

GMA 8
Joint Groundwater
Planning Meeting
August 7, 2020

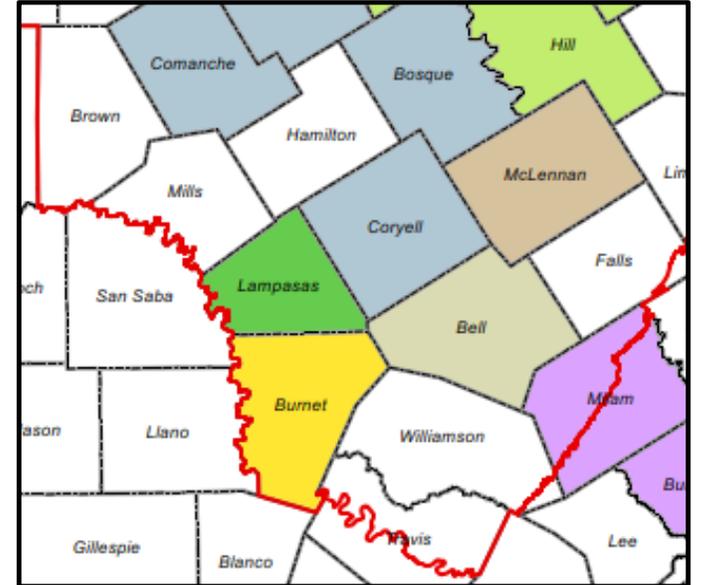


Agenda Item 6

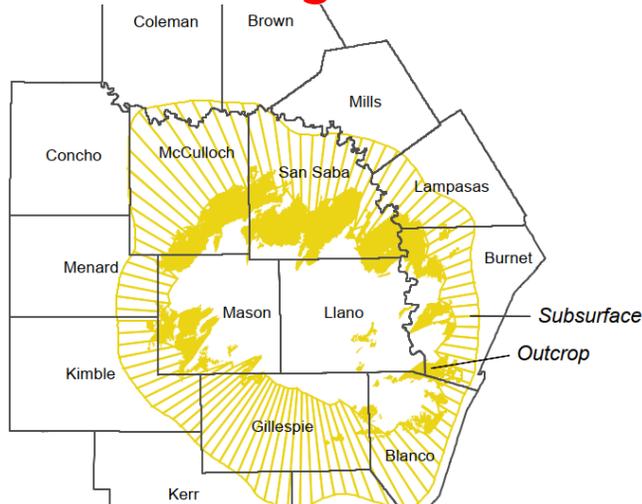
Discussion and possible action on results from the Central Texas Llano Uplift model run

- WSP completed simulations for Central Texas GCD related to impacts from various pumping in the aquifers using the Llano Uplift GAM
- Central Texas GCD funded this effort separately from the GMA 8 budget

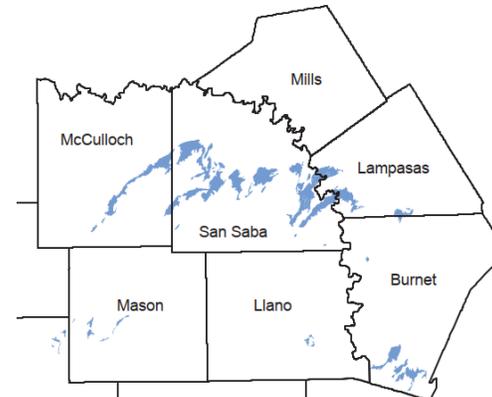
Southern portion of GMA 8



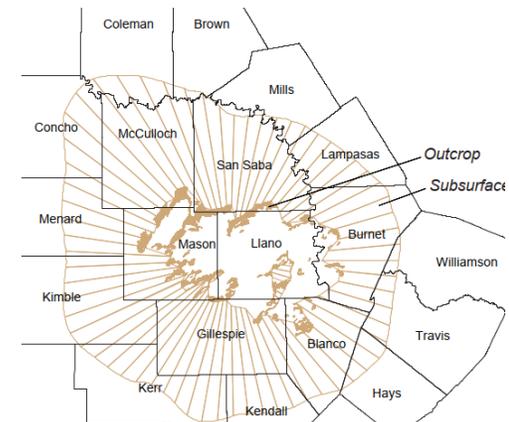
Ellenburger



Marble Falls



Hickory



Central Texas Llano Uplift model runs

💧 **History:** Previous DFC statements based on percent remaining saturated thickness

