

# REGION F WATER PLANNING GROUP

March 15, 2018



# EXISTING SURFACE WATER SUPPLIES



# Region F Existing Surface Water Supplies

- TWDB Rules Require the use of Water Availability Model (WAM) Run 3
- Strict priority order
- Very few sources in Region F have availability under this analysis
- Two major river basins
  - Rio Grande
  - Colorado



# Rio Grande River Basin

## Existing Surface Water Supplies

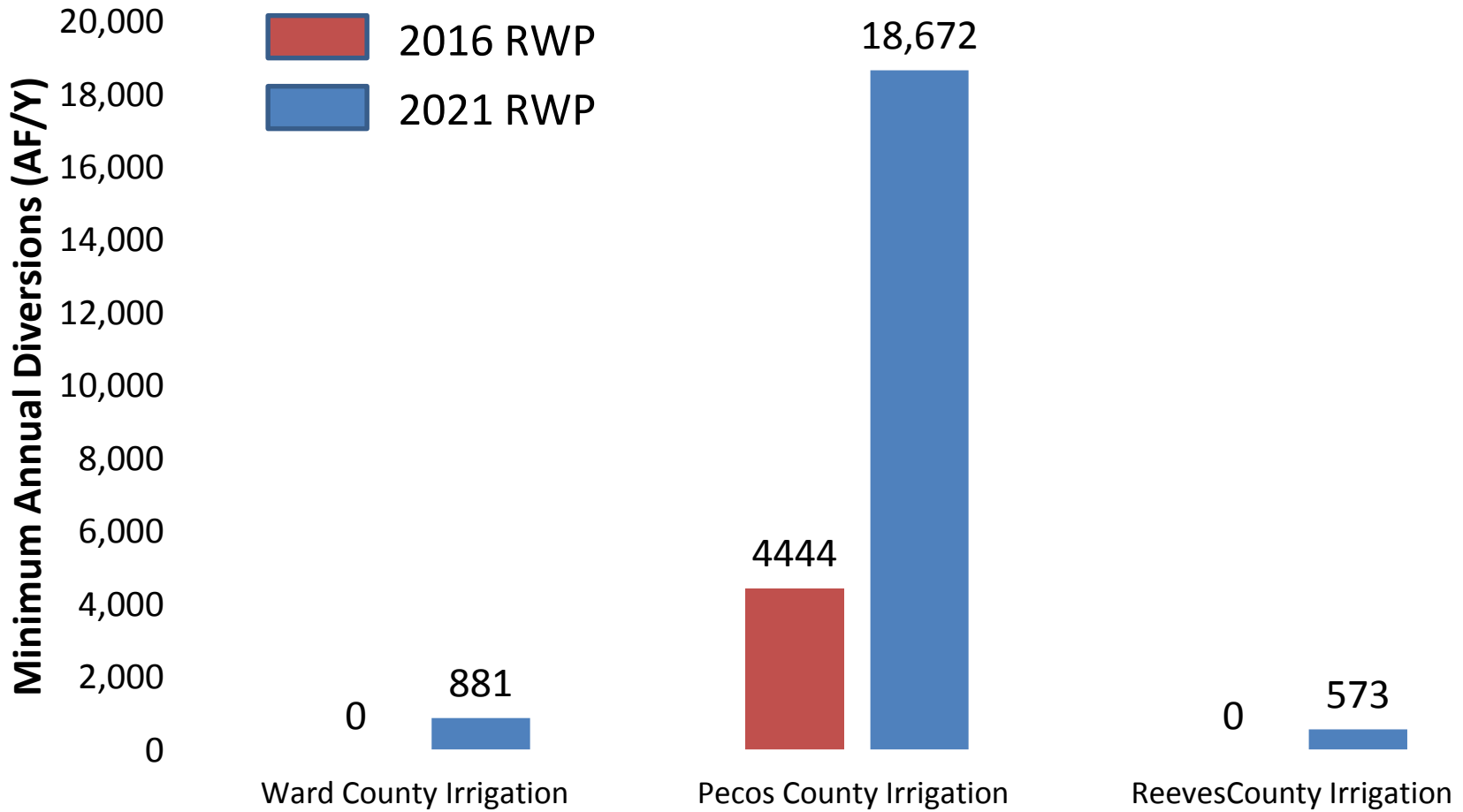


Texas  
Commission  
on  
Environmental  
Quality

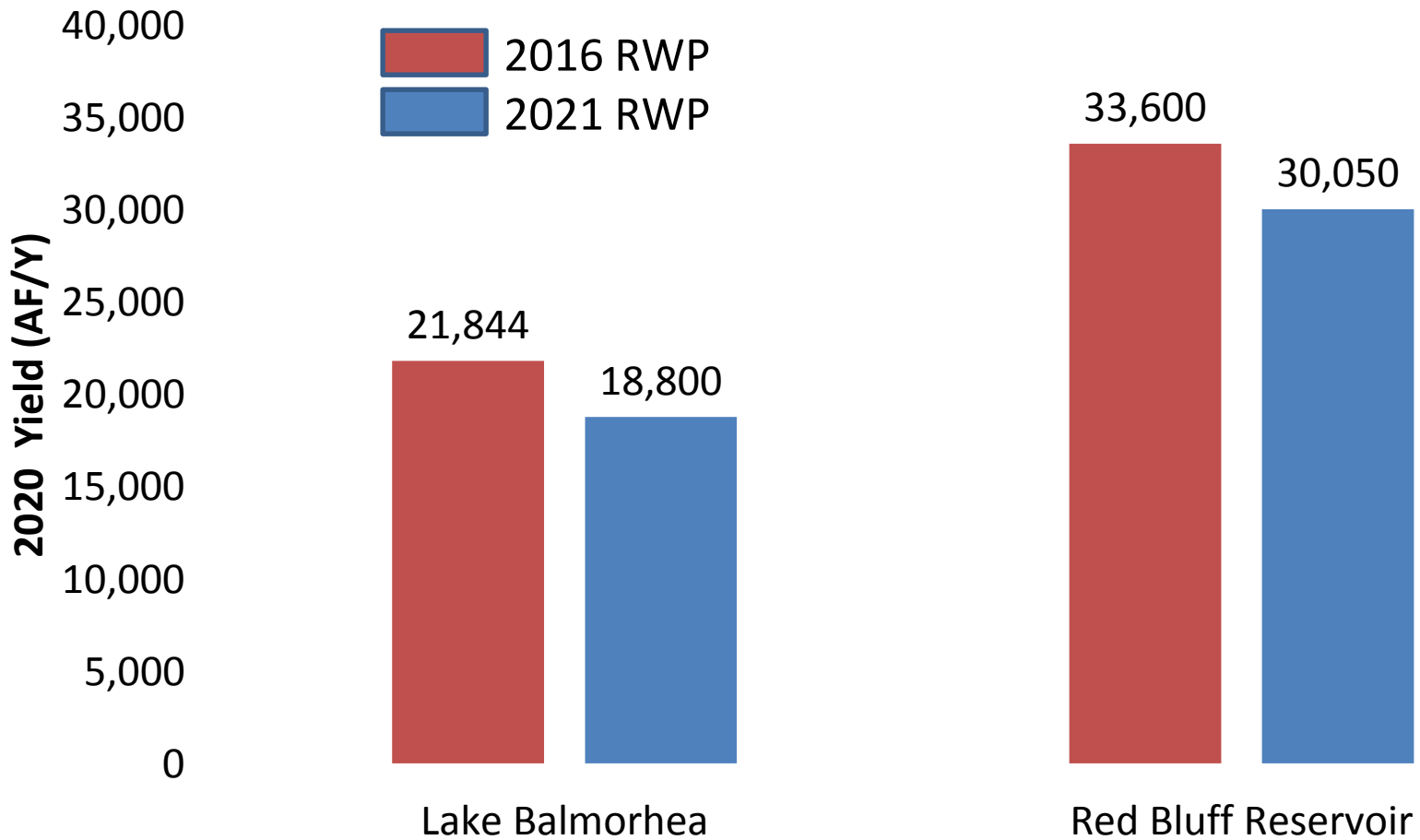
- TCEQ recently published a new version of the Rio Grande WAM
- Includes hydrology through end of 2000



# Rio Grande Run-of River Supplies



# Reservoir Supplies



# Colorado River Basin

## Existing Surface Water Supplies



- TCEQ recently published a new version of the Colorado WAM
- Includes hydrology through end of 2013
- Includes several changes
- Coordinating with TCEQ



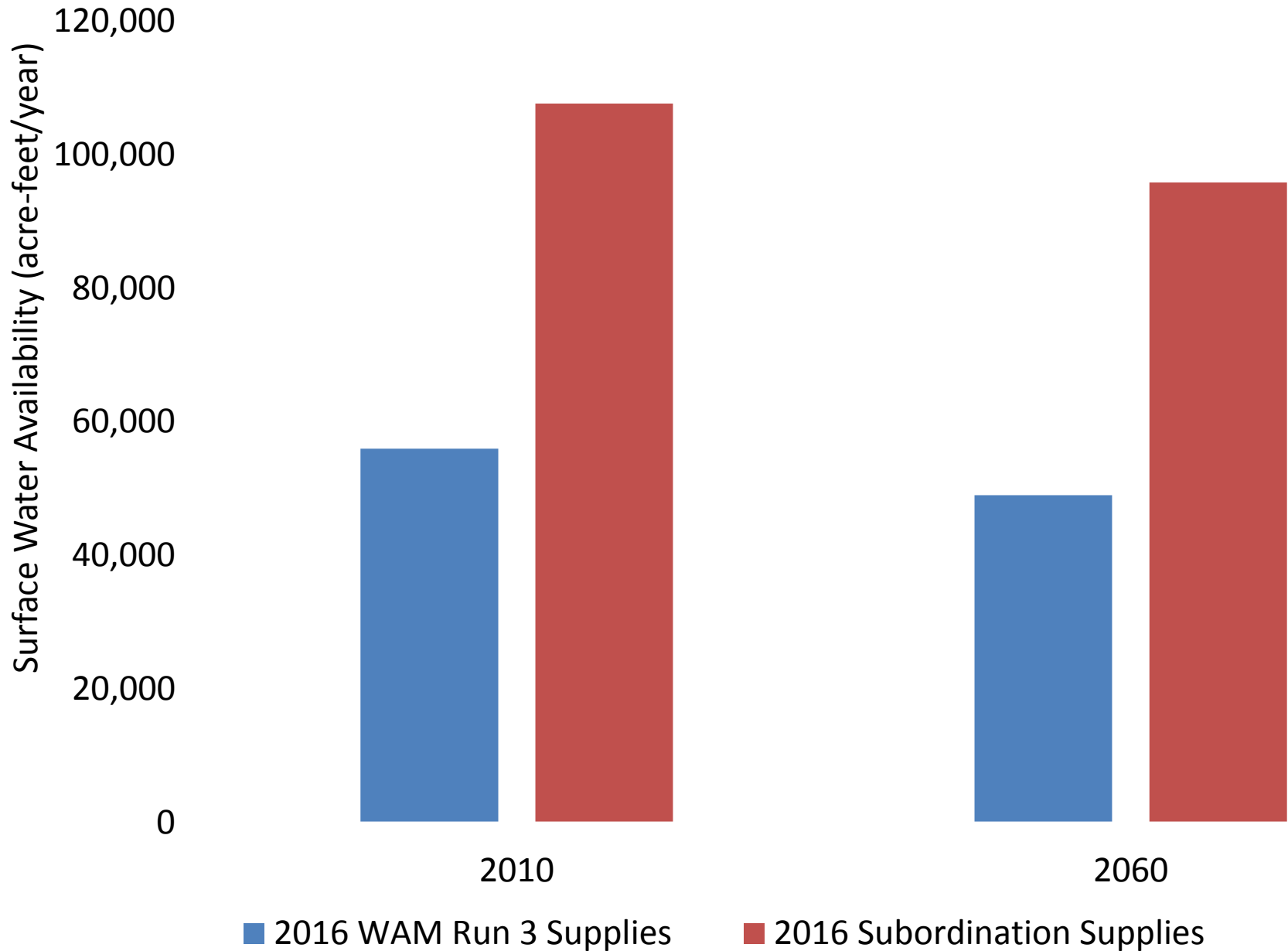
# Subordination

- Major surface water strategy in Region F
- Lower Colorado Basin (Region K) is subordinated to the Upper Colorado Basin (Region F) in the WAM
- Will be reevaluated for the 2021 Plan as part of the Task 5A authorization
- Plan to use a more updated version of the WAM
  - Hydrology extended through 2016
  - Expected to be available in April 2018





