Summary of Groundwater Modeling Results

Presented to:
Groundwater Management Area 12

March 24, 2016

Prepared by GMA 12 Consultants

Sparta, Queen City, and Carrizo-Wilcox

Predictive Scenario 6 (PS6)
Central Queen City-Sparta GAM

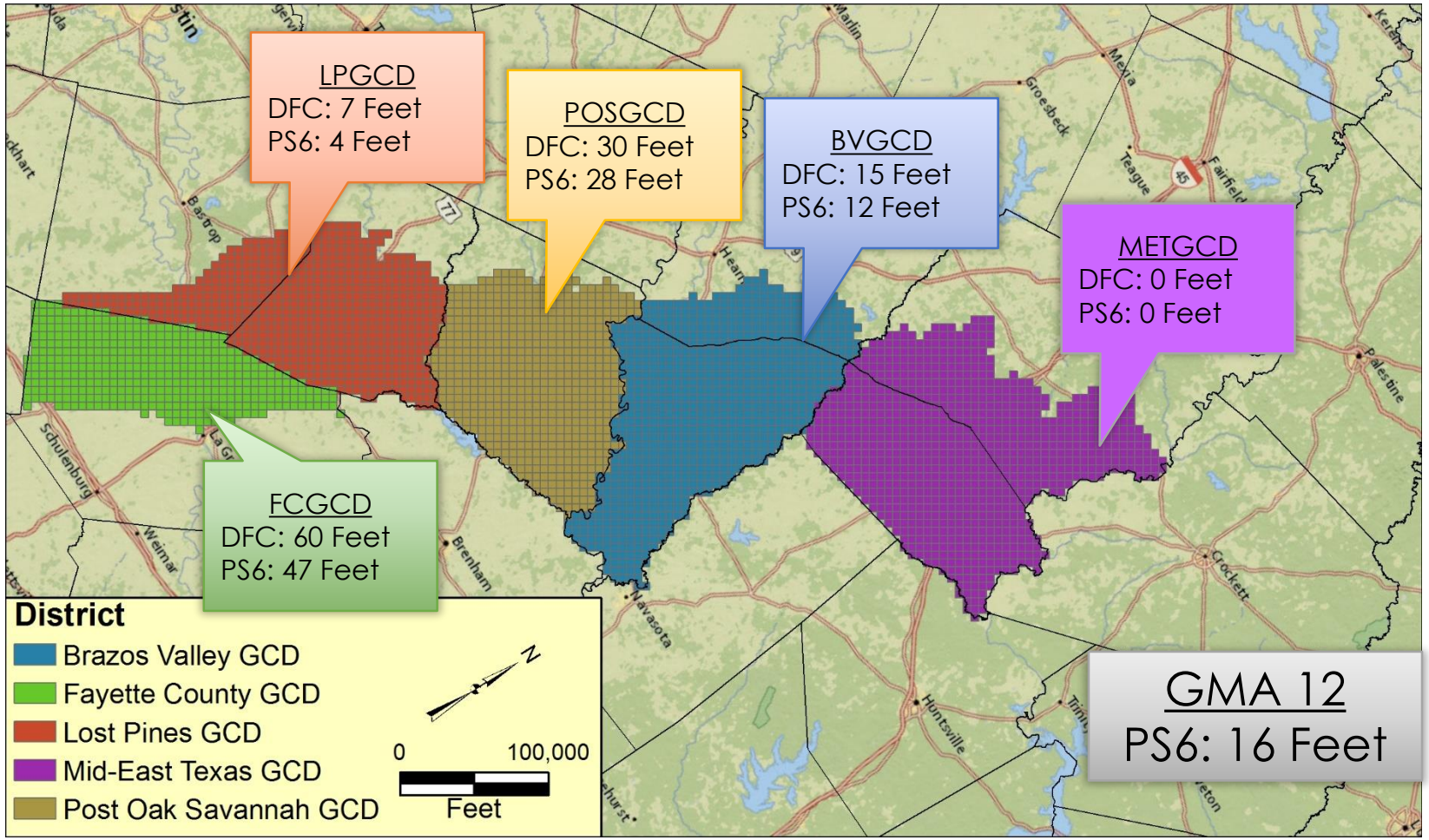
- Minor modification of PS5
- Added PS4 ramp-up scenario for Hooper in METGCD
- Increased Hooper pumping in METGCD from 835 acre-feet in 2070 to 5,550 acre-feet in 2070