💧 **Objective:** Assess impact of various levels of pumping and develop a DFC statement for Llano Uplift aquifers based on average drawdown

💧 **Approach:** develop 3 scenarios of various pumping to assess impacts in the each aquifer

- *Scenario A = 2009 pumping*
- *Scenario B = Current MAG*
- *Scenario C = 2.5 x Current MAG*

Scenario A - Llano Uplift model runs 2009 pumping

County	Aquifer	2009 Q MAG Results							
		2010	2020	2030	2040	2050	2060	2070	2080
Brown	Marble Falls	25	25	25	25	25	25	25	25
Brown	Ellenburger-San Saba	131	131	131	131	131	131	131	131
Brown	Hickory	12	12	12	12	12	12	12	12
Burnet	Marble Falls	2,220	2,220	2,220	2,220	2,220	2,220	2,220	2,220
Burnet	Ellenburger-San Saba	5,244	5,244	5,244	5,244	5,244	5,244	5,244	5,244
Burnet	Hickory	1,088	1,088	1,088	1,088	1,088	1,088	1,088	1,088
Lampasas	Marble Falls	363	363	363	363	363	363	363	363
Lampasas	Ellenburger-San Saba	351	351	351	351	351	351	351	351
Lampasas	Hickory	113	113	113	113	113	113	113	113
Mills	Marble Falls	20	20	20	20	20	20	20	20
Mills	Ellenburger-San Saba	100	100	100	100	100	100	100	100
Mills	Hickory	36	36	36	36	36	36	36	36