# 2016 Plan Existing Surface Water Supplies vs. Subordination Supplies



# CURRENT GROUNDWATER SUPPLIES



# REGION F GROUNDWATER

- **BRIEF REVIEW OF JOINT PLANNING, DFCs, MAGs**
- **OVERVIEW OF AQUIFERS IN THE REGION F**
- **GROUNDWATER AVAILABILITY**
- **REGION F APPROACH**



# Brief History (Pre 2005)

- Regional Planning Groups set “Groundwater Availability”
- No requirement for neighboring Groundwater Conservation Districts to work together



# HB 1763 (2005)

- Required Groundwater Conservation Districts to conduct “Joint Planning” in each Groundwater Management Area (set Desired Future Conditions)
- Basis for Groundwater Availability used in Regional Planning
- Resulted in consistency between policy goals and groundwater availability numbers



# Joint Planning for Groundwater Management Areas (GMAs)

## the balance test

Highest Practicable Level  
of Groundwater  
Production

Conservation, Preservation,  
Protection, Recharging, and  
Prevention of Waste of  
Groundwater, and Control of  
Subsidence



# DFC Considerations

Aquifer Uses or  
Conditions

Supply Needs  
and Management  
Strategies

Hydrological  
Conditions

Environmental  
Impacts

Subsidence  
Impacts

Socioeconomic  
Impacts

Private Property  
Rights

DFC Feasibility

Other Relevant  
Information



# DFCs, MAGs, Planning

## 3 shifting targets

- DFCs – GCDs/Science
- MAGs – TWDB/Science
- Strategies – RWPGs



**Adaptive Management**

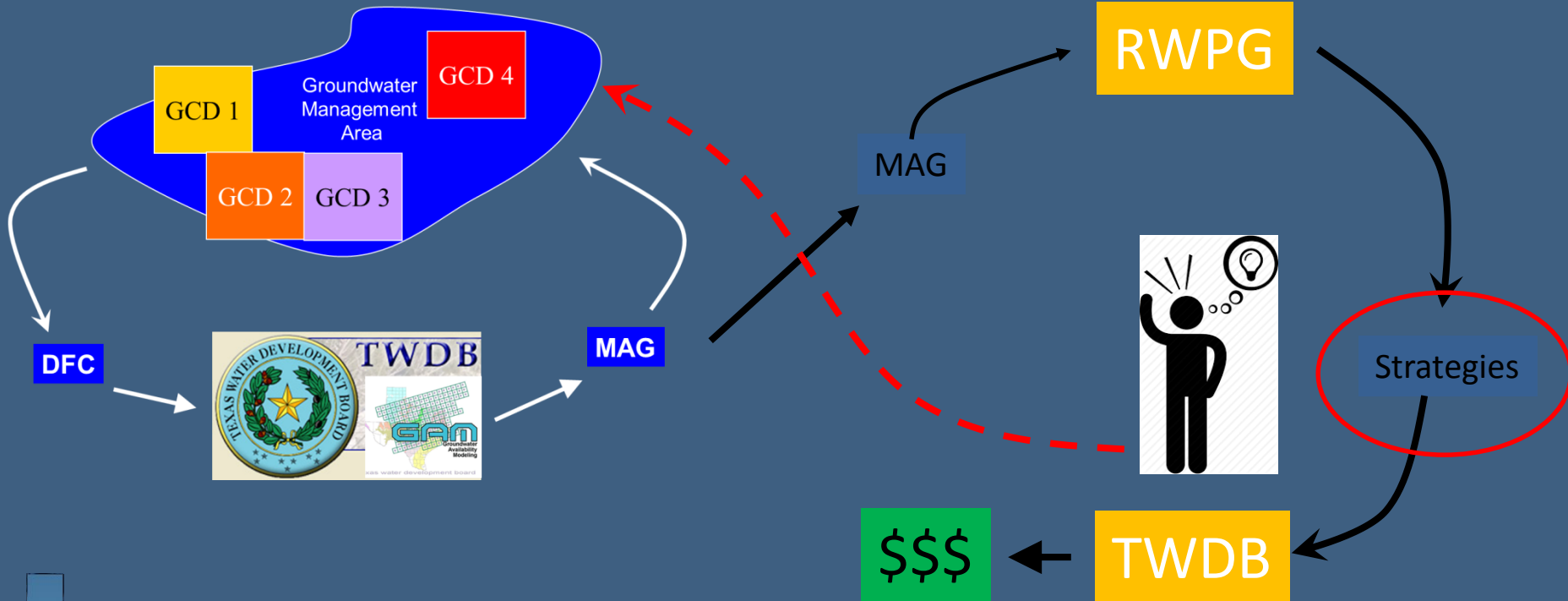




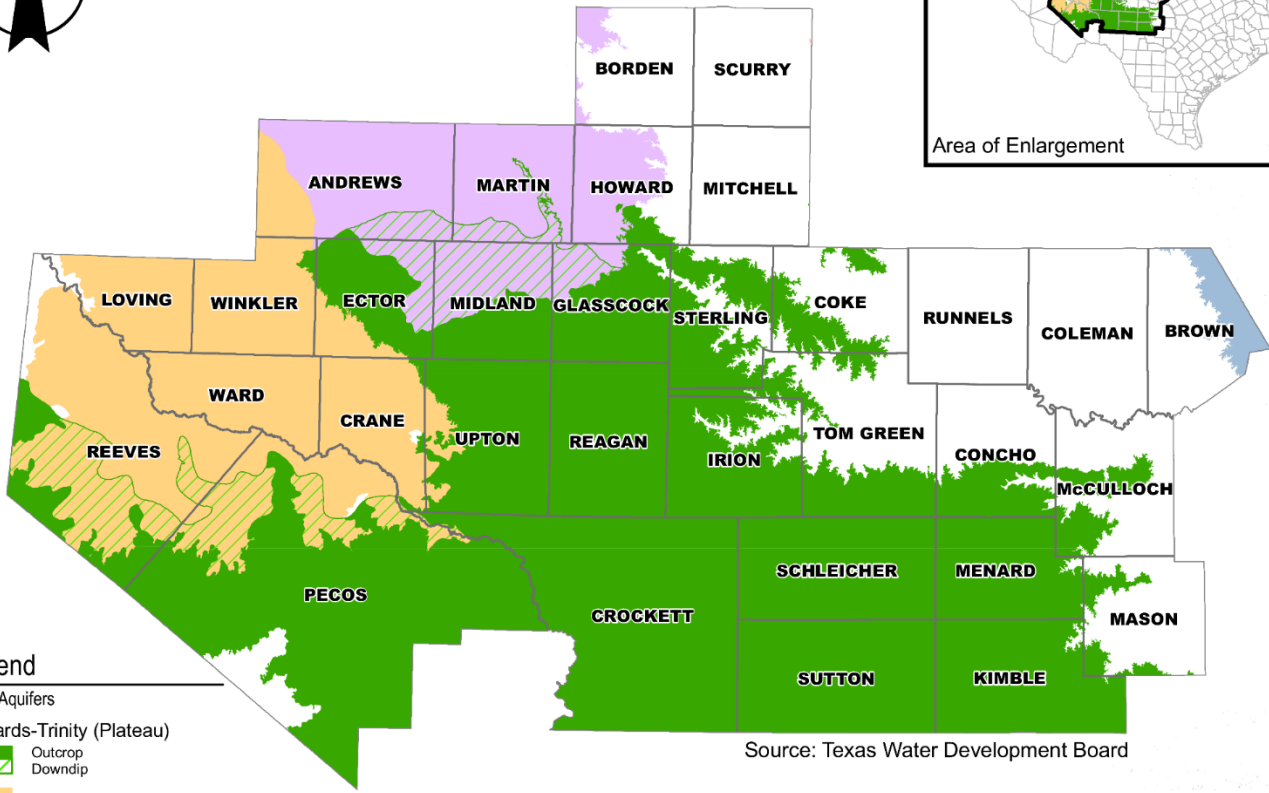
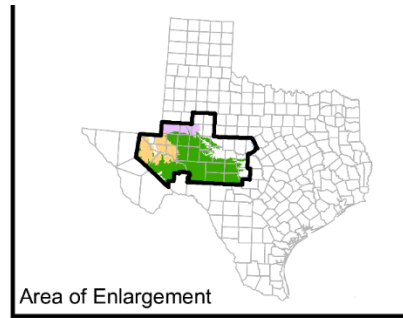
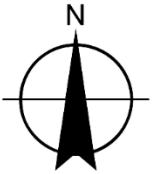
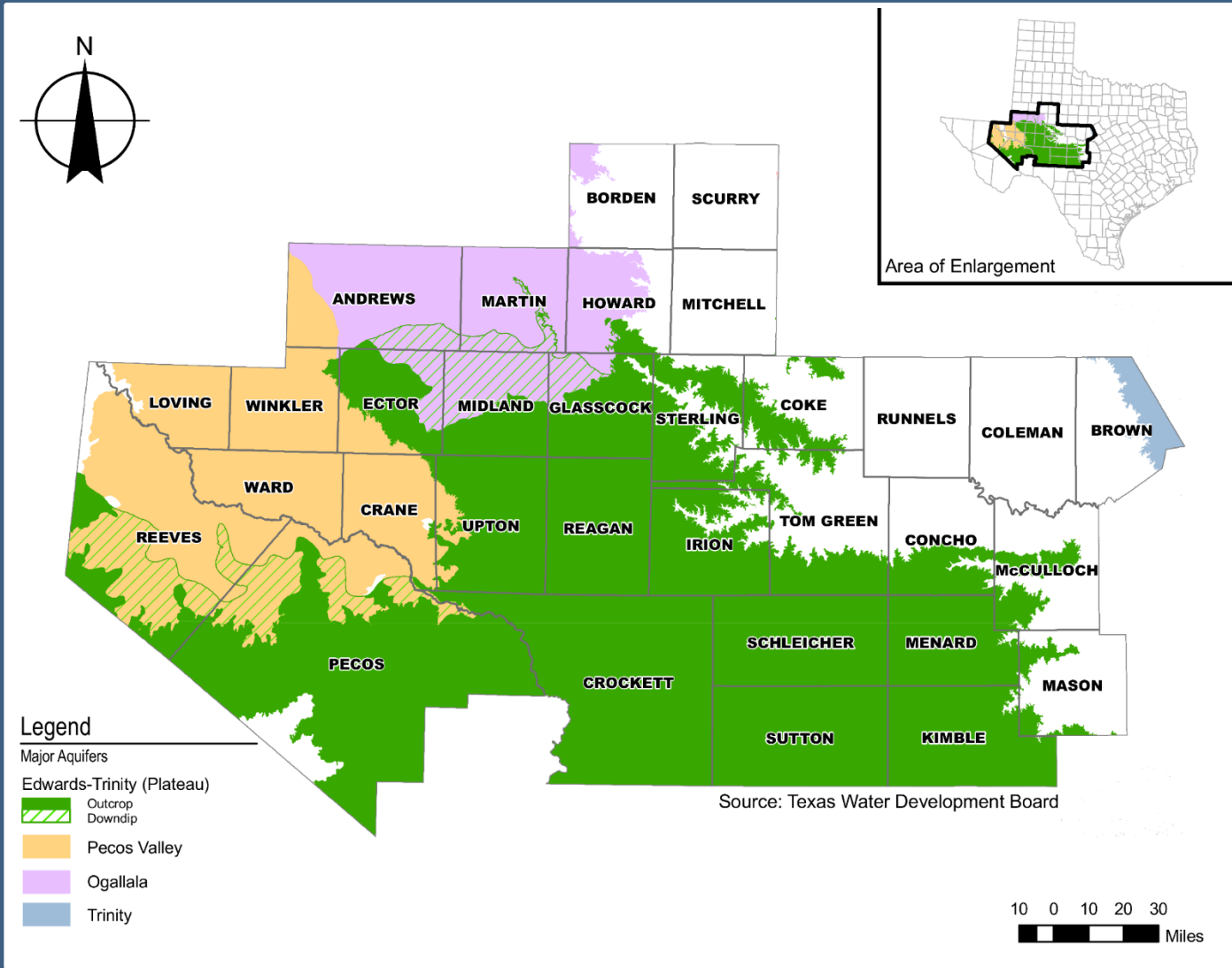
# Why MAGs Matter