PS6 Year 2070 Pumping (Acre-Feet)

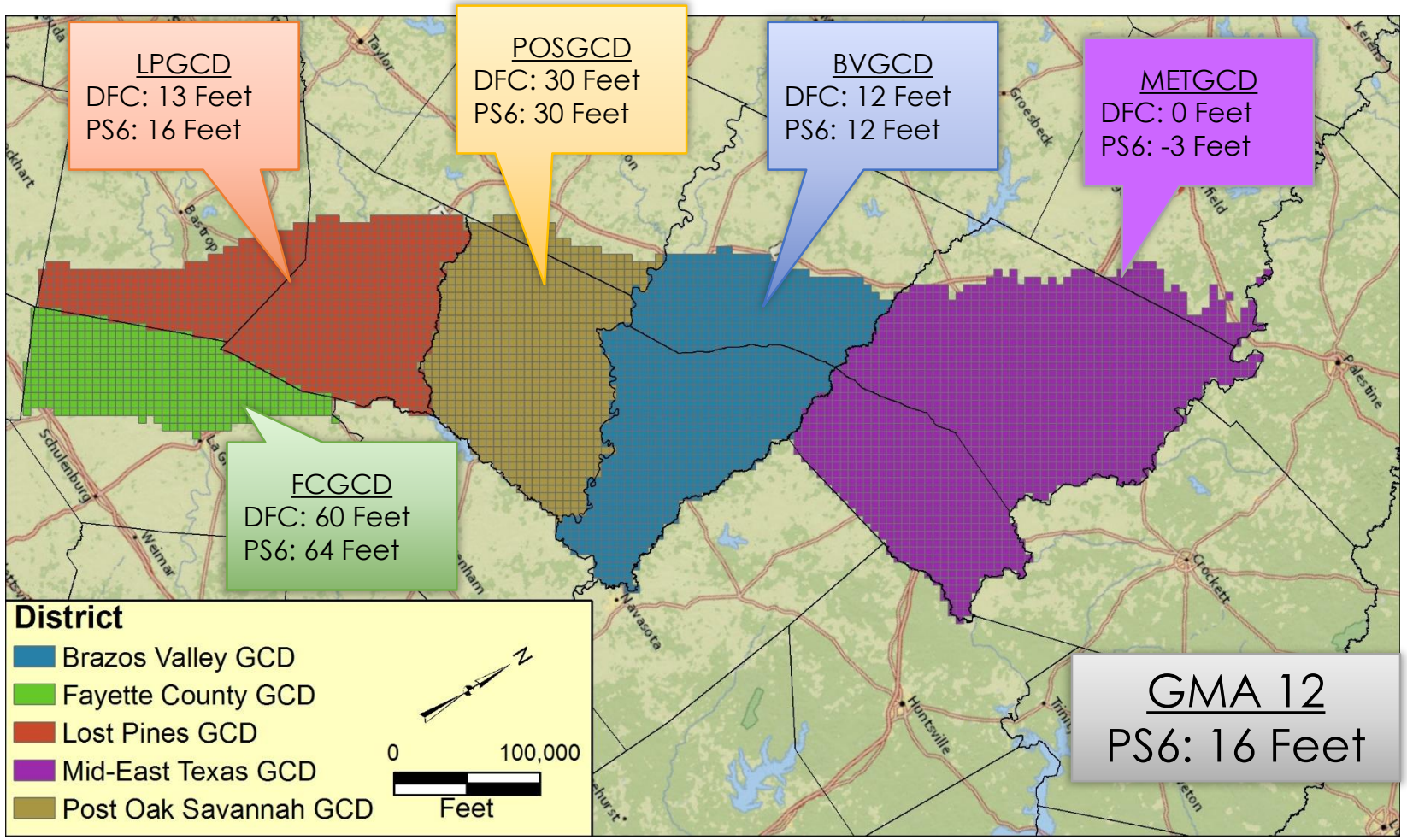
District	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper	Total
Brazos Valley	9,019	1,200	5,494	1,758	96,187	2,001	115,659
Fayette County	2,802	2,708	5,474	—	—	—	10,984
Lost Pines	2,405	1,315	12,052	3,984	37,249	2,592	59,597
Mid-East Texas	3,343	974	11,091	3,917	7,181	~~835~~ 5,550	~~27,341~~ 32,056
Post Oak Savannah	6,747	504	7,063	1,037	48,503	4,480	68,334
GMA 12 GCDs	**24,317**	**6,701**	**41,173**	**10,696**	**189,119**	**~~9,908~~ 14,624**	**~~281,914~~ 286,630**

