Post Oak Savannah GCD. The initial pumping files submitted by POSGCD for the 2021 DFC planning round included a high level of water production associated with oil and gas production. That pumping no longer exists at those levels. Pumping from the YJ in BVGCD has not increased since the last round of planning. POSGCD has revised the pumping files first submitted from 14,000 ac-ft/yr down to 7,000 ac-ft/yr. The modeled results from the revised pumping files predict YJ water wells in Burleson County will not trigger well mitigation in the 5-year planning horizon. It was agreed that no more YJ model runs would be needed for DFC determination and adoption.

The Brazos River Alluvium Aquifer (BRAA) DFC will be developed by POSGCD and BVGCD because no alluvial deposits exist in the other member districts. Model runs have been completed using both the BRAA GAM developed by the Texas Water Development Board and the recently updated Central Carrizo-Wilcox/Sparta/Queen City GAM. Both GAMs developed similar results that were favorable to keeping the DFCs the same in both districts for 2021 planning purposes. It was agreed that no further BRAA model runs would be needed for DFC determination and adoption.

There was an extensive discussion among GMA 12 members concerning DFCs for primarily the Carrizo and Simsboro aquifers. Some districts are still struggling to come to grips with the model results produced by the S7 GAM run. DFC levels went higher for both POSGCD and LPGCD but down for BVGCD in the S7 run. The boards for both of the other districts do not want the DFC values produced from the old GAM to change. With ten additional years of pumping files and a vast number of new permitted and producing wells in both districts added to the model run, a massive hurdle now exists allowing for no change to the DFCs. No agreement was reached other than each district was tasked with bringing solutions to the next GAM 12 meeting on March 26, 2020.

GMA 12 members reviewed the revised draft of the “white paper” discussing “The State of GMA 12.” Members adopted both the white paper and an executive summary and authorized distribution of the document to the public and to state legislative representatives.

As detailed above, there are a number of hurdles to be overcome this DFC planning round. We will continue to work closely with our neighboring districts to find solutions to these issues.

GMA 12

- ▣ Preliminary Results and Discussion of Yegua-Jackson and QC/Sparta/C-W Modeling Results