## Joint Planning

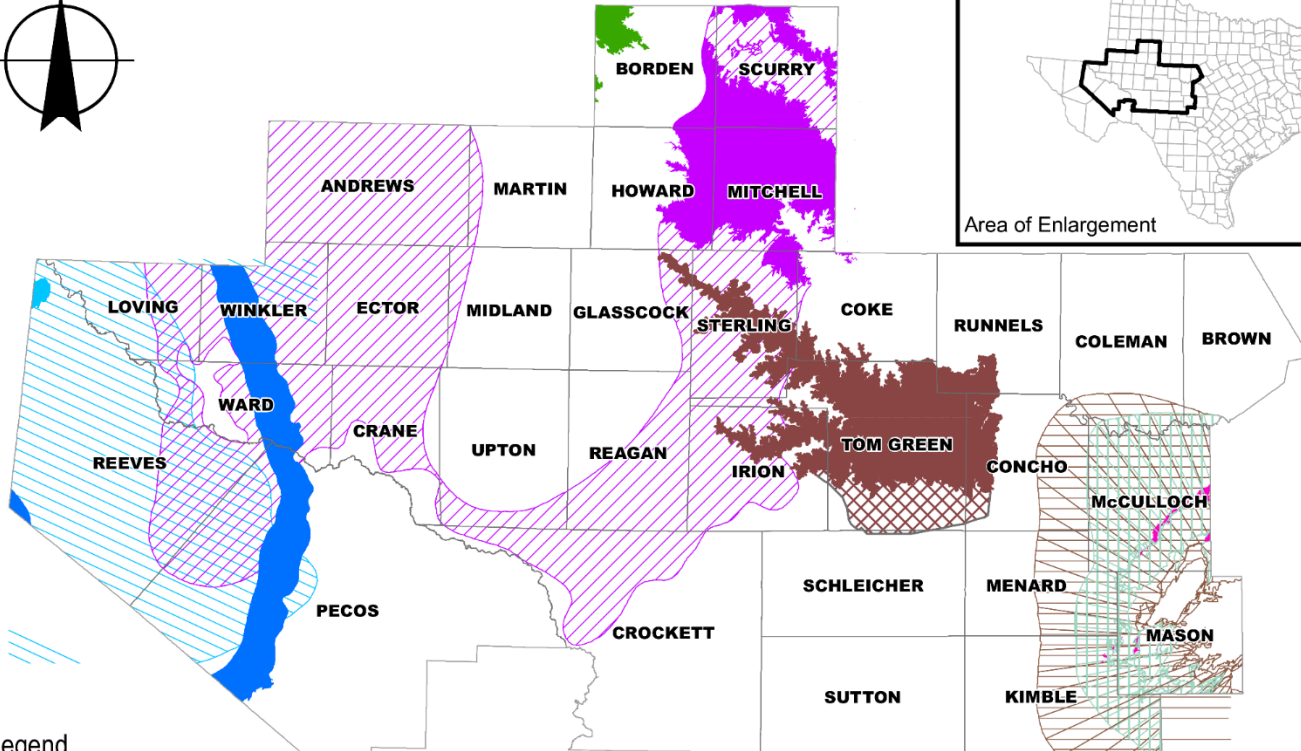
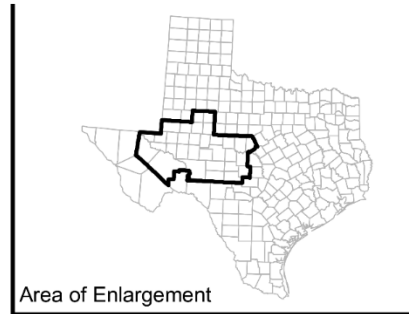
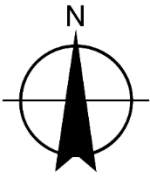
## Regional Water Planning