Sparta Aquifer (Layer 1)

Average Drawdown – 1/1/2000 through 12/31/2070

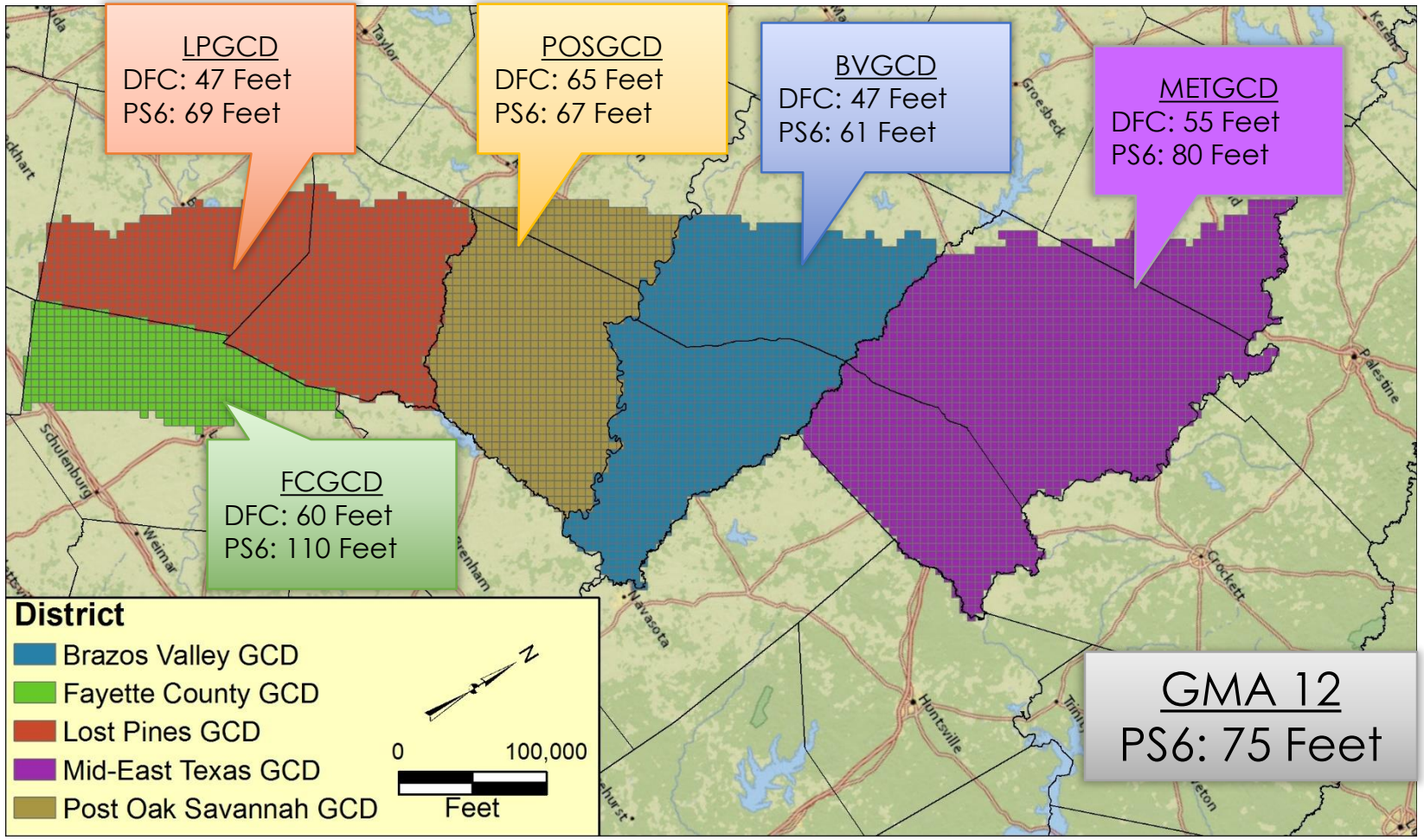


Queen City Aquifer (Layer 3)