Scenario B - Llano Uplift model runs

Current MAG pumping

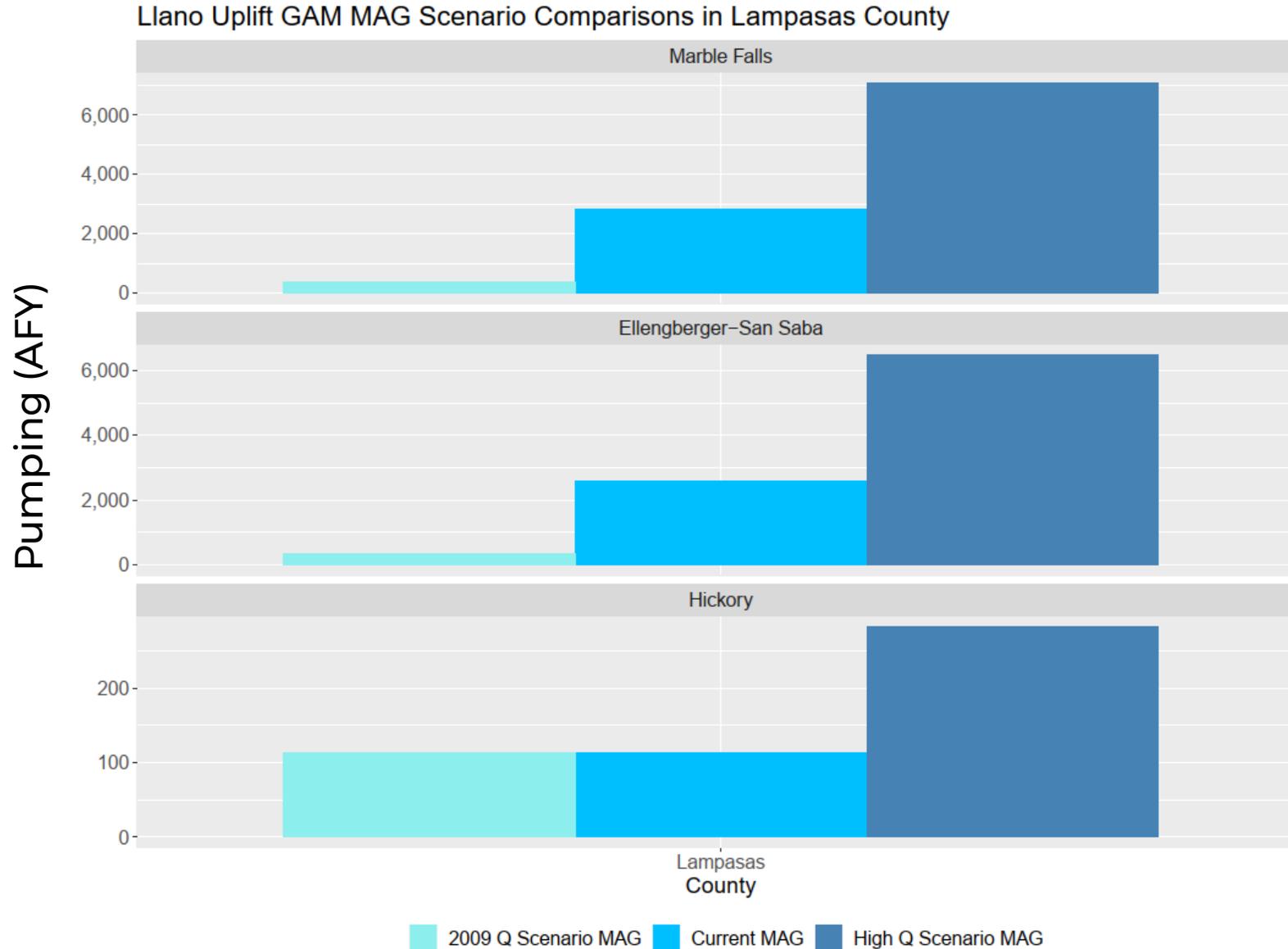
County	Aquifer	Current MAG Results							
		2010	2020	2030	2040	2050	2060	2070	2080
Brown	Marble Falls	25	25	25	25	25	25	25	-
Brown	Ellenburger-San Saba	131	131	131	131	131	131	131	-
Brown	Hickory	12	12	12	12	12	12	12	-
Burnet	Marble Falls	2,738	2,738	2,738	2,738	2,738	2,738	2,738	-
Burnet	Ellenburger-San Saba	10,834	10,834	10,834	10,834	10,834	10,834	10,834	-
Burnet	Hickory	3,415	3,415	3,415	3,415	3,415	3,415	3,415	-
Lampasas	Marble Falls	2,839	2,839	2,839	2,839	2,839	2,839	2,839	-
Lampasas	Ellenburger-San Saba	2,595	2,595	2,595	2,595	2,595	2,595	2,595	-
Lampasas	Hickory	113	113	113	113	113	113	113	-
Mills	Marble Falls	25	25	25	25	25	25	25	-
Mills	Ellenburger-San Saba	499	499	499	499	499	499	499	-
Mills	Hickory	36	36	36	36	36	36	36	-

Scenario C - Llano Uplift model runs 2.5 x Current MAG pumping

County	Aquifer	High Q MAG Results							
		2010	2020	2030	2040	2050	2060	2070	2080
Brown	Marble Falls	25	25	25	25	25	25	25	25
Brown	Ellenburger-San Saba	131	131	131	131	131	131	131	131
Brown	Hickory	12	12	12	12	12	12	12	12
Burnet	Marble Falls	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845
Burnet	Ellenburger-San Saba	27,086	27,086	27,086	27,086	27,086	27,086	27,086	27,086
Burnet	Hickory	8,538	8,538	8,538	8,538	8,538	8,538	8,538	8,538
Lampasas	Marble Falls	7,097	7,097	7,097	7,097	7,097	7,097	7,097	7,097
Lampasas	Ellenburger-San Saba	6,487	6,487	6,487	6,487	6,487	6,487	6,487	6,487
Lampasas	Hickory	283	283	283	283	283	283	283	283
Mills	Marble Falls	63	63	63	63	63	63	63	63
Mills	Ellenburger-San Saba	1,248	1,248	1,248	1,248	1,248	1,248	1,248	1,248
Mills	Hickory	90	90	90	90	90	90	90	90