by

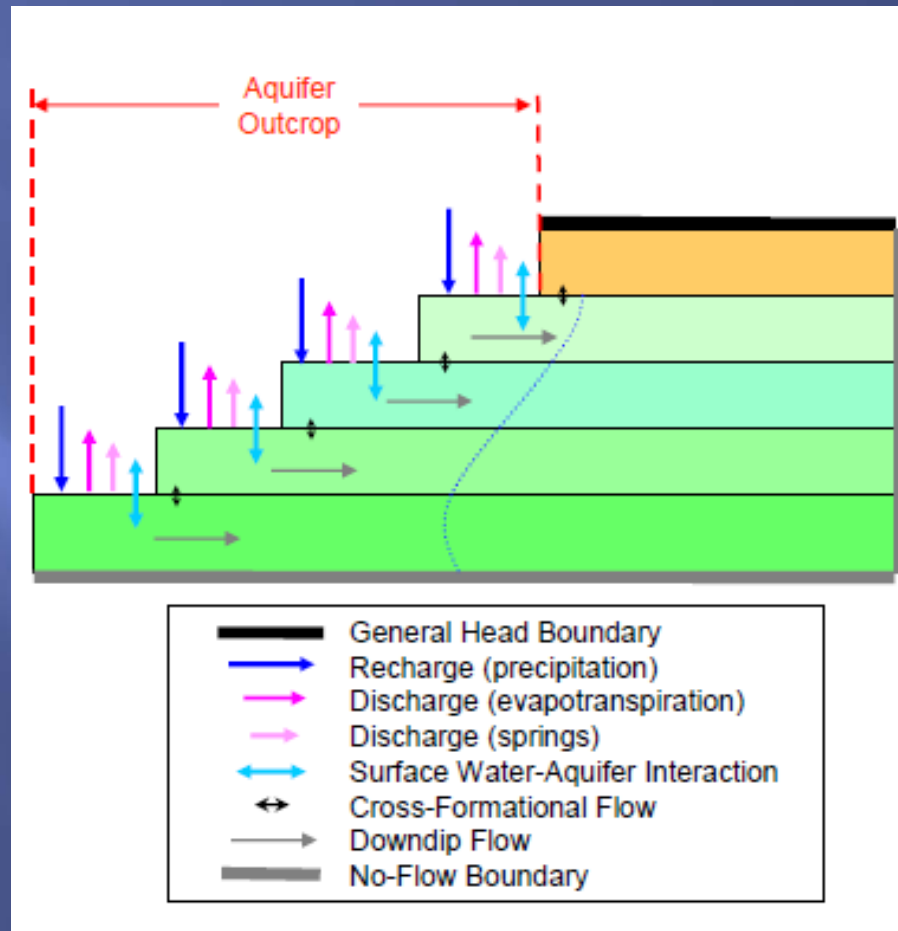
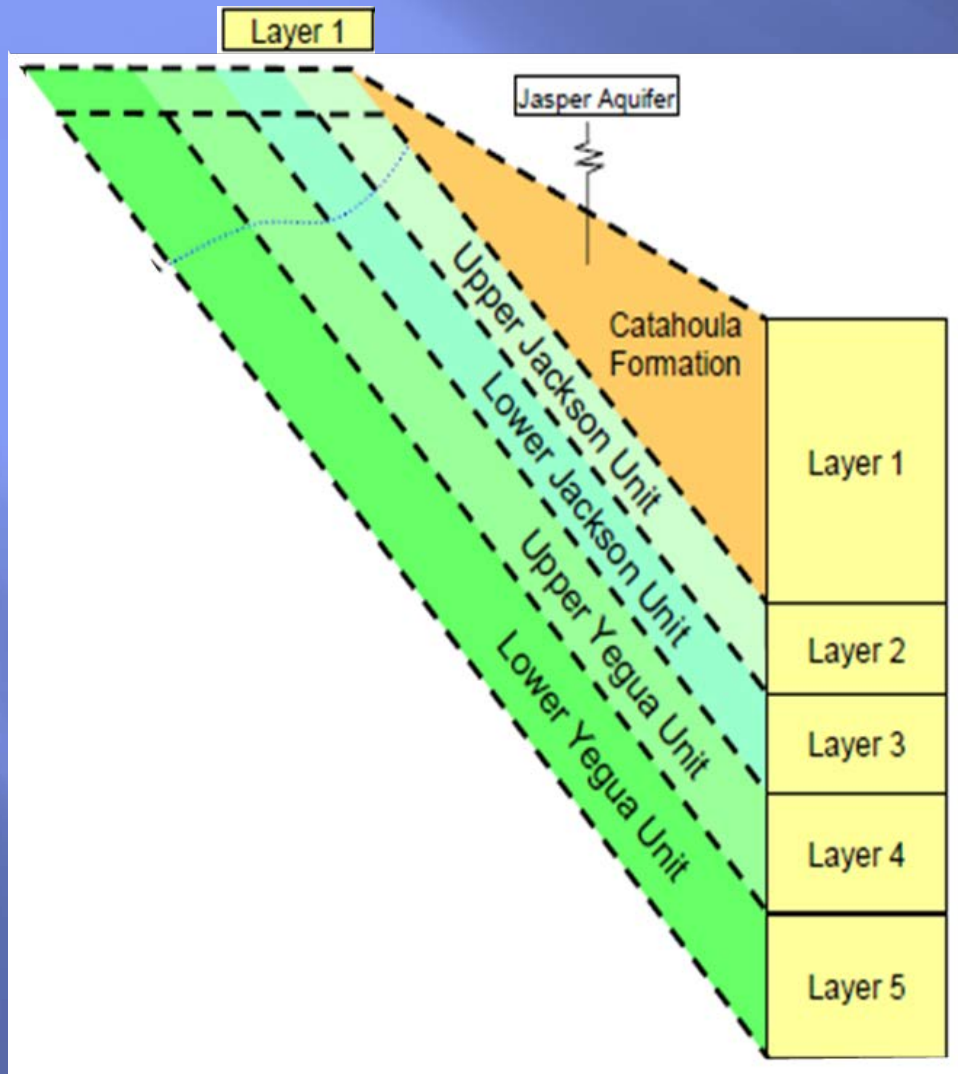
GMA 12 Consultant Team

January 29, 2020

Outline

- ▣ Revised Yegua-Jackson Simulations (#11)
- ▣ Sensitivity analysis on PS-7 and PS-9 Simulations (#12, #13)

Yegua-Jackson GAM



Yegua-Jackson DFC Run (YJ-PS1)

TABLE 10 MODELED AVAILABLE GROUNDWATER FOR THE YEGUA-JACKSON AQUIFER IN GROUNDWATER MANAGEMENT AREA 12 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2010 AND 2069. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District	County	Aquifer	2010	2020	2030	2040	2050	2060	2069
Brazos Valley GCD	Brazos	Jackson	4,411	4,404	4,402	4,402	4,402	4,402	4,402
Brazos Valley GCD	Brazos	Yegua	2,452	2,452	2,452	2,452	2,452	2,452	2,452
Brazos Valley GCD Total¹		Yegua-Jackson	6,863	6,856	6,854	6,854	6,854	6,854	6,854
Fayette County GCD¹	Fayette³	Yegua-Jackson	9,262	9,262	9,262	9,262	9,262	9,261	9,261
Lost Pines GCD ²	Bastrop	Yegua-Jackson	NR	NR	NR	NR	NR	NR	NR
Lost Pines GCD ²	Lee	Yegua-Jackson	NR	NR	NR	NR	NR	NR	NR
Lost Pines GCD Total^{1,2}		Yegua-Jackson	NR	NR	NR	NR	NR	NR	NR
Mid-East Texas GCD	Leon	Yegua-Jackson	0	0	0	0	0	0	0
Mid-East Texas GCD	Madison	Yegua-Jackson	809	809	809	809	809	809	809
Mid-East Texas GCD Total¹		Yegua-Jackson	809	809	809	809	809	809	809
Post Oak Savannah GCD¹	Burleson	Yegua-Jackson	14,544	14,544	12,576	12,564	12,478	12,326	10,200
GMA 12 Total¹		Yegua-Jackson	31,478	31,471	29,501	29,489	29,403	29,250	27,124