# Major Aquifers



# Minor Aquifers



## Legend

### Minor Aquifers

#### Dockum

Outcrop  
Down-dip

#### Hickory

Outcrop  
Down-dip

#### Ellenburger - San Saba

Outcrop  
Down-dip

#### Rustler

Outcrop  
Down-dip

#### Marble Falls

Outcrop  
Down-dip

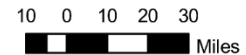
#### Lipan

Outcrop  
Down-dip

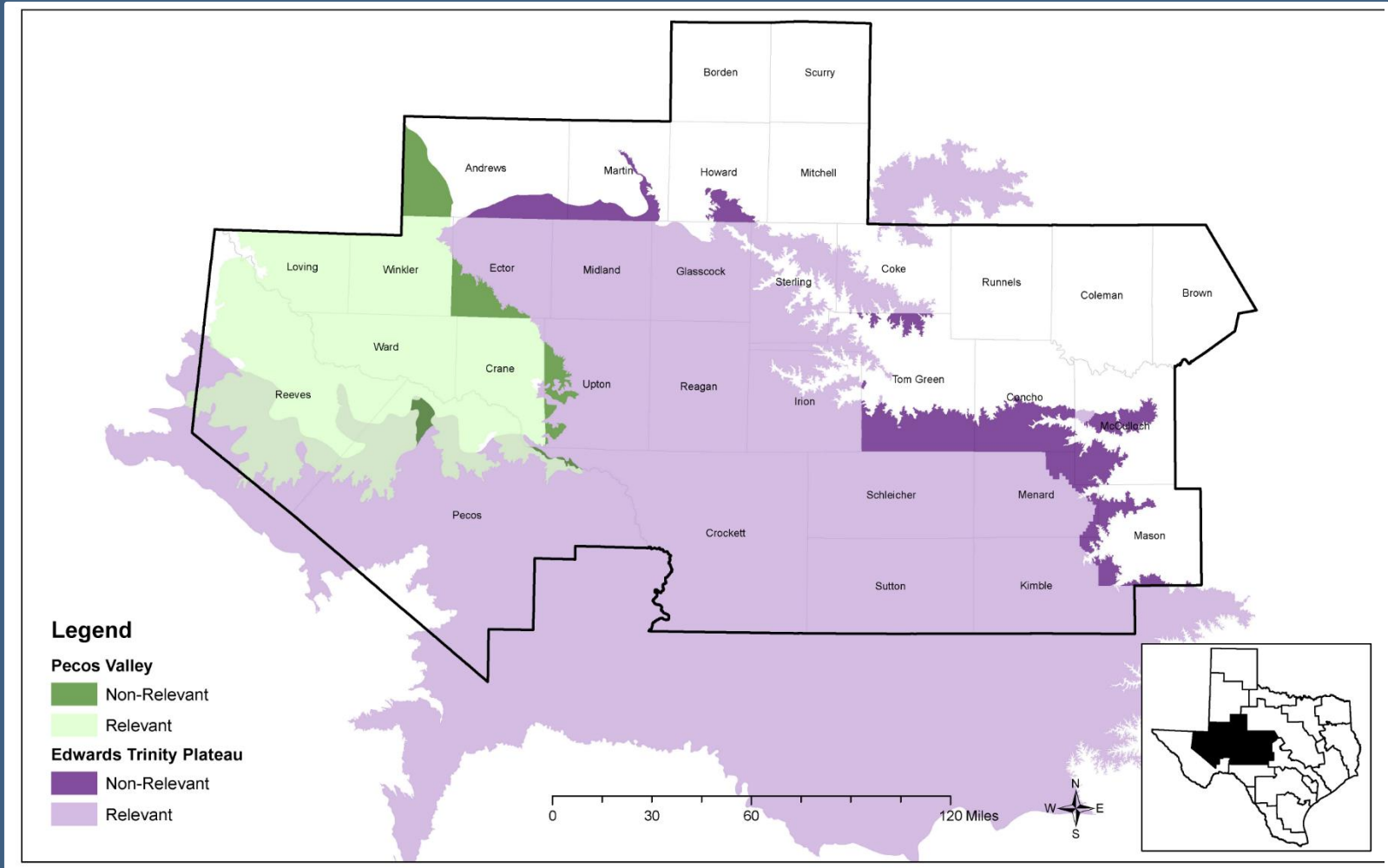
#### Captain Reef Complex

Outcrop  
Down-dip

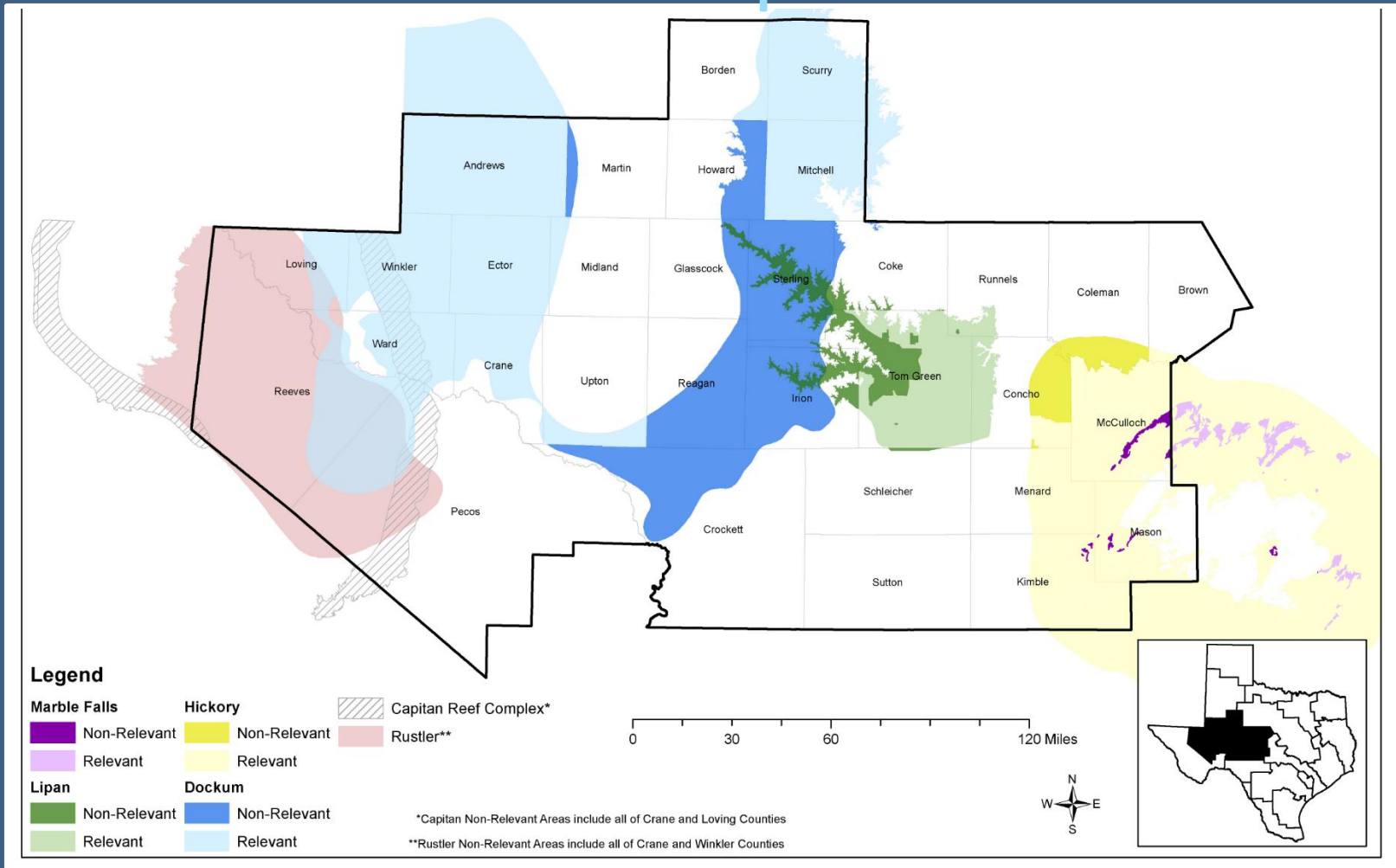
Source: Texas Water Development Board



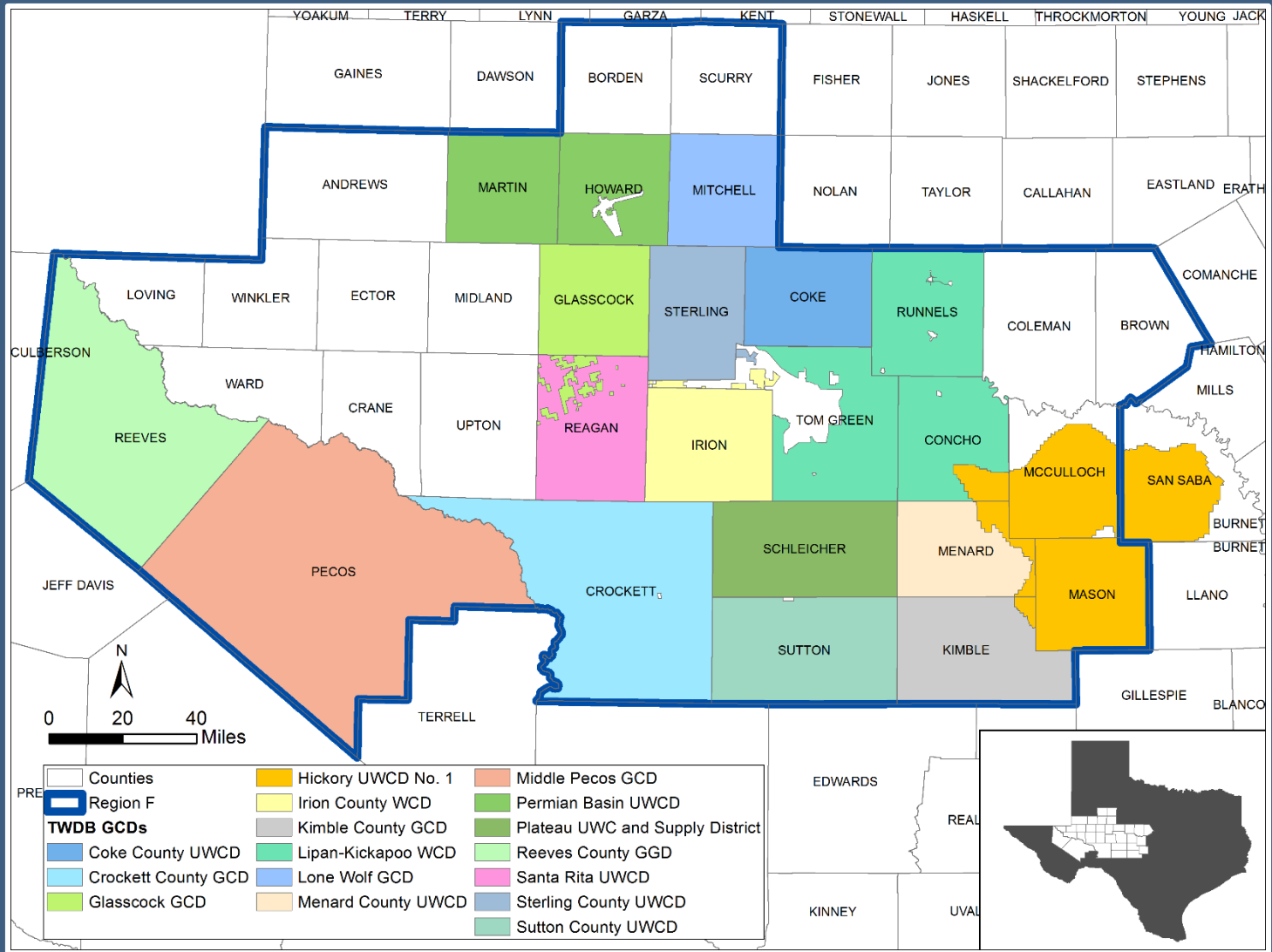
# Non-Relevant Portions Major Aquifers

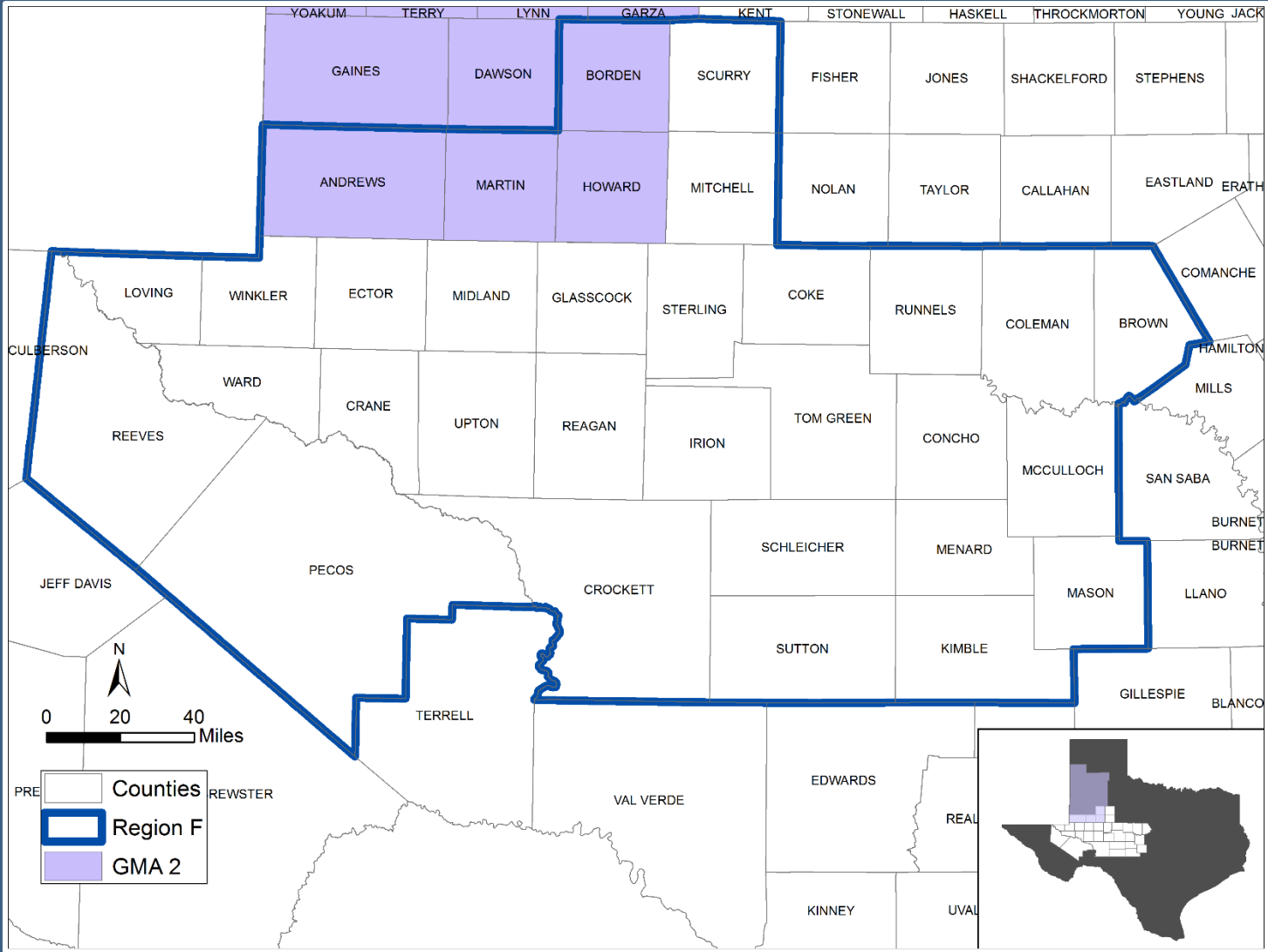


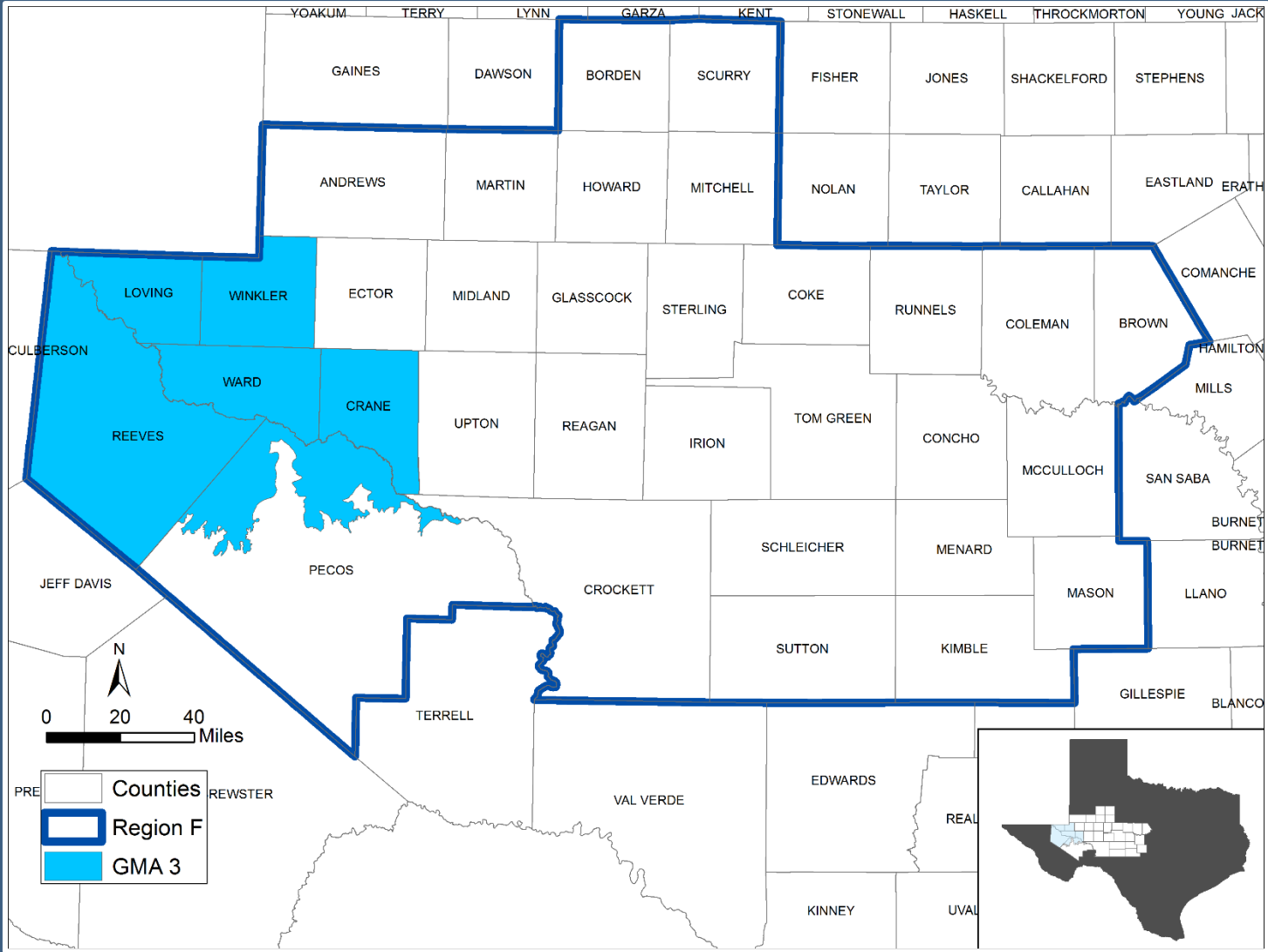
# Non-Relevant Portions Minor Aquifers



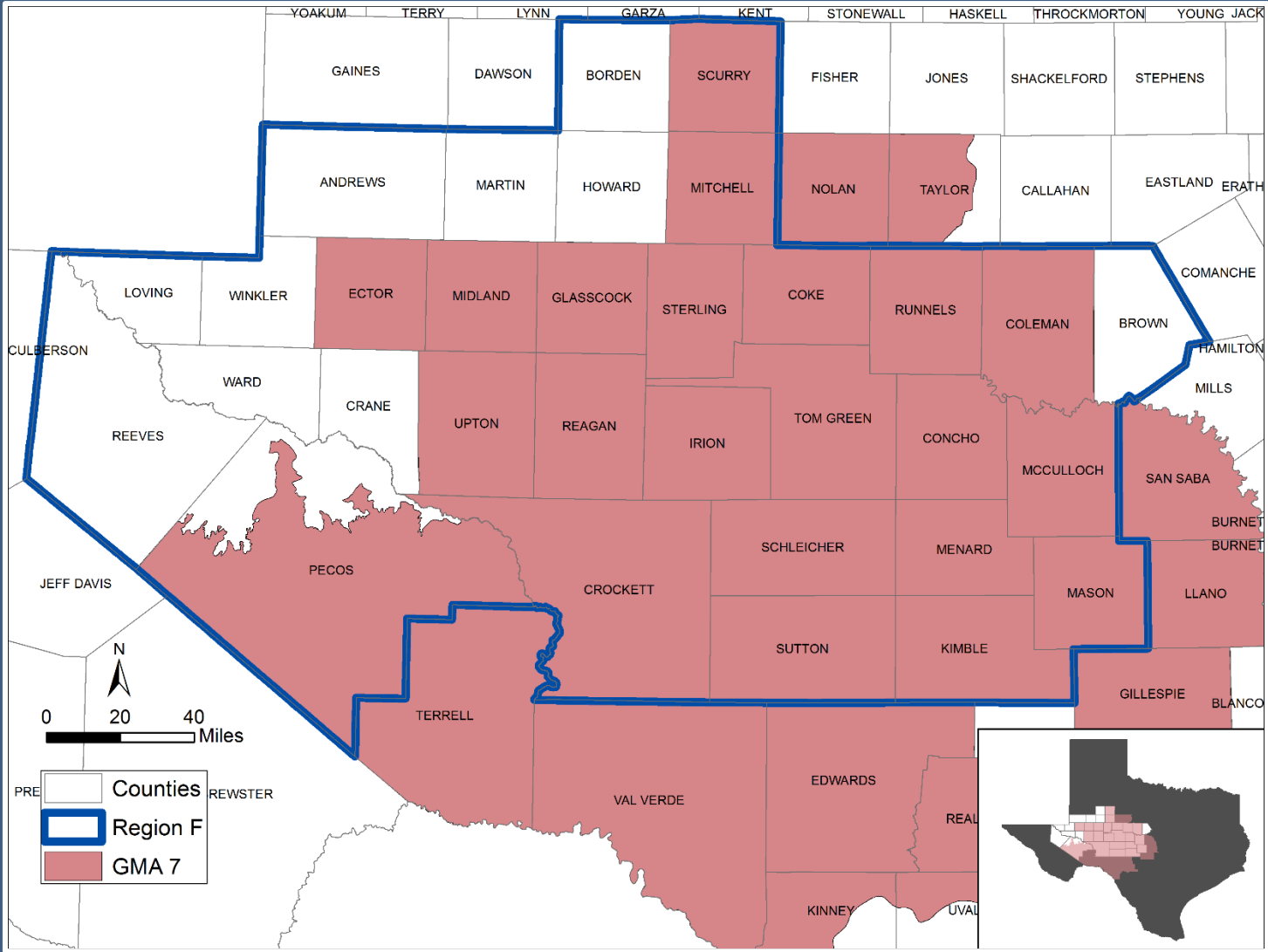
# Groundwater Conservation Districts

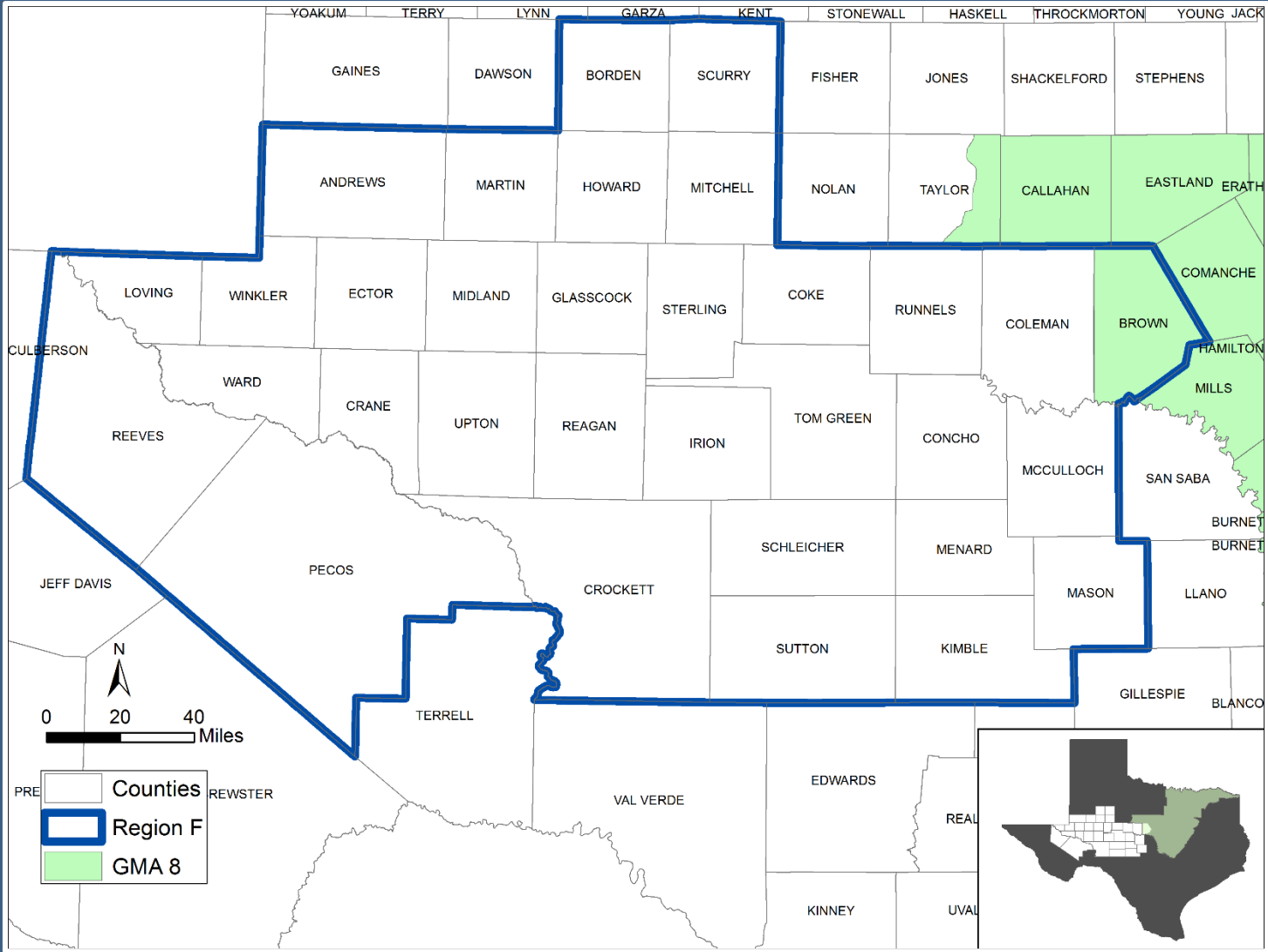












# DFC / MAG TIMELINE

- **DESIRED FUTURE CONDITIONS (DFCs) WERE PROVIDED TO THE TWDB BY GMAs IN 2016**
- **STATUS**
  - **GMA 2 – COMPLETED**