Average Drawdown – 1/1/2000 through 12/31/2070

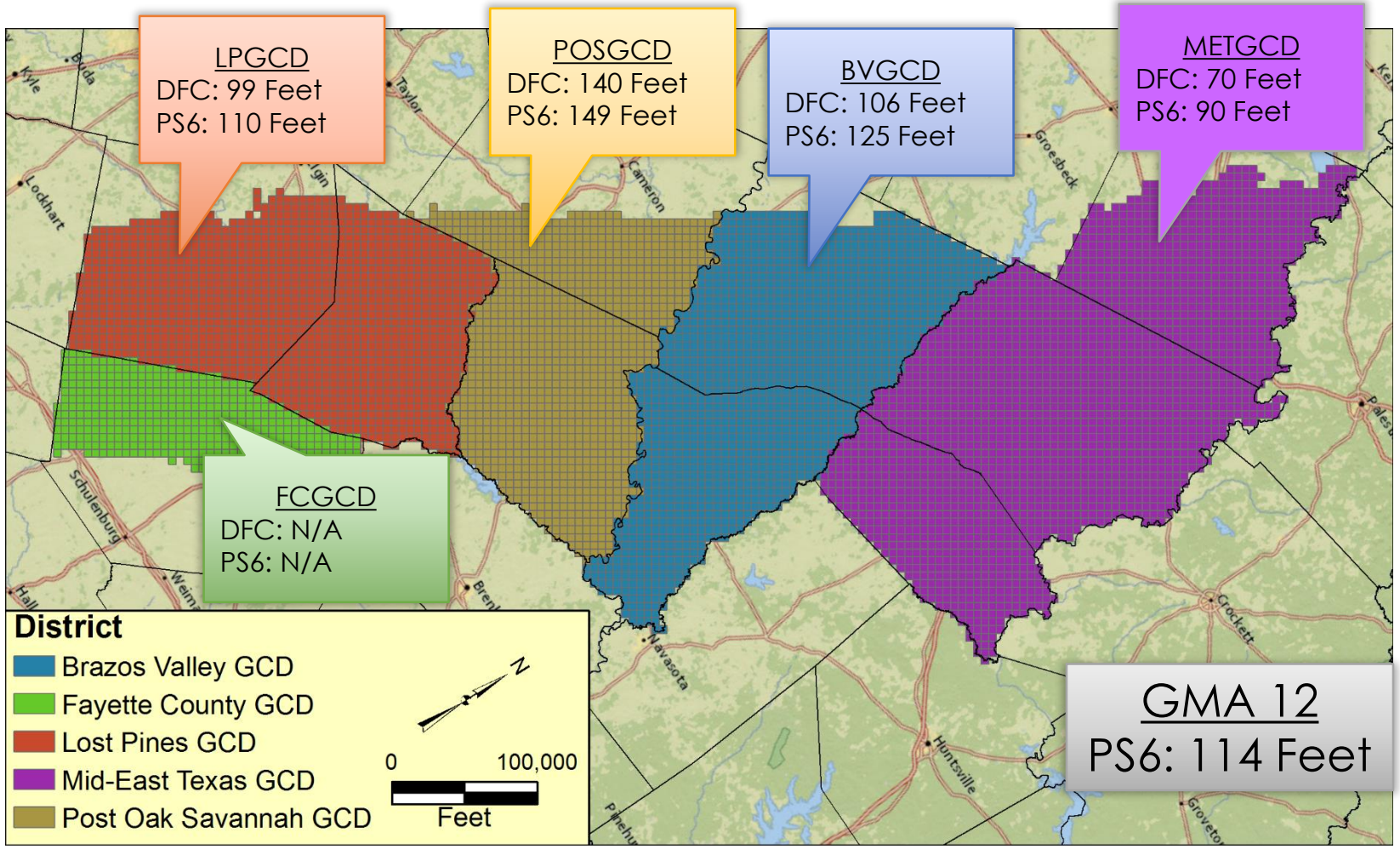


Carrizo Aquifer (Layer 5)