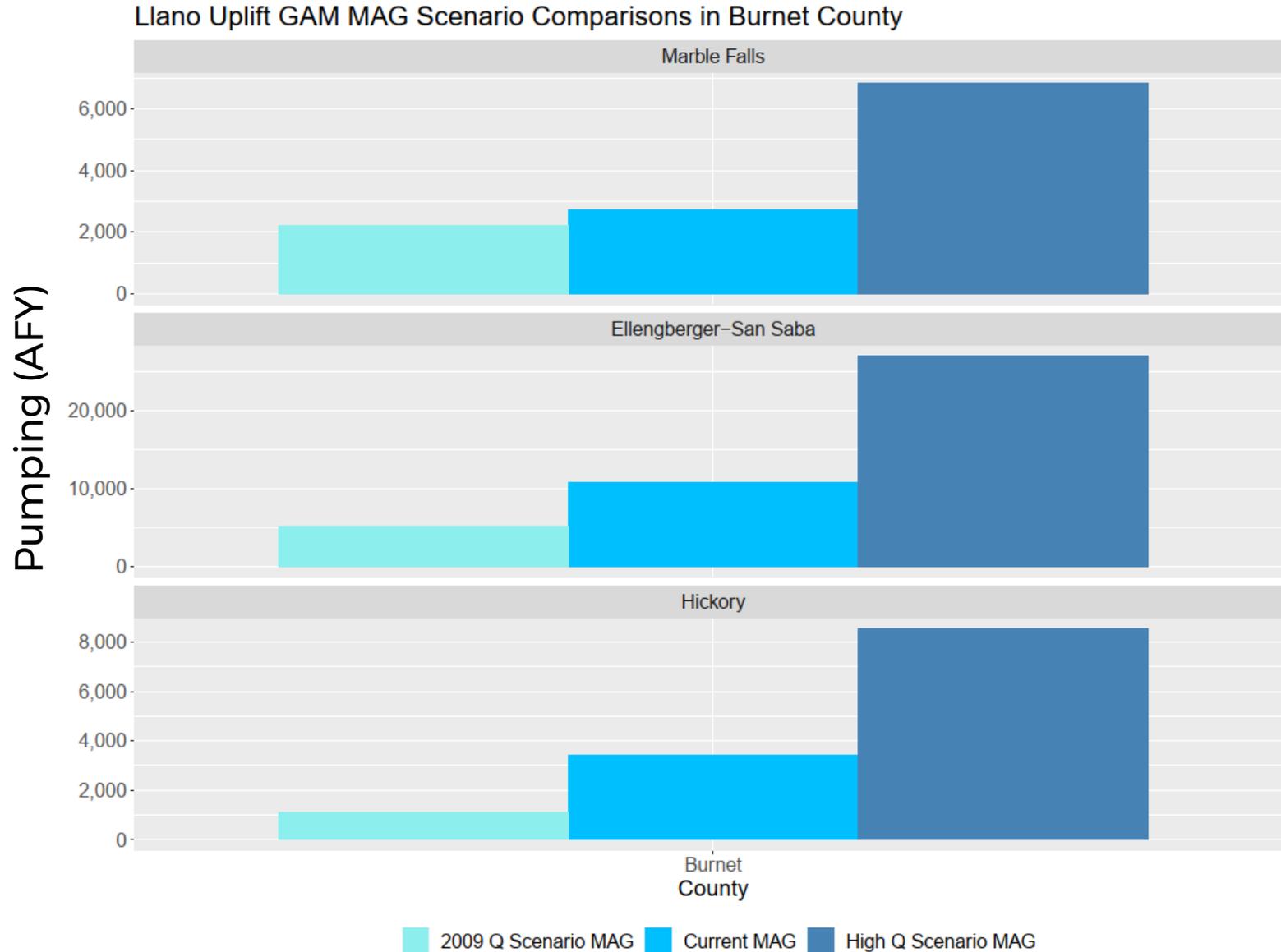
Lampasas County - Llano Uplift model runs