  - **GMA 3 – SOON?**
  - **GMA 7 – Mid-Summer?**
  - **GMA 8 – COMPLETED**



# **2021 REGION F WATER PLAN GMA-2 AND GMA-8 MAGs**



# GMA-2 and GMA-8 MAGs

All values are in acre-feet per year

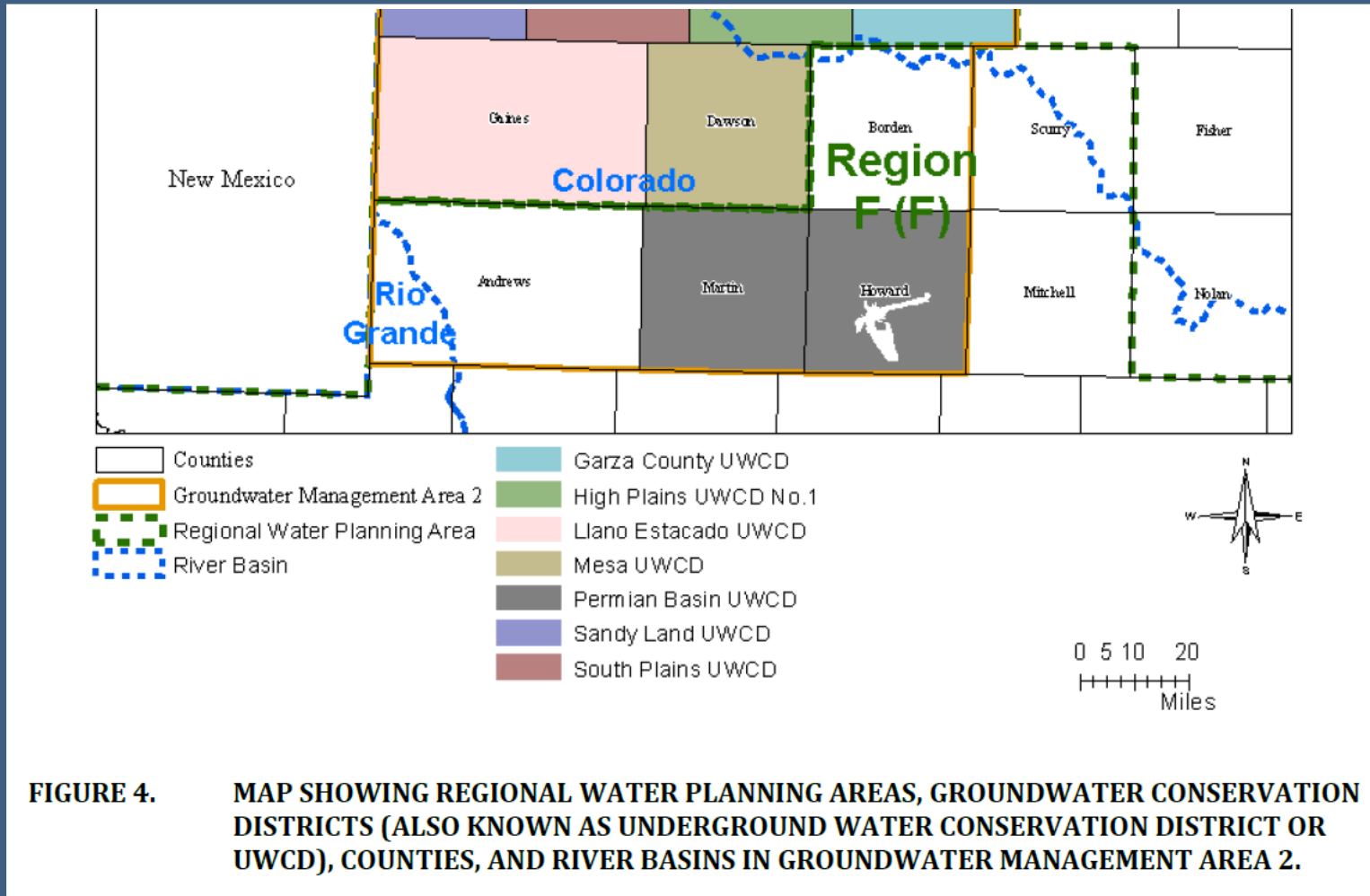
County	Old MAG 2020	New MAG 2020	Old MAG 2030	New MAG 2030	Old MAG 2040	New MAG 2040	Old MAG 2050	New MAG 2050	Old MAG 2060	New MAG 2060	Old MAG 2070	New MAG 2070	GMA
ANDREWS	15,985	26,256	14,569	22,694	12,905	21,114	10,907	20,093	8,268	19,359	n/a	18,793	2
BORDEN	1,020	1,743	1,020	1,600	1,020	1,536	1,020	1,498	1,020	1,473	n/a	1,456	2
HOWARD	3,075	21,424	2,731	18,980	2,731	17,853	2,731	17,227	2,703	16,870	n/a	16,655	2
MARTIN	13,570	63,471	13,570	51,134	13,140	43,869	12,299	39,801	12,277	37,218	n/a	35,433	2
BROWN	1,547	1,980	1,547	1,974	1,547	1,980	1,547	1,974	1,547	1,980	n/a	1,974	8

Note: The old MAG values for GMA-8 were taken from Run 10 results calculated by WSP (formerly LBG-Guyton) for GMA-8 (January, 2016).