Average Drawdown – 1/1/2000 through 12/31/2070

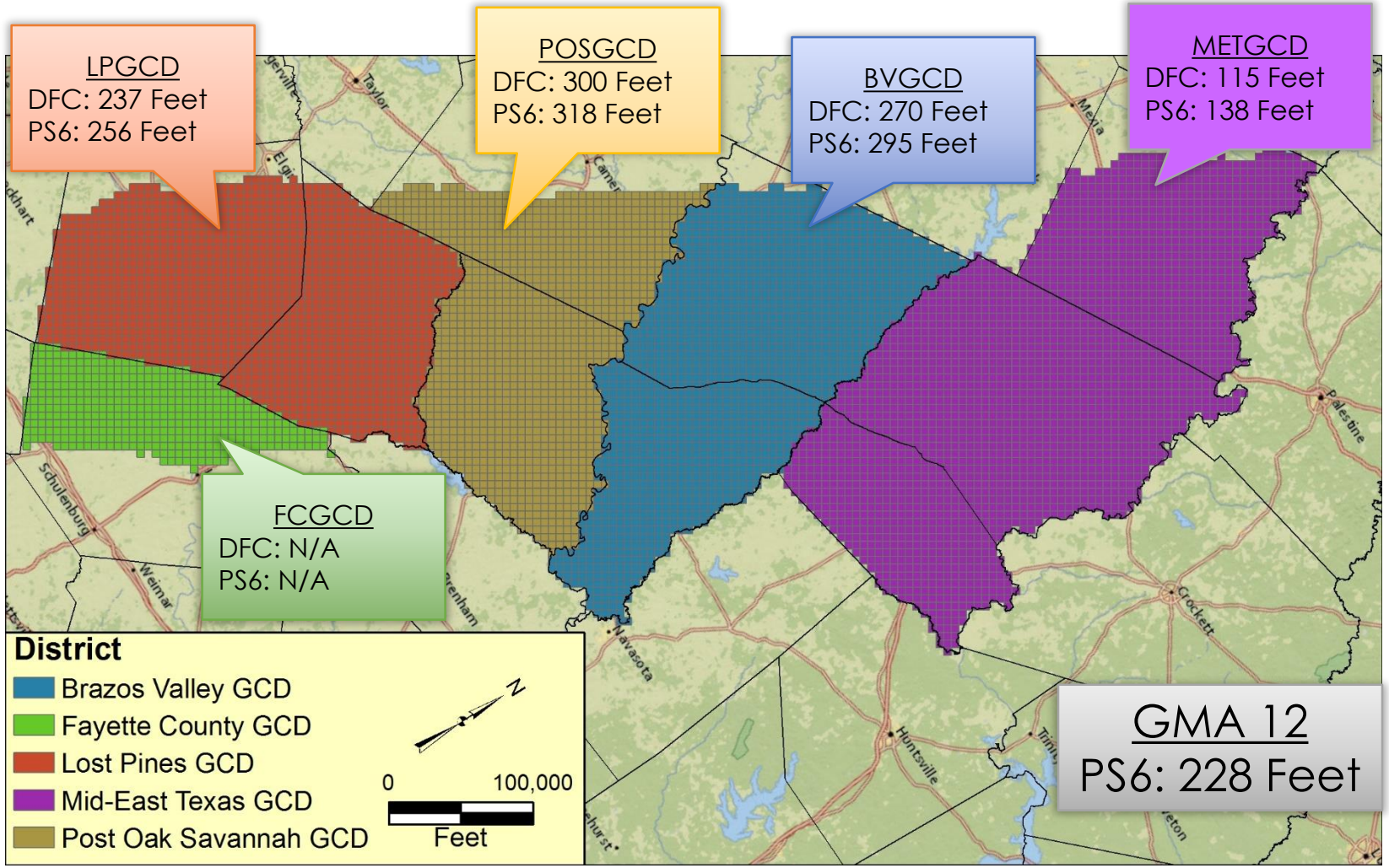


Calvert Bluff Aquifer (Layer 6)