1. Individual estimates are rounded and may not always sum up to the total value displayed.

2. NR: Groundwater Management Area 12 declared the Yegua-Jackson Aquifer not relevant in these areas .

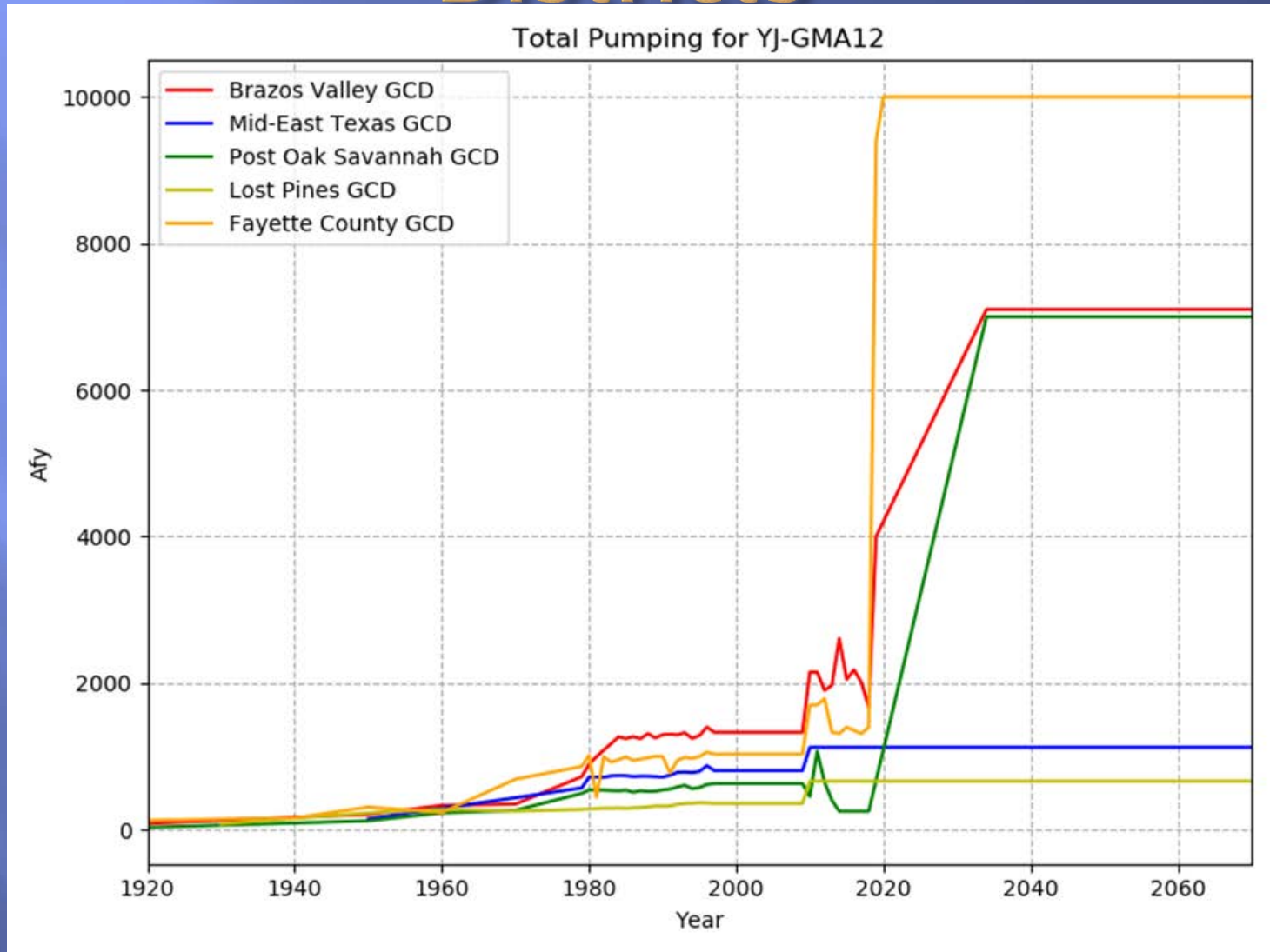
3. Modeled available groundwater values for Fayette County include all of the county (GMA 12 and GMA 15 portions)