- GMA-2 MAGs are significantly higher due to higher Ogallala values
- GMA-8 MAG total for Brown County is about 25 percent higher



# GMA-2



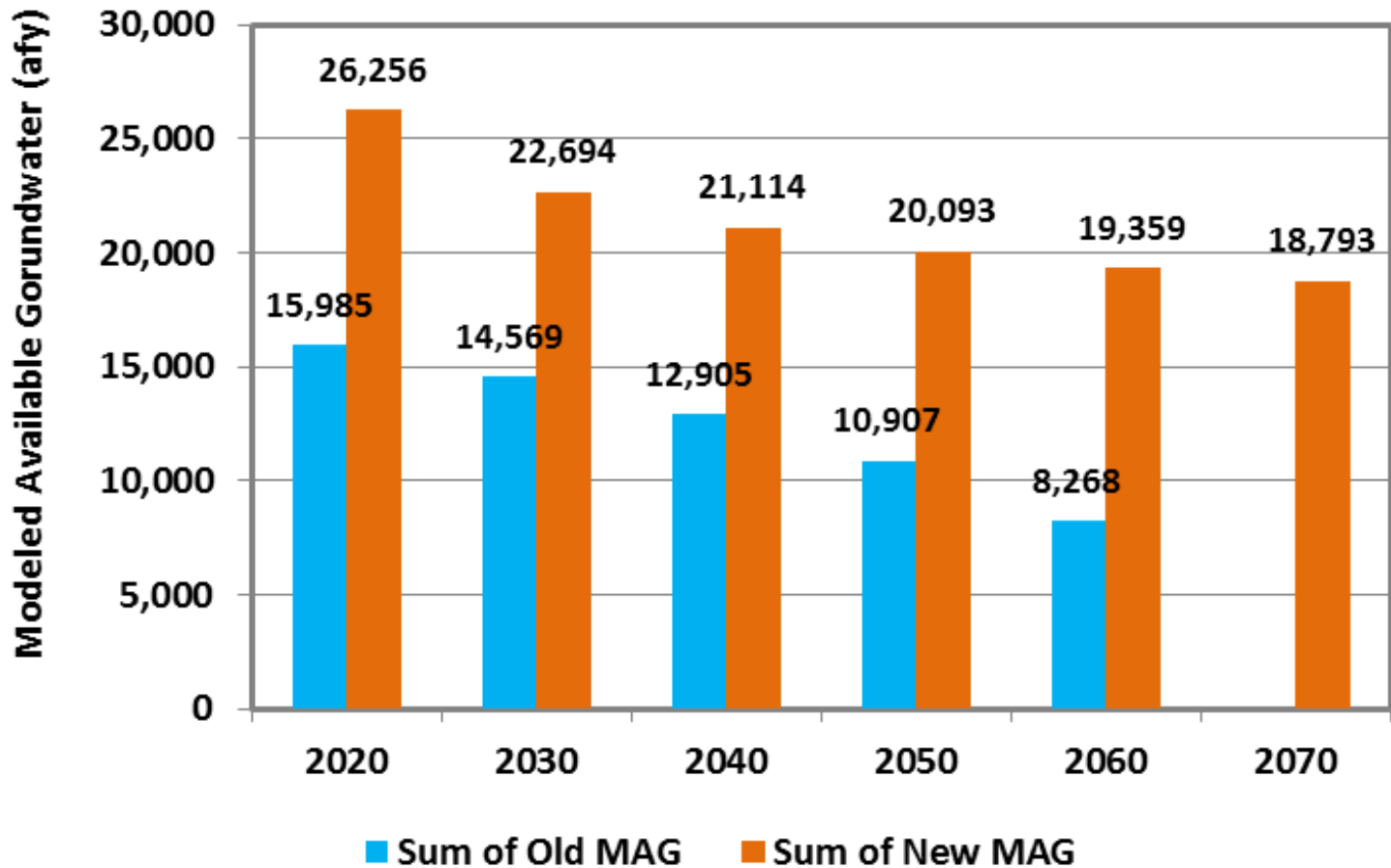
**FIGURE 4. MAP SHOWING REGIONAL WATER PLANNING AREAS, GROUNDWATER CONSERVATION DISTRICTS (ALSO KNOWN AS UNDERGROUND WATER CONSERVATION DISTRICT OR UWCD), COUNTIES, AND RIVER BASINS IN GROUNDWATER MANAGEMENT AREA 2.**

Source: TWDB GAM RUN 16-028 MAG: MODELED AVAILABLE GROUNDWATER FOR THE OGALLALA, EDWARDS-TRINITY (HIGH PLAINS), AND DOCKUM AQUIFERS IN GROUNDWATER MANAGEMENT AREA 2