Pumping Scenarios by aquifer



Burnet County - Llano Uplift model runs

Pumping Scenarios by aquifer



Llano Uplift model run results from 3 scenarios

Q = Pumping

Current = current MAG

Llano Uplift DFC Results (Average Drawdown)				
County	Scenario	Marble Falls	Ellenburger-San Saba	Hickory
Brown	2009 Q	2.9	2.9	2.9
Brown	Current Q	3.2	3.2	3.1
Brown	High Q	3.6	3.6	3.6
Burnet	2009 Q	1.4	1.1	0.7
Burnet	Current Q	11.3	11.5	11.1
Burnet	High Q	41.3	42.6	42.0
Lampasas	2009 Q	3.8	3.8	3.8
Lampasas	Current Q	16.4	16.2	16.1
Lampasas	High Q	42.3	41.8	41.7
Mills	2009 Q	3.8	3.8	3.8
Mills	Current Q	8.9	8.9	8.9
Mills	High Q	18.7	18.7	18.7

Central Texas GCD Proposal for Llano Uplift Aquifer DFCs based on results of Scenario B

Proposed Llano Uplift DFCs (Average feet of Drawdown in 2080)			
County	Marble Falls	Ellenburger-San Saba	Hickory
Brown	3	3	3
Burnet	11	12	11
Lampasas	16	16	16
Mills	9	9	9

Proposed Action for Agenda Item 6

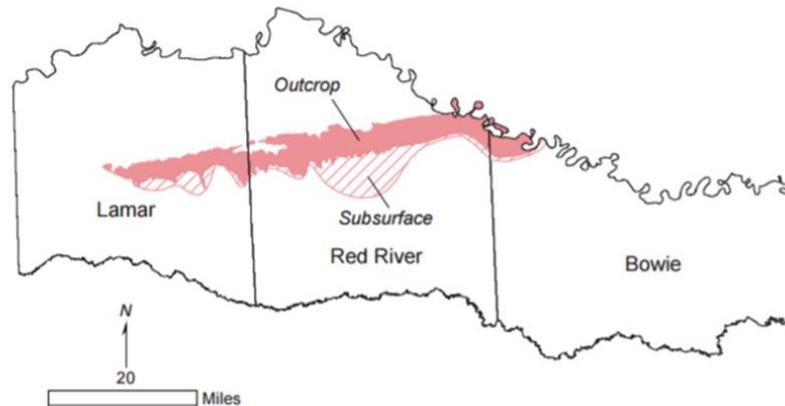
In the current round of planning, GMA 8 adopts the results from Scenario B using the Llano Uplift Aquifer GAM as the DFCs for the Llano Uplift Aquifers

Agenda Item 7

Discuss and possible action regarding GMA 8 declaration of non-relevant aquifers

Review of NON-RELEVANT Aquifers (last round)

- 💧 The Nacatoch, Blossom and Brazos River Alluvium aquifers were classified as non-relevant for the purposes of joint planning
- 💧 DFCs were not adopted for these aquifers