Yegua-Jackson Run (YJ-PS2)

- ▣ YJ-PS1 historical pumping from 2010 to 2018 is too high
- ▣ GMS 12 Districts revised pumping rates to reflect
 - historical pumping from 2010 to 2018
 - revised estimates for future pumping

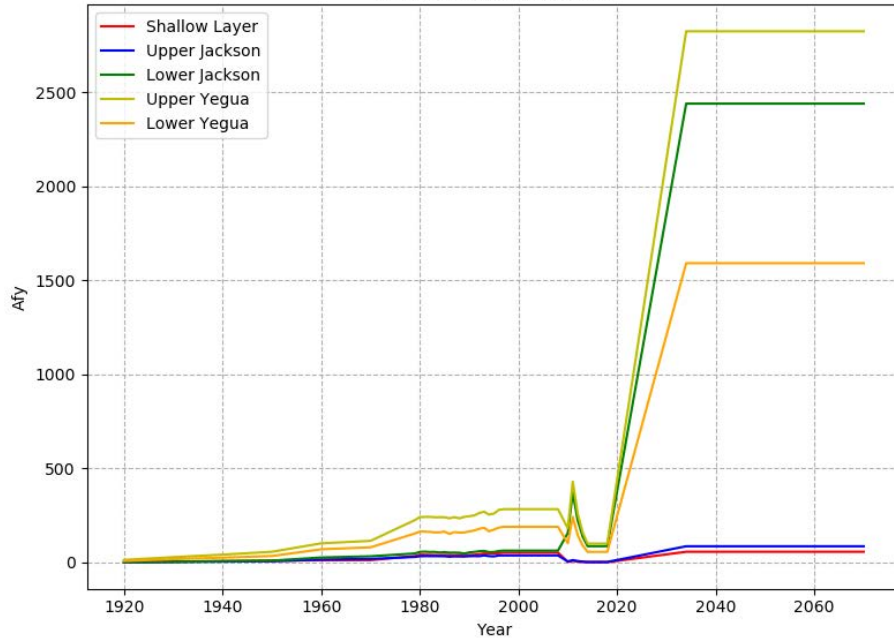
GCD	Total 2070 YJ Pumping AFY
FCGCD	10,000
BVGCD	7,100
POSGCD	7,000
METGCD	1,121
LPGCD	661