Average Drawdown – 1/1/2000 through 12/31/2070



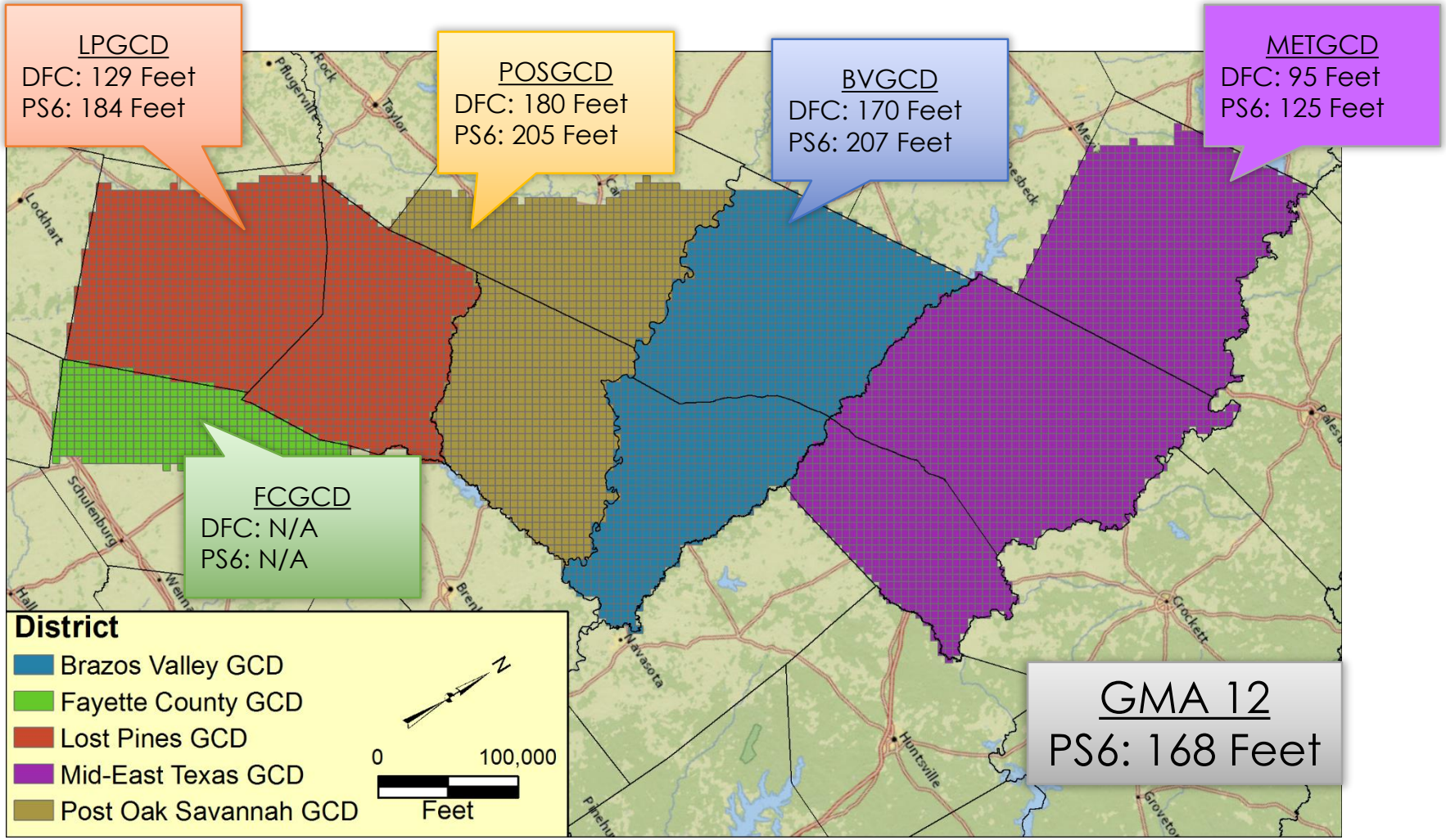
Simsboro Aquifer (Layer 7)