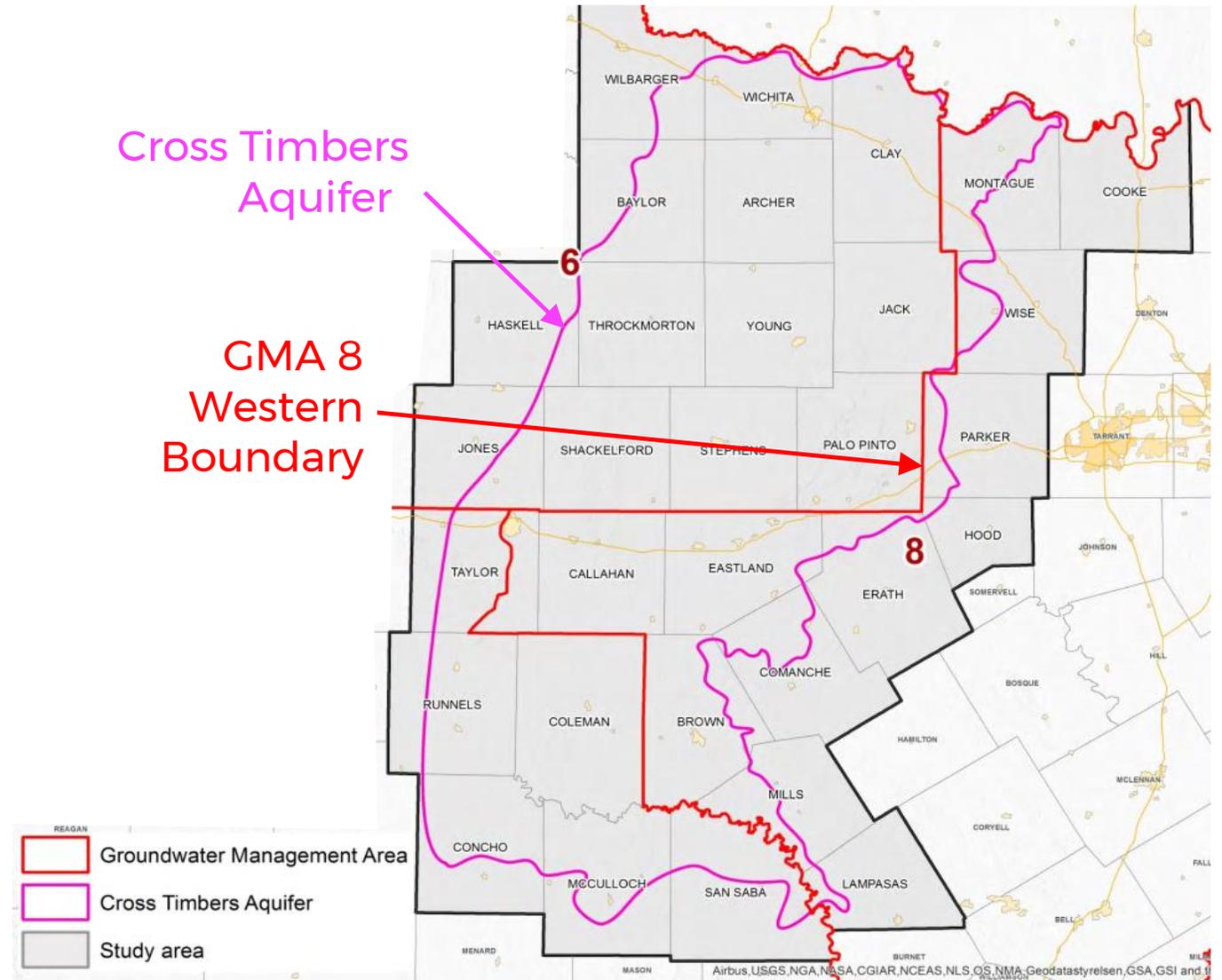
New NON-RELEVANT Aquifer

💧 Cross Timbers Aquifer

- *GAM Conceptual Model under development*
- *Non-relevant*
- *Will be added to Explanatory Report*

Cross Timbers Aquifer

GMA 8 Western Boundary



Proposed Action for Agenda Item 7

💧 In the current round of planning, GMA 8 determines that Nacatoch, Blossom, Brazos River Alluvium, and Cross Timbers Aquifers be declared non-relevant for purposes of Joint Groundwater Planning

Agenda Item 8

Presentation, discussion and possible action on options for Desired Future Conditions statements and next steps to establish proposed Desired Future Conditions.

Northern Trinity and Woodbine Aquifers

- *Run 11 - Update of NTWGAM DFC/MAG Run*
- *WSP has received pumping updates from Upper Trinity GCD, Southern Trinity GCD, Prairielands GCD, Central Texas GCD (funded thru GMA 8 contract)*
- *Pumping projections also updated for Clearwater UWCD, Central Texas GCD, Travis and Williamson County (funded separately by Clearwater UWCD)*

Edwards Balcones Fault Zone Aquifer

- *Clearwater UWCD recommends re-adopting current DFCs*

Run 11 Results – Drawdown (2010-2080)