# GMA-2

## Andrews County

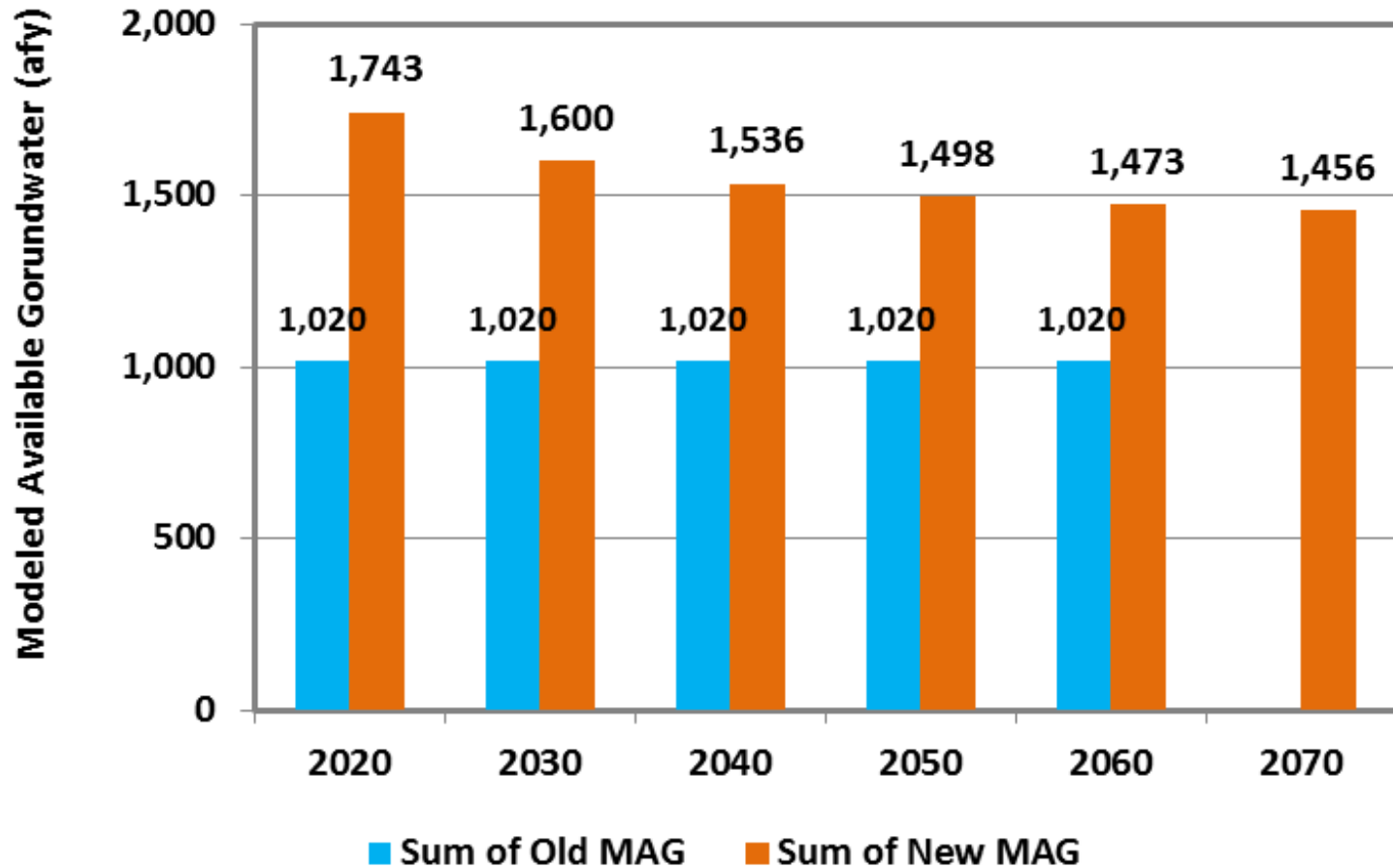


All values are in acre-feet per year



# GMA-2

## Borden County



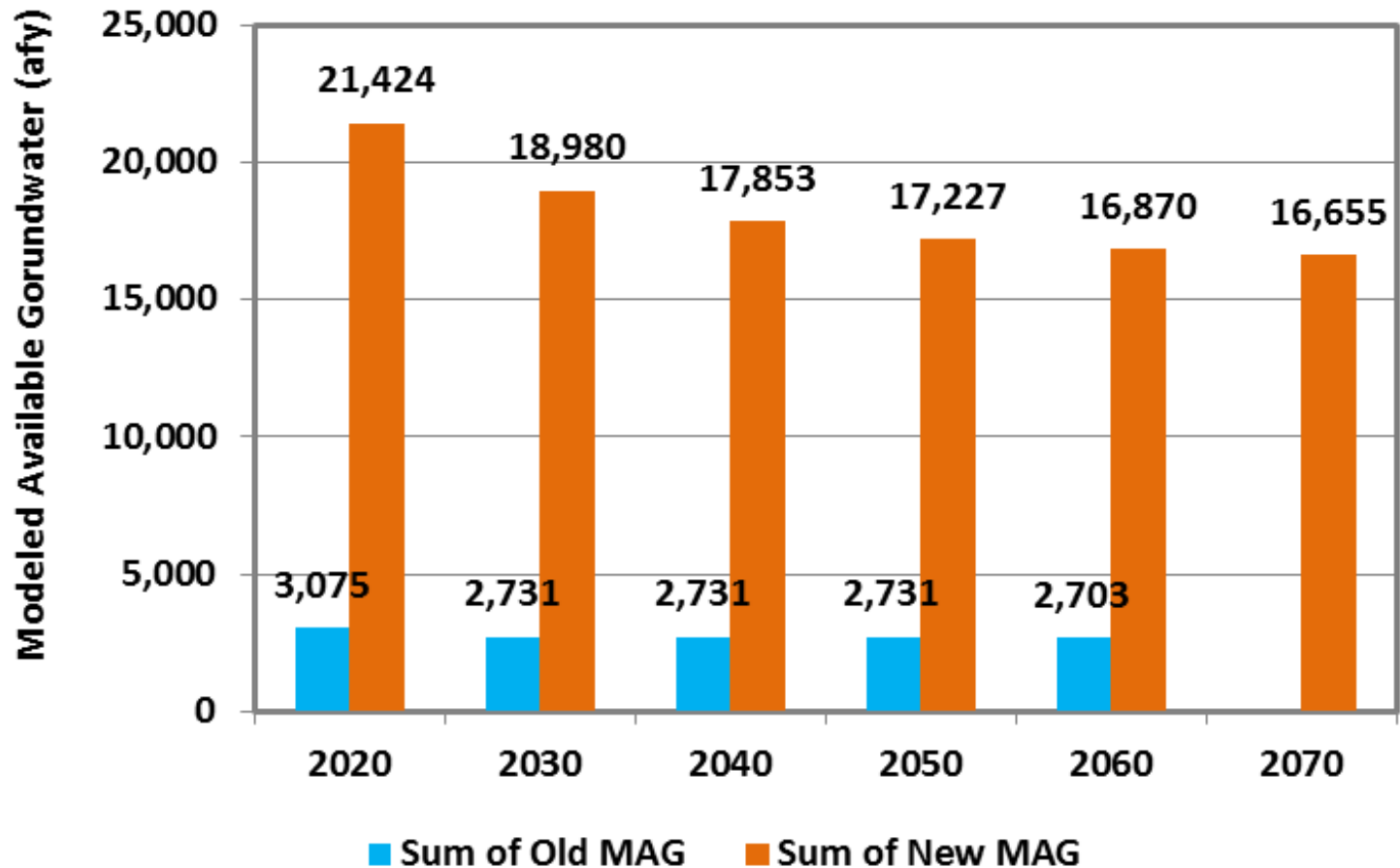
All values are in acre-feet per year





# GMA-2

## Howard County

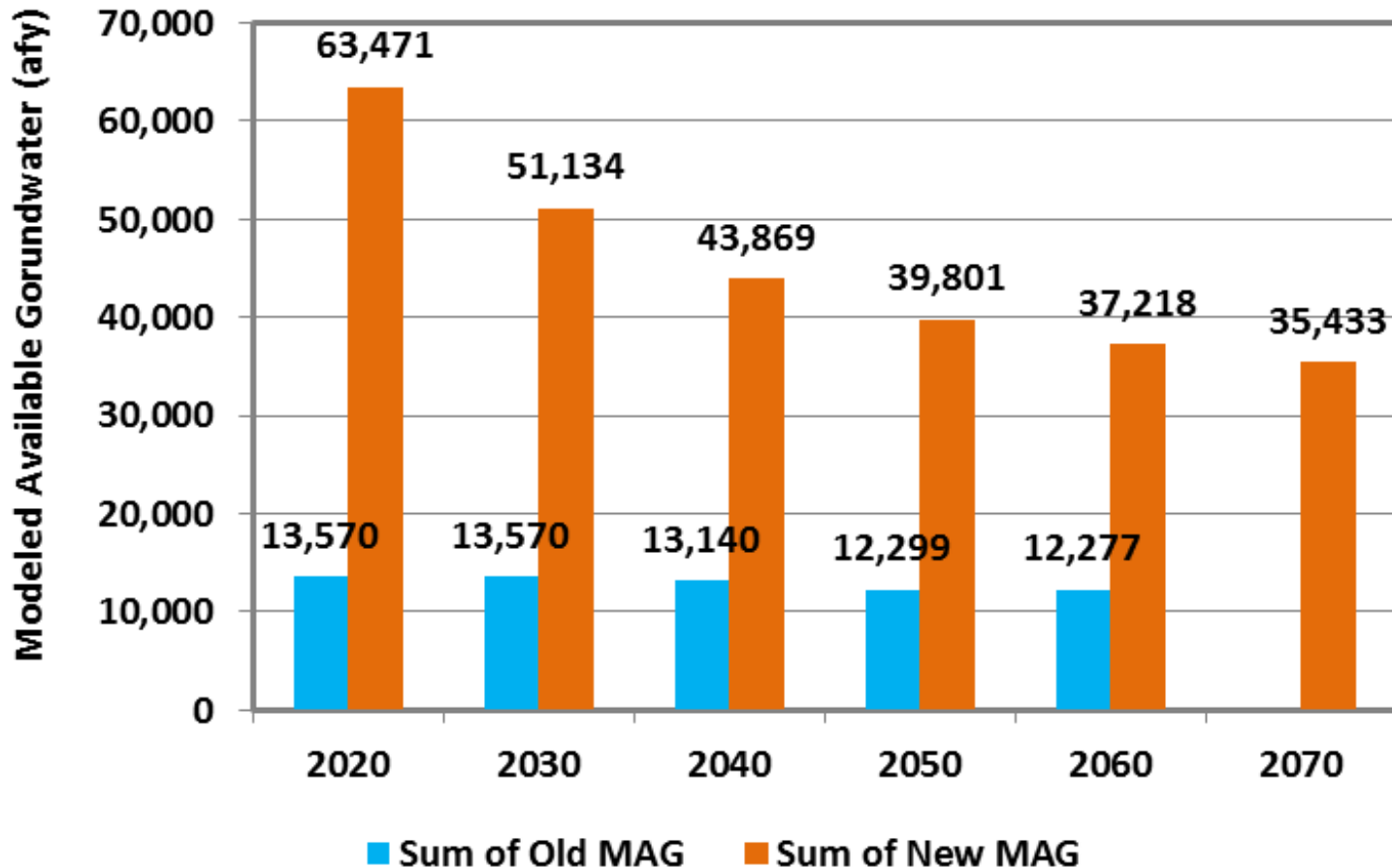


All values are in acre-feet per year



# GMA-2

## Martin County



All values are in acre-feet per year



# GMA-2 (by aquifer)

All values are in acre-feet per year

County	All Aquifers 2020	All Aquifers 2030	All Aquifers 2040	All Aquifers 2050	All Aquifers 2060	All Aquifers 2070
ANDREWS	26,256	22,694	21,114	20,093	19,359	18,793
BORDEN	1,743	1,600	1,536	1,498	1,473	1,456
HOWARD	21,424	18,980	17,853	17,227	16,870	16,655
MARTIN	63,471	51,134	43,869	39,801	37,218	35,433

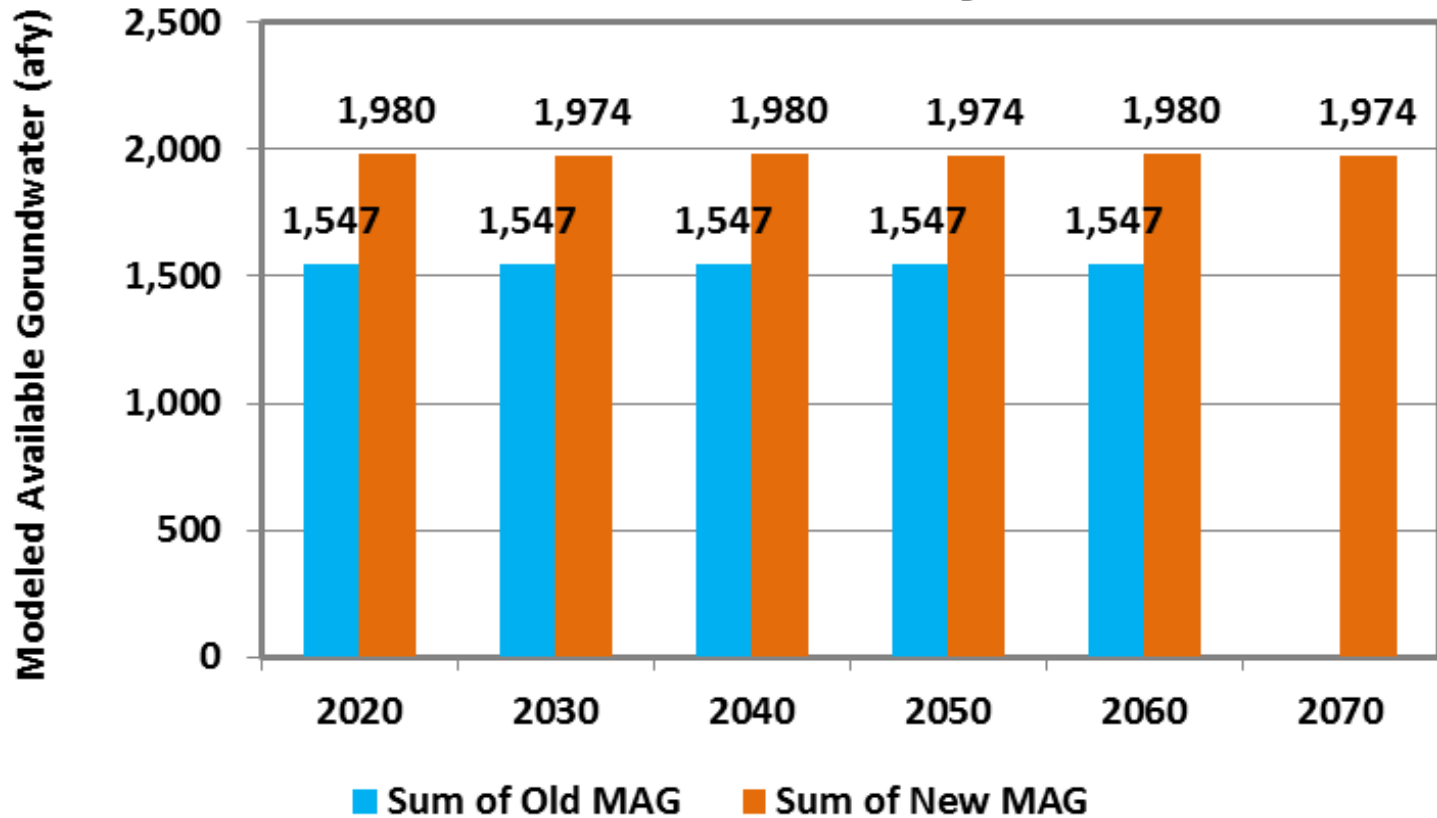
County	Ogallala/ ETHP						Dockum					
	2020	2030	2040	2050	2060	2070	2020	2030	2040	2050	2060	2070
ANDREWS	24,937	21,375	19,795	18,774	18,040	17,474	1,319	1,319	1,319	1,319	1,319	1,319
BORDEN	842	699	635	597	572	555	901	901	901	901	901	901
HOWARD	19,835	17,391	16,264	15,638	15,281	15,066	1,589	1,589	1,589	1,589	1,589	1,589
MARTIN	63,463	51,126	43,861	39,793	37,210	35,425	8	8	8	8	8	8

Note: Ogallala and Edwards Trinity (High Plains) are not differentiated in the GAM runs.



# GMA-8

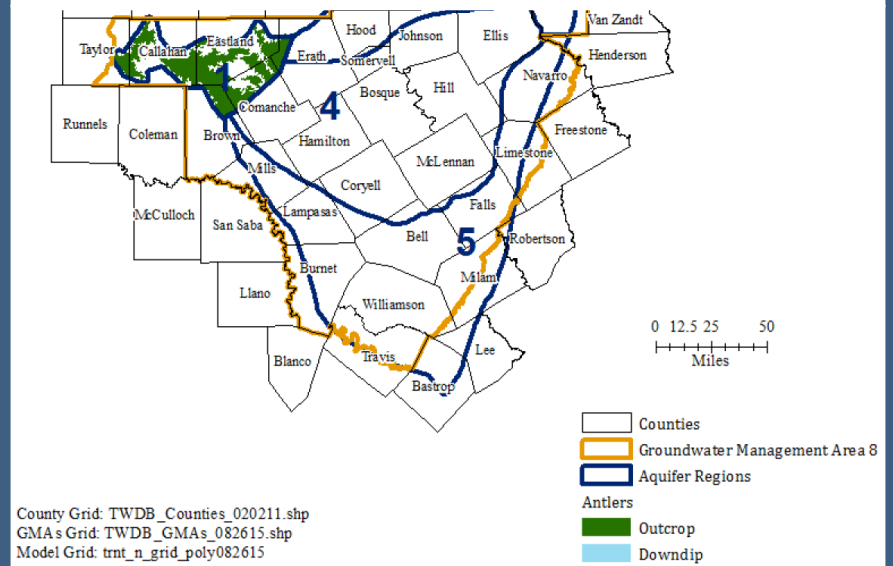
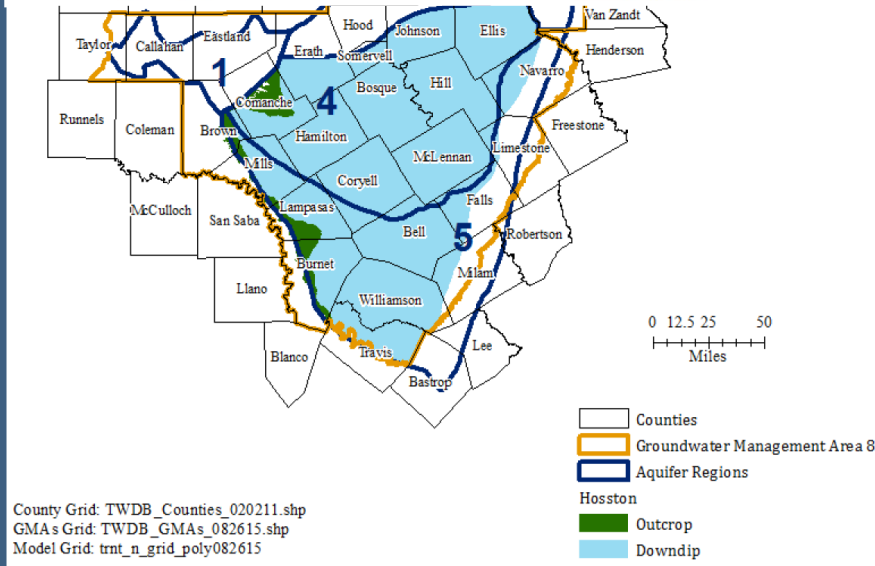
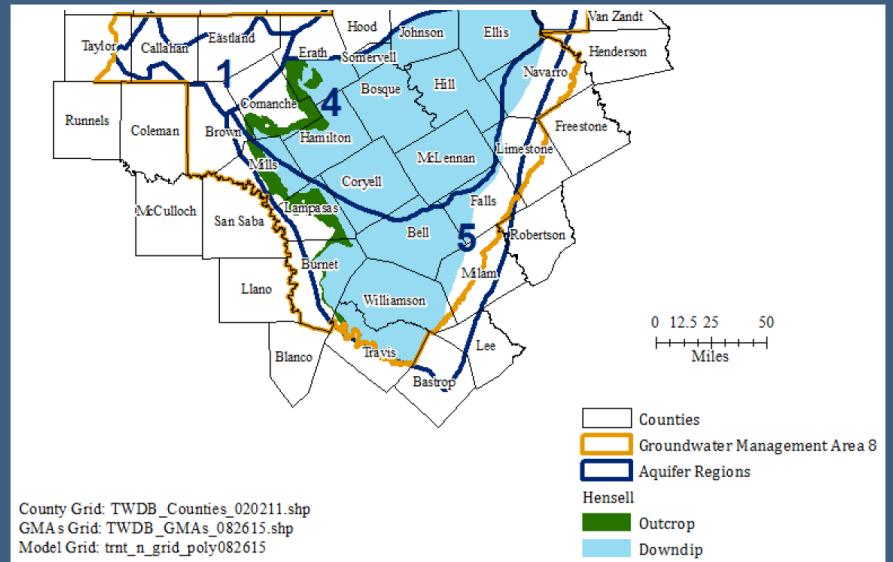
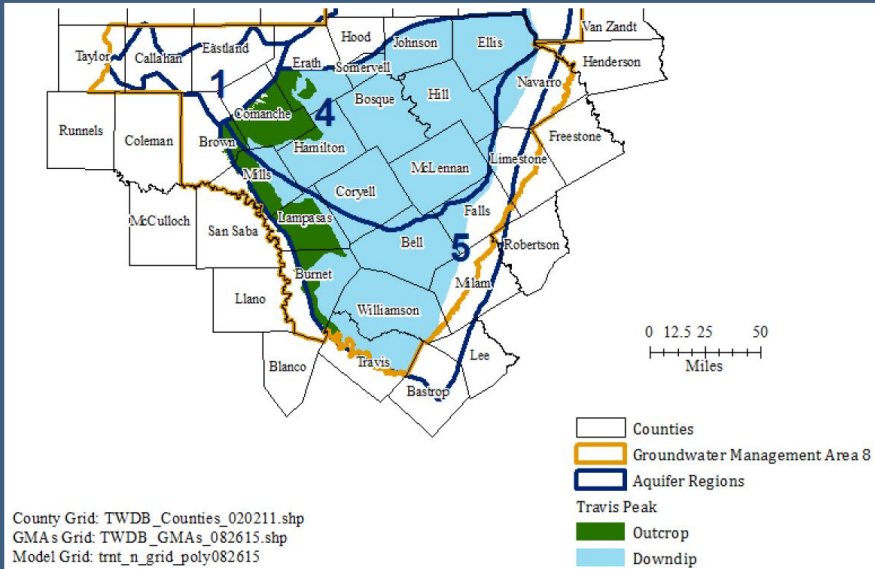
## Brown County