Yegua-Jackson Run (YJ-PS2), All Districts

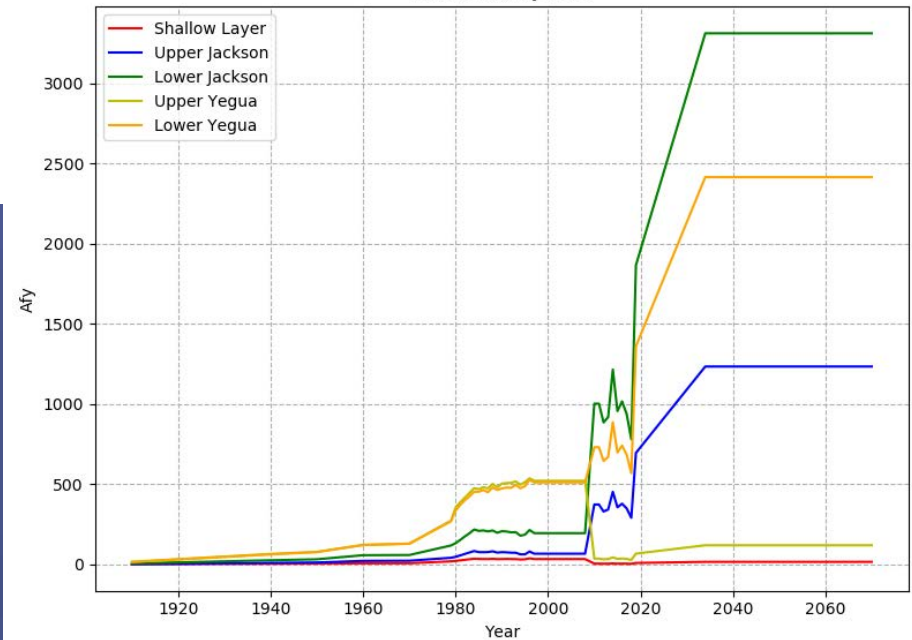


YJ-PS2 for POSGCD & BVGCD

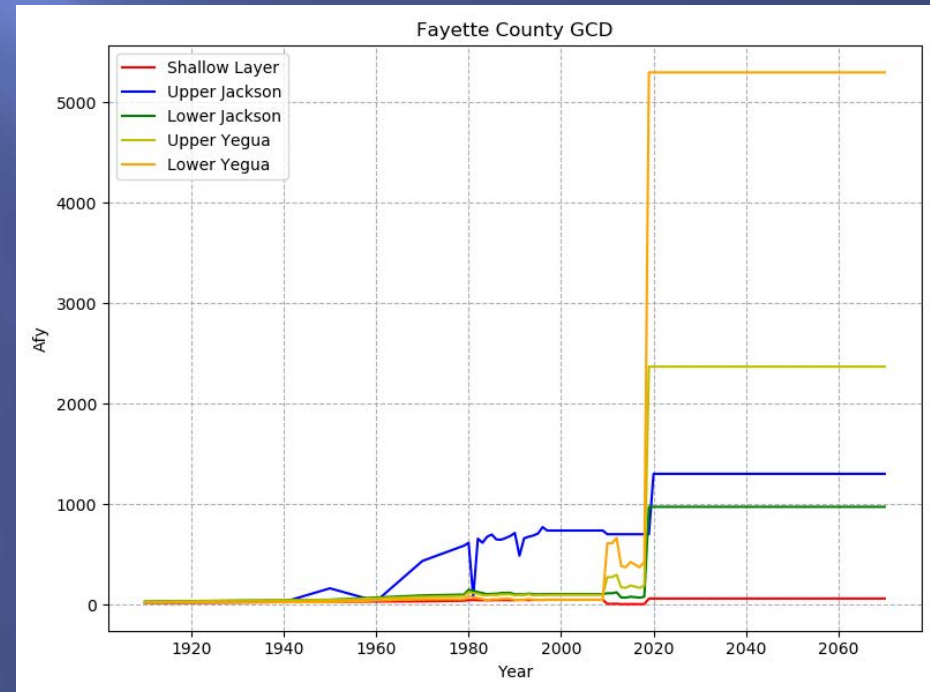
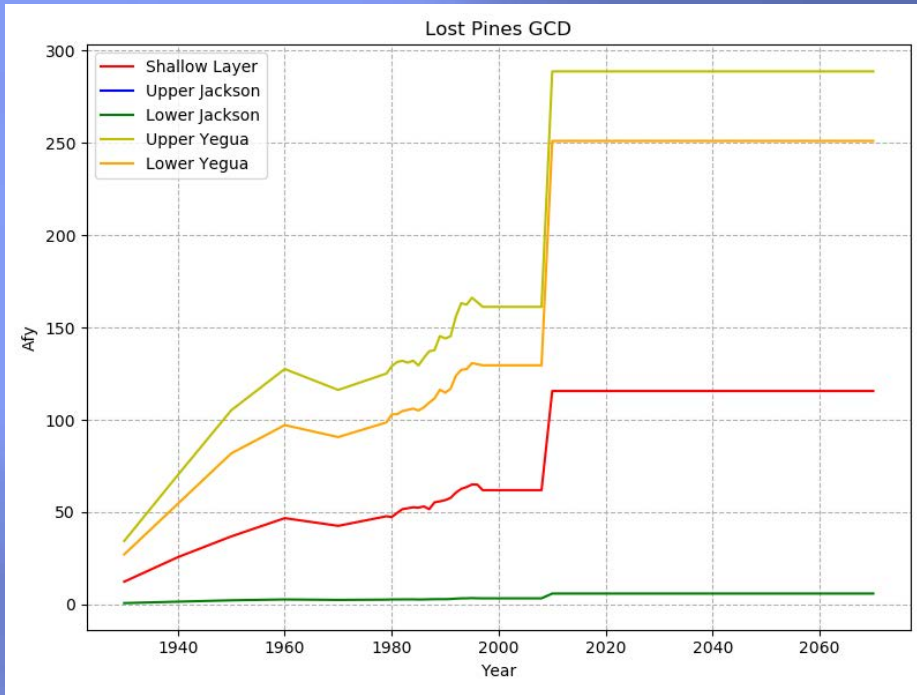
Post Oak Savannah GCD