County	Woodbine	Paluxy	Glen Rose	Twin Mnt	Travis Peak	Hensell	Hosston	Antlers
Bell	-	17	83	0	333	145	375	0
Bosque	-	6	53	0	189	139	232	0
Brown	-	2	1	0	2	1	1	2
Burnet	0	0	2	0	19	7	21	0
Callahan	-	0	0	0	0	0	0	1
Collin	482	729	366	560	-	0	0	596
Comanche	-	2	2	0	4	2	3	12
Cooke	2	0	0	0	0	0	0	191
Coryell	-	5	15	0	107	70	141	0
Dallas	137	346	288	515	415	362	419	0
Delta	-	279	198	0	202	0	0	0
Denton	20	558	367	752	0	0	0	416
Eastland	-	0	0	0	0	0	0	4

Run 11 Results – Drawdown (2010-2080)

County	Woodbine	Paluxy	Glen Rose	Twin Mnt	Travis Peak	Hensell	Hosston	Antlers
Ellis	76	128	220	413	380	290	390	0
Erath	-	6	6	8	25	12	35	14
Falls	-	159	238	0	505	296	511	0
Fannin	259	709	305	400	291	0	0	269
Grayson	163	943	364	445	0	0	0	364
Hamilton	-	2	4	0	26	14	38	0
Hill	20	45	149	0	365	211	413	0
Hunt	631	610	326	399	350	0	0	0
Johnson	4	-57	66	184	235	120	329	0
Kaufman	242	311	305	427	372	349	345	0
Lamar	42	100	107	0	125	0	0	132
Lampasas	-	1	1	0	6	1	11	0
Limestone	-	199	301	0	433	214	445	0

Run 11 Results – Drawdown (2010-2080)

County	Woodbine	Paluxy	Glen Rose	Twin Mnt	Travis Peak	Hensell	Hosston	Antlers
McLennan	6	41	148	0	504	242	582	0
Milam	0	0	241	0	412	261	412	0
Mills	-	1	1	0	9	2	13	0
Navarro	110	139	266	0	343	295	343	0
Red River	2	24	40	0	57	0	0	15
Rockwall	275	433	343	466	-	0	0	0
Somervell	-	4	4	50	64	17	120	0
Tarrant	6	105	163	348	0	0	0	177
Taylor	-	0	0	0	0	0	0	0
Travis	0	0	83	0	219	68	226	0
Williamson	0	0	78	0	220	89	225	0
McLennan	6	41	148	0	504	242	582	0

Run 11 Results – Drawdown (2010-2080)

County	O/D	Paluxy	Glen Rose	Twin Mnt	Antlers
Hood	Downdip	-	39	72	0
Hood	Outcrop	6	9	13	0
Montague	Downdip	0	0	0	-
Montague	Outcrop	0	0	0	40
Parker	Downdip	2	50	68	-
Parker	Outcrop	6	20	7	42
Wise	Downdip	0	0	0	154
Wise	Outcrop	0	0	0	59

Presentation of DFCs from NTWGAM Run 11

DFC Tables in previous Explanatory Report

- Aquifer-Wide scale
- GCD scale
- County scale
- Outcrop and Downtip for UTGCD

Proposed Action for Agenda Item 8

Northern Trinity and Woodbine Aquifers

- *For the current round of planning, GMA 8 adopts the results of Run 11 as proposed DFCs for the Northern Trinity and Woodbine Aquifers*

Edwards (BFZ) Aquifer

- *For the current round of planning, GMA 8 proposes the current DFCs for the Edwards BFZ Aquifer as defined in Resolution 2017-01 as the proposed DFCs*