Average Drawdown – 1/1/2000 through 12/31/2070



Hooper Aquifer (Layer 8)

Average Drawdown – 1/1/2000 through 12/31/2070



Yegua-Jackson

Yegua-Jackson MAGs and DFCs for 2060

District	MAG (Acre-Feet per Year)	DFC (Average Feet of Drawdown)
Brazos Valley	7,071	Yegua: 70 Jackson: 110
Fayette County	5,762	75
Lost Pines	N/A	N/A
Mid-East Texas	1,122	5
Post Oak Savannah	12,923	100
GMA 12 GCDs	**26,878**	

Yegua-Jackson Modeling

- Utilize Previously Developed DFC Well File
- Extend 2060 Pumping Through 2070
- Review Results

Yegua-Jackson Pumping (Acre-Feet) 2010 - 2070

District	YGJK-PS1	MAG
Brazos Valley	7,167	7,071
Fayette County	9,269 (5,839)	5,762
Lost Pines	N/A	N/A
Mid-East Texas	1,122	1,122
Post Oak Savannah	14,693	12,923
GMA 12 GCDs	**32,251**	**26,878**

Values in parentheses are within the defined aquifer footprint per the TWDB grid definition file.

Yegua-Jackson Average Drawdown 1/1/2010 – 12/31/2070

District	DFC (2010 to 2060)	YGJK-PS1 Simple Average
Brazos Valley	Jackson: 110 Feet Yegua: 70 Feet	Jackson: 114 Feet Yegua: 70 Feet
Fayette County	75 Feet	77 Feet
Lost Pines	N/A	N/A
Mid-East Texas	5 Feet	7 Feet
Post Oak Savannah	100 Feet	100 Feet