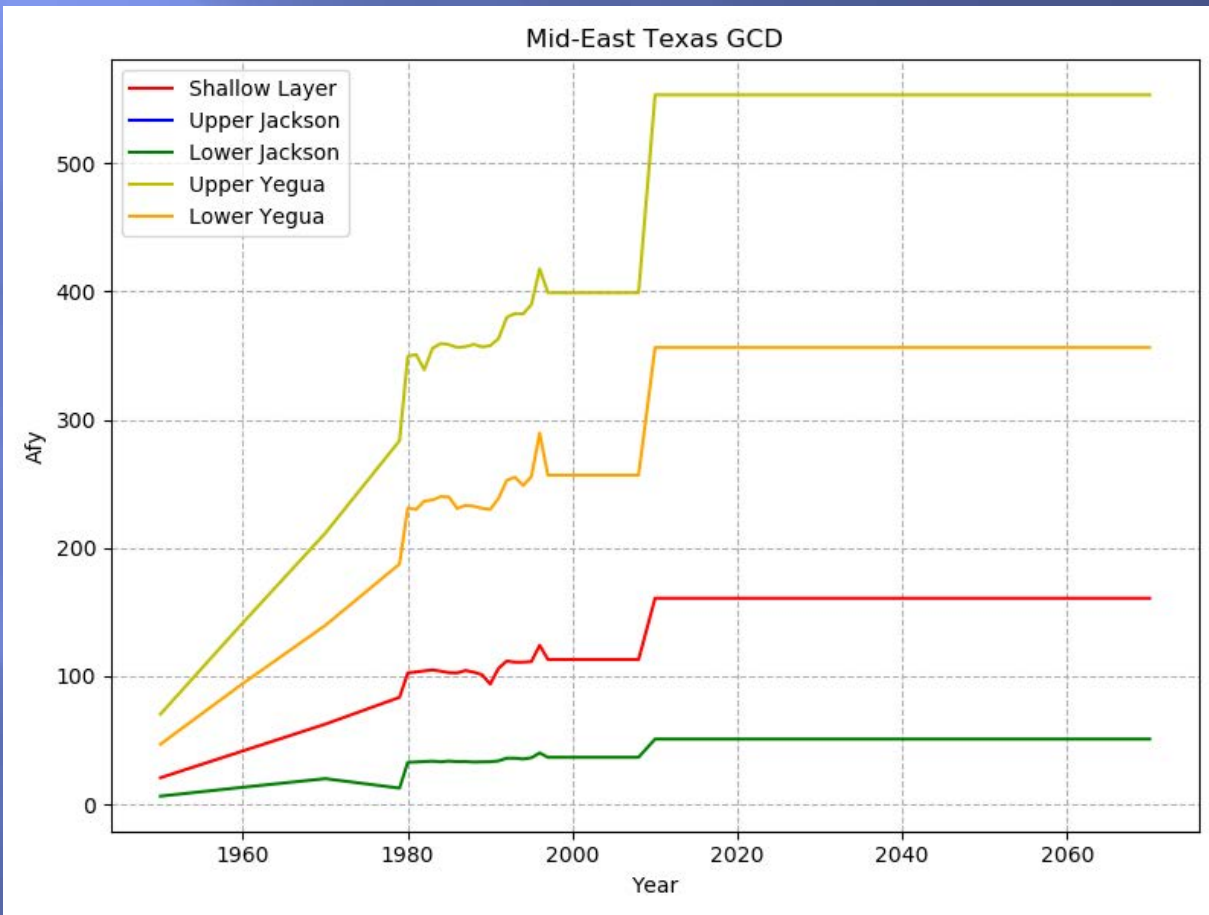
Brazos Valley GCD



YJ-PS2 for LPGCD & FCGCD



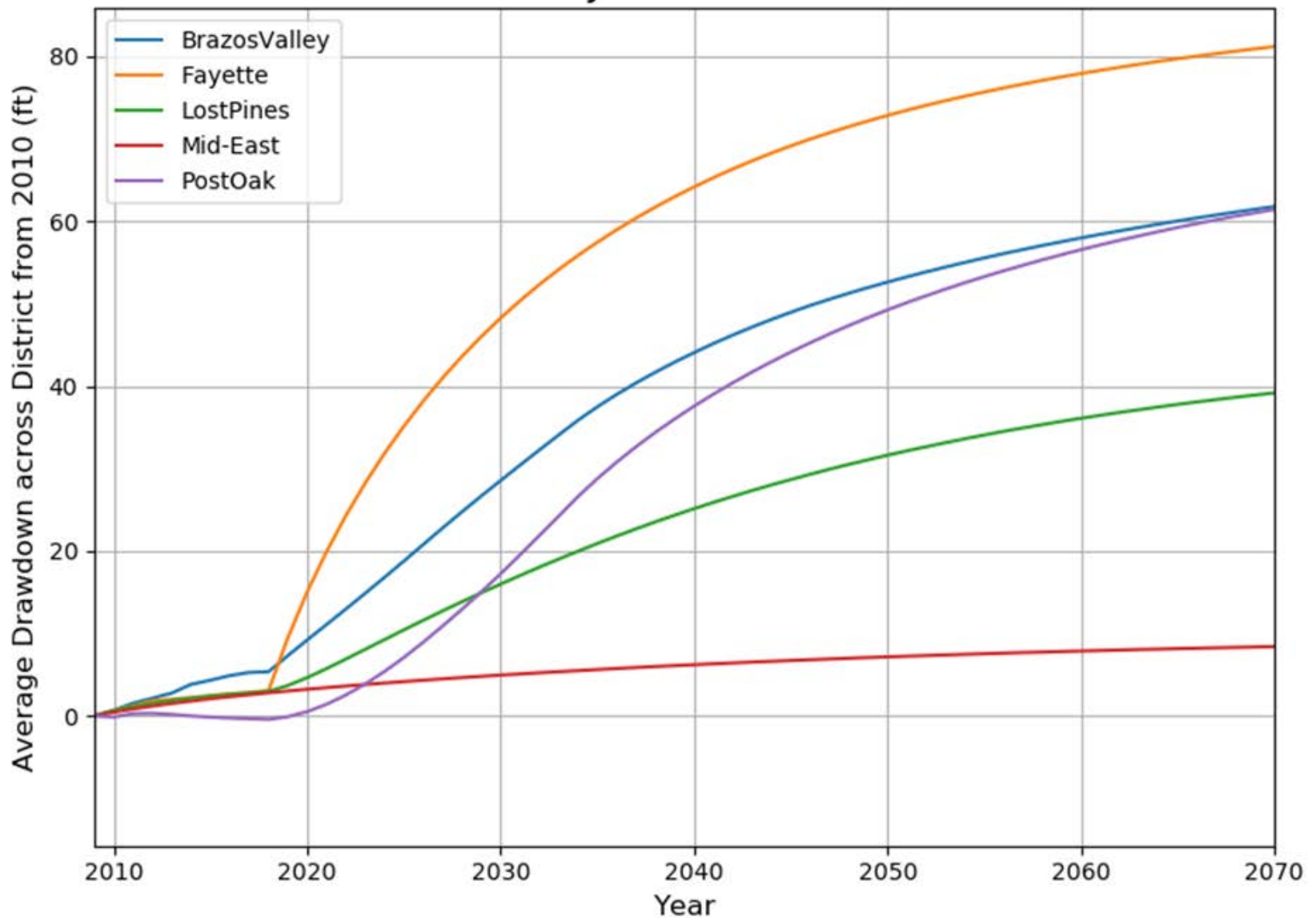
YJ-PS2 for METGCD



Average Drawdowns

GCD	Existing DFC, ft			Drawdown 2010-2070, ft	
	Yegua	Jackson	Yegua-Jackson	PS1	PS2
Brazos Valley	70	114	-	73	61
Fayette	-	-	77	77	81
Lost Pines	-	-	-	42	39
Mid-East	-	-	7	7	8
PostOak	-	-	100	100	61