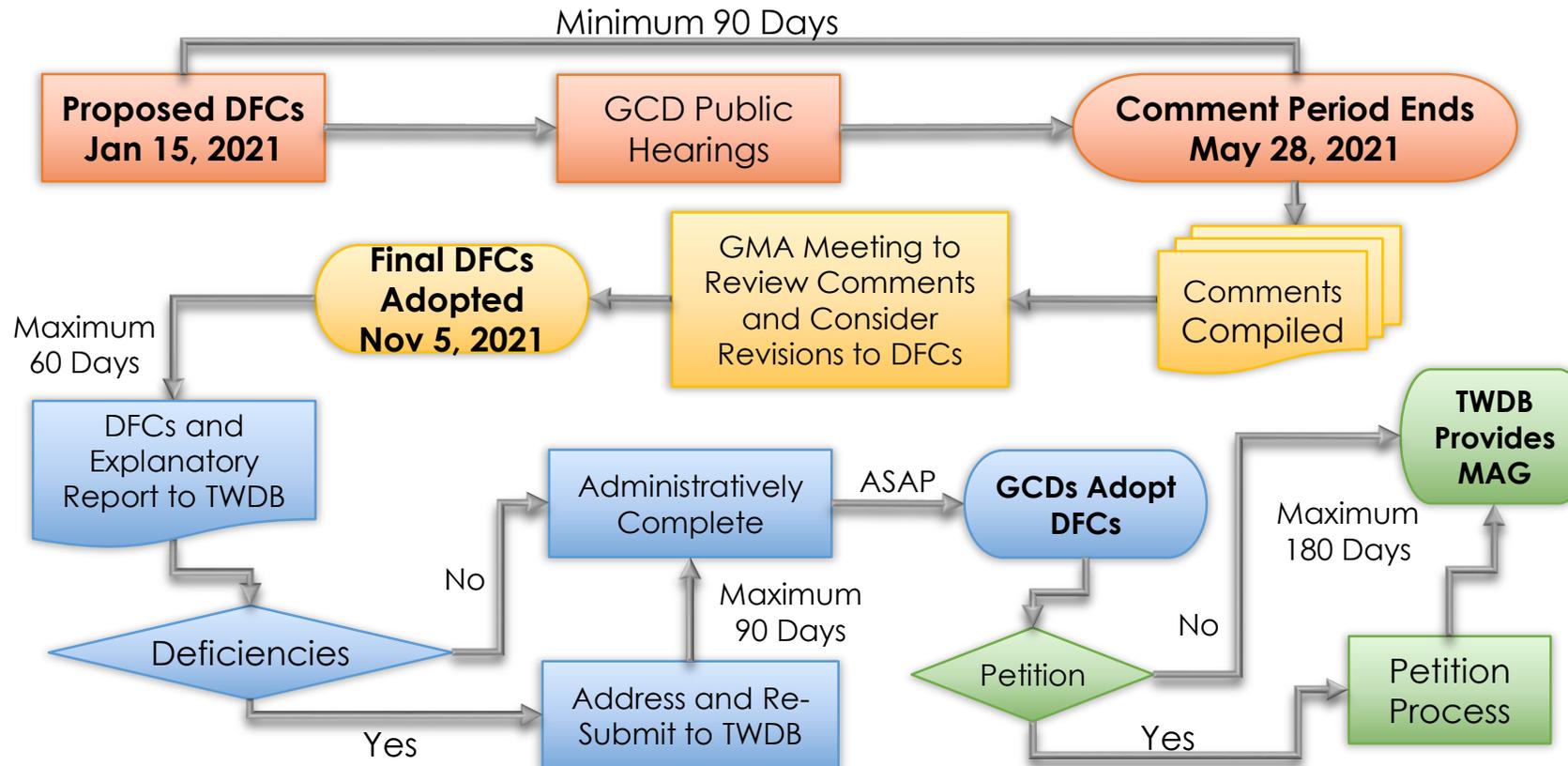
County	Edwards (BFZ) DFC
Bell	Maintain at least 100 acre-feet per month of stream/spring flow in Salado Creek during a repeat of the drought of record
Travis	Maintain at least 42 acre-feet per month of aggregated stream/spring flow during a repeat of the drought of record
Williamson	Maintain at least 60 acre-feet per month of aggregated stream/spring flow during a repeat of the drought of record

Agenda Item 9

Discussion and possible action on margin of error language for the Desired Future Conditions Statement.

- 💧 Due to the nature of the drawdown calculations, TWDB suggests that the GMA provide “variance assumptions”
- 💧 For example, if the variation of averaged drawdowns calculated by the TWDB is within 5 percent of the proposed DFCs values, then the TWDB assumes the model results are consistent with the proposed DFCs.

Anticipated Timeline for GMA 8 DFC Process



Agenda Item 13

Discussion of possible agenda items and dates for next GMA 8 meeting

💧 Review 9 factors

💧 Approve DFC resolutions for each Aquifer

— Draft resolutions will be sent to GCDs at least 2 weeks prior to meeting

Thank you!

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