BVGCD DFC Approach for Brazos River Alluvium

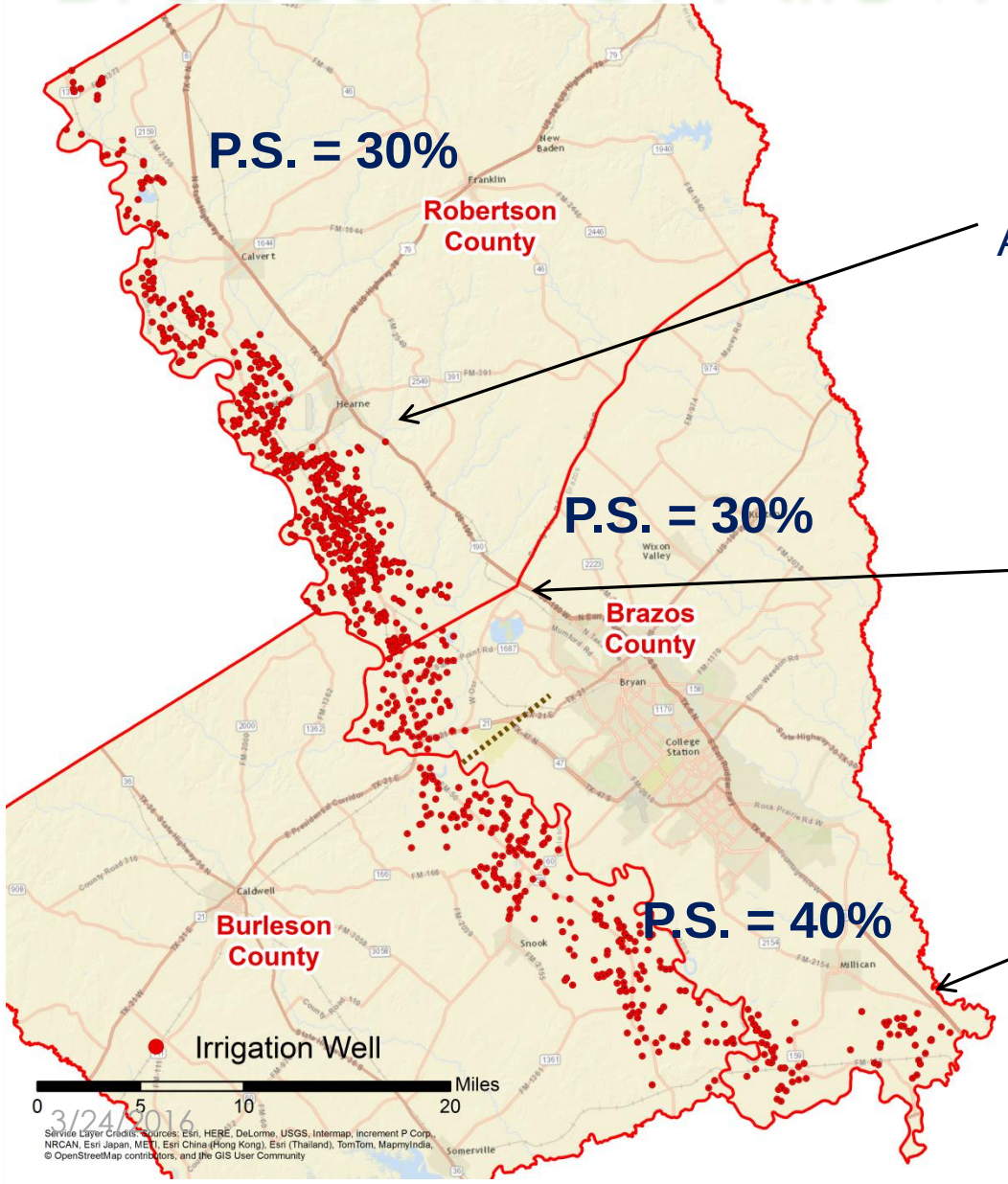
WD = Well Depth, ft

DTW = Depth to Water, ft

$$\text{Percent Saturation (PS) Above Well Depth} = \frac{\text{WD-DTW}}{\text{WD}}$$

Static water-level data to estimate PS would be collected during the winter months following the irrigation season. To reach a DFC the average PS for all wells measured would have to be below the applicable PS for three consecutive years.

Brazos River Alluvium Well Data



Irrigation Well Depths
Range: 45 to 72 feet
Average ~ 55 to 60 feet

Potential DFC Threshold on Allowable Percent Saturation
P.S. ≥ 30% or 40% depending on location

Average Irrigation Well Depth
60 to 65 feet

Average Irrigation Well Depth
60 to 65 feet


Thank you!
Questions?