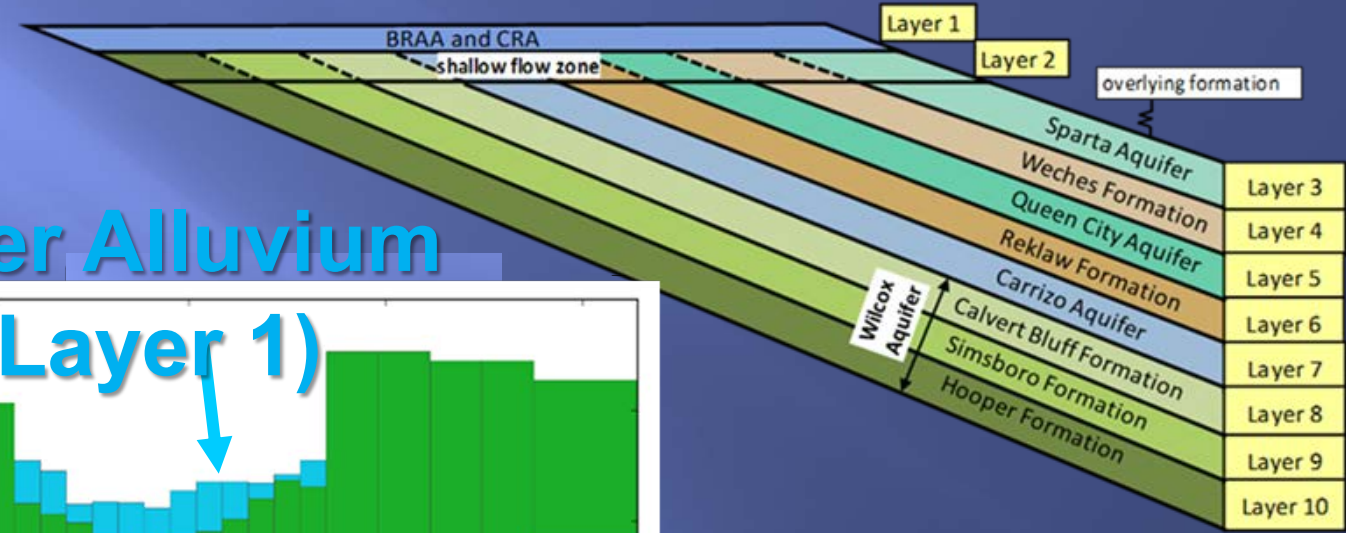
Average Drawdown for YJ-PS2



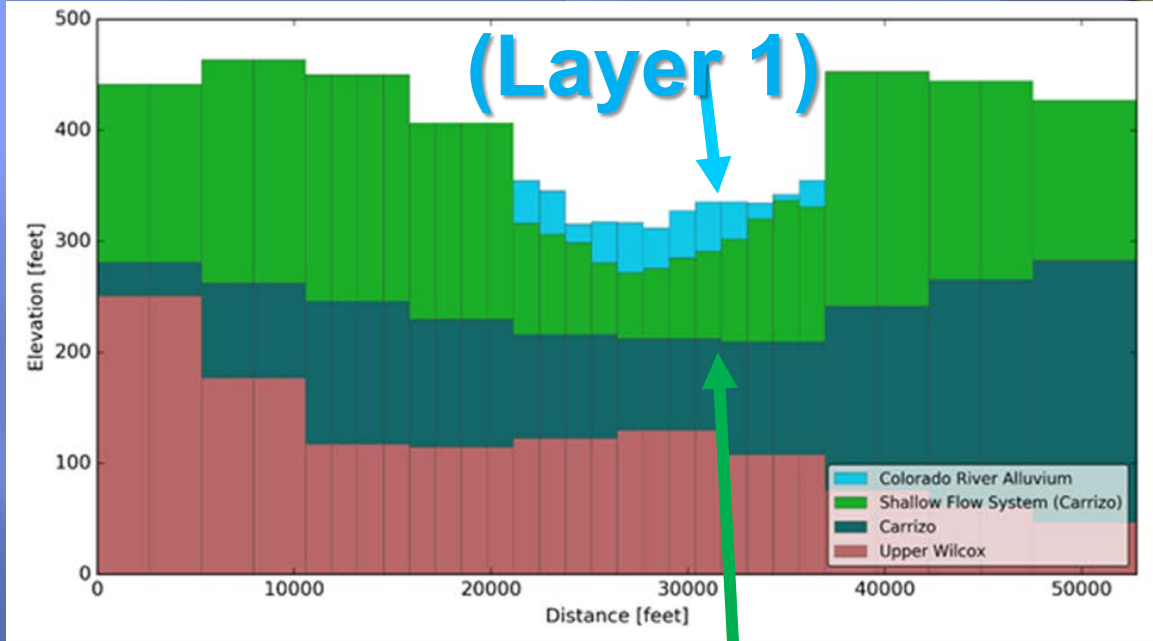
Yegua-Jackson DFC Runs

- ▣ Additional checks will be performed on YJ-PS2 by GMA 12 Consultants
- ▣ No additional Runs are Planned
- ▣ District GMs will determine if Additional Runs are Needed

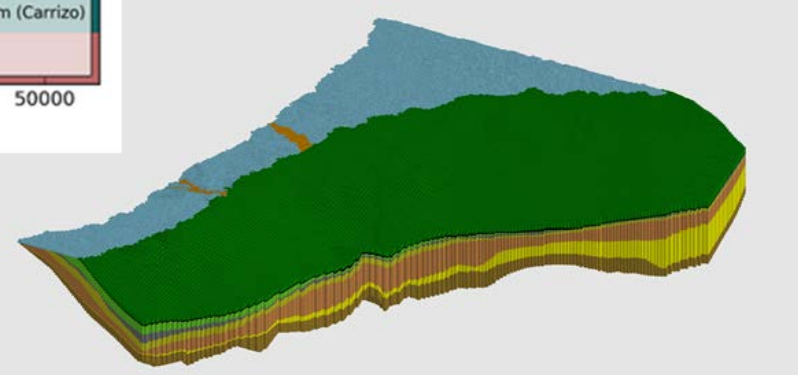
SP/QC/CW GAM



River Alluvium



Shallow Flow Zone (Layer 2)



SP/QC/CW GAM

- Replace pumping in Brazos River Alluvium in SP/QC/CW GAM with amounts in BRAA GAM Run

GCD	Well Pumping from Brazos River Alluvium (afy)	
	BRAA Model	Carrizo-Wilcox Model
POSGCD	70,000	30,500
BVGCD	140,000	61,000

Sensitivity of Average Drawdown To Change in BRAA Pumping

Aquifer	POSGCD			BVGCD		
	Existing DFC	Drawdown 2010-2070, feet		Existing DFC	Drawdown 2010-2070, feet	
		S7	S7 + BRAA		S7	S7 + BRAA
Sparta	28	23	17	12	47	46
Queen City	30	21	18	12	41	39
Carrizo	67	176	176	61	76	76
Calvert Bluff	149	182	182	125	95	96
Simsboro	318	352	352	295	211	212
Hooper	205	220	220	207	151	151

Aquifer	POSGCD			BVGCD		
	Existing DFC	Drawdown 2010-2070, feet		Existing DFC	Drawdown 2010-2070, feet	
		S9	S9 + BRAA		S9	S9 + BRAA
Sparta	28	6	6	12	21	21
Queen City	30	9	9	12	21	20
Carrizo	67	132	132	61	57	57
Calvert Bluff	149	165	166	125	88	88
Simsboro	318	347	347	295	207	208
Hooper	205	217	217	207	147	148

QUESTIONS?