All values are in acre-feet per year



# GMA-8 Brown County Trinity MAGs



Source: GAM RUN 17-029 MAG: MODELED AVAILABLE GROUNDWATER FOR THE TRINITY, WOODBINE, EDWARDS (BALCONES FAULT ZONE), MARBLE FALLS, ELLENBURGER-SAN SABA AND HICKORY AQUIFERS IN GROUNDWATER MANAGEMENT AREA 8



# GMA-8 MAGs (by aquifer)

All values are in acre-feet per year

Trinity (Travis Peak) 2020	Trinity (Travis Peak) 2030	Trinity (Travis Peak) 2040	Trinity (Travis Peak) 2050	Trinity (Travis Peak) 2060	Trinity (Travis Peak) 2070	Trinity (Hensell) 2020	Trinity (Hensell) 2030	Trinity (Hensell) 2040	Trinity (Hensell) 2050	Trinity (Hensell) 2060	Trinity (Hensell) 2070
<b>395</b>	<b>394</b>	<b>395</b>	<b>394</b>	<b>395</b>	<b>394</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>

Trinity (Hosston) 2020	Trinity (Hosston) 2030	Trinity (Hosston) 2040	Trinity (Hosston) 2050	Trinity (Hosston) 2060	Trinity (Hosston) 2070	Trinity (Antlers) 2020	Trinity (Antlers) 2030	Trinity (Antlers) 2040	Trinity (Antlers) 2050	Trinity (Antlers) 2060	Trinity (Antlers) 2070
<b>358</b>	<b>356</b>	<b>358</b>	<b>356</b>	<b>358</b>	<b>356</b>	<b>1,055</b>	<b>1,052</b>	<b>1,055</b>	<b>1,052</b>	<b>1,055</b>	<b>1,052</b>

*Note: (GMA-8 Trinity) The modeled available groundwater values estimated for counties may be slightly different from those estimated for groundwater conservation districts because of the process for rounding the values. The modeled available groundwater values for the longer leap years (2020, 2040, and 2060) are slightly higher than shorter non-leap years (2010, 2030, 2050, and 2070).*

Ellenburger - San Saba 2020	Ellenburger - San Saba 2030	Ellenburger - San Saba 2040	Ellenburger - San Saba 2050	Ellenburger - San Saba 2060	Ellenburger - San Saba 2070
<b>131</b>	<b>131</b>	<b>131</b>	<b>131</b>	<b>131</b>	<b>131</b>

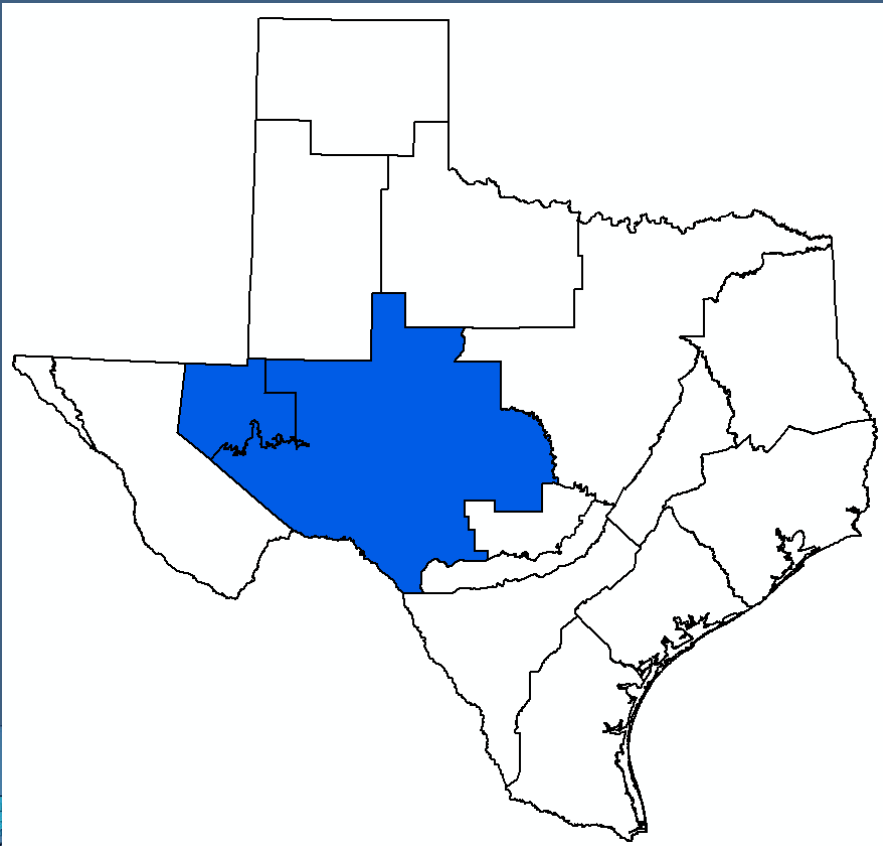
Marble Falls 2020	Marble Falls 2030	Marble Falls 2040	Marble Falls 2050	Marble Falls 2060	Marble Falls 2070
<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>

Hickory 2020	Hickory 2030	Hickory 2040	Hickory 2050	Hickory 2060	Hickory 2070
<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>



# GMA 3 and GMA 7

## Desired Future Conditions and Modeled Available Groundwater



Bill Hutchison, Ph.D., P.E., P.G.  
Region F Meeting  
March 15, 2018

# Topics

- Desired Future Conditions for GMAs 3 and 7
- Modeled Available Groundwater for GMAs 3 and 7



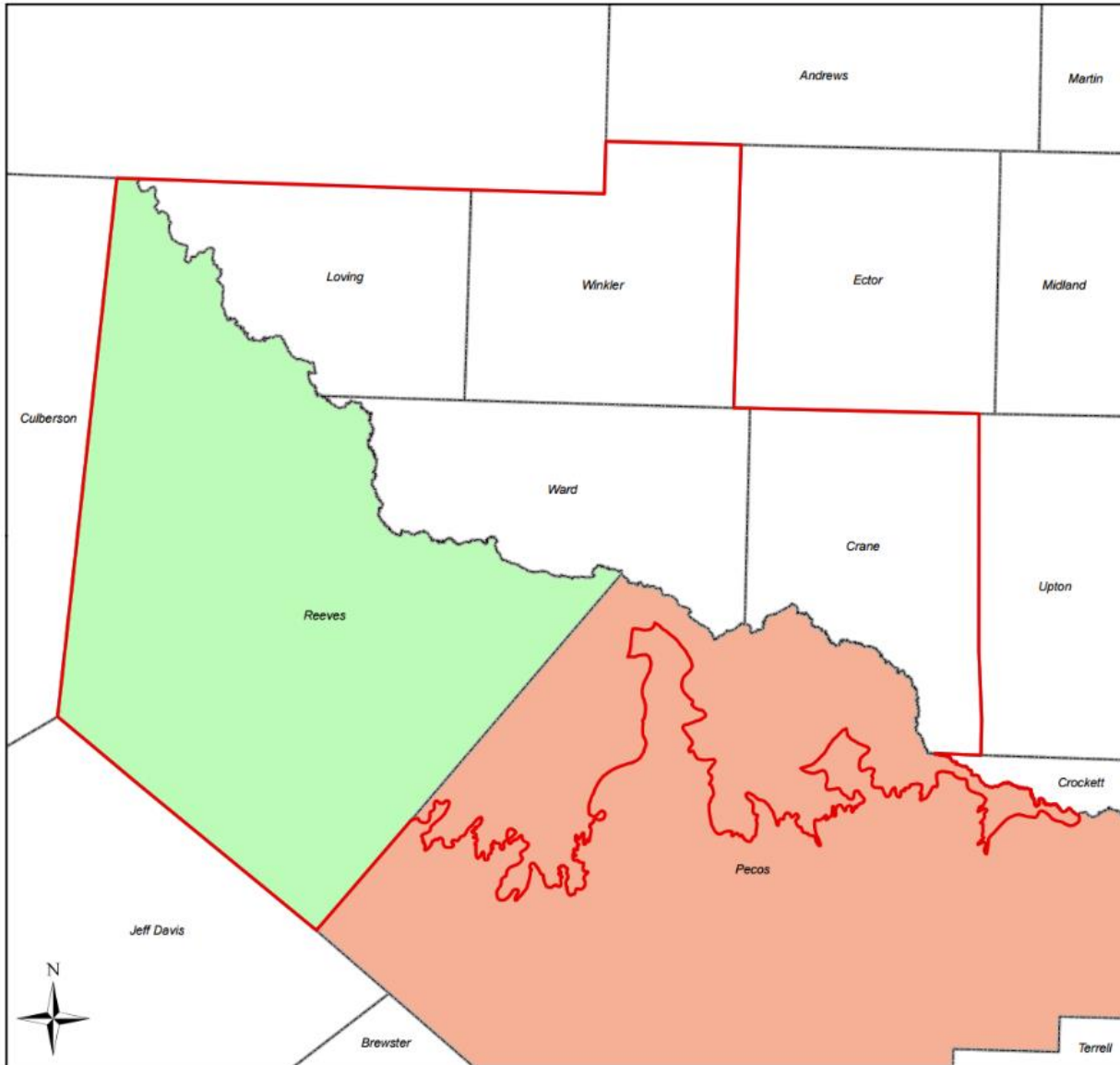


# GMA 3 and 7

- Two of 16 Groundwater Management Areas in Texas
  - TWDB delineated GMAs in 2002 as required in SB 2
- Districts within a GMA must adopt desired future conditions for relevant aquifers every five years
- GMA 3 has two confirmed districts
  - 7 Aquifers
- GMA 7 has 20 confirmed districts
  - 14 Aquifers



# Groundwater Management Area 3

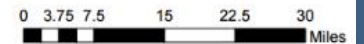


## MAP LEGEND

- Groundwater Management Area 3
- Counties
- Groundwater Conservation Districts**
- Middle Pecos GCD
- Unconfirmed Groundwater Conservation Districts**
- Reeves County GGD

**DISCLAIMER**  
 This map was generated by the Texas Water Development Board. No claims are made to the accuracy or completeness of the information shown herein nor to its suitability for a particular use. The scale and location of all mapped data are approximate. Boundaries for groundwater conservation districts are approximate and may not accurately depict legal descriptions.

Updated 8/26/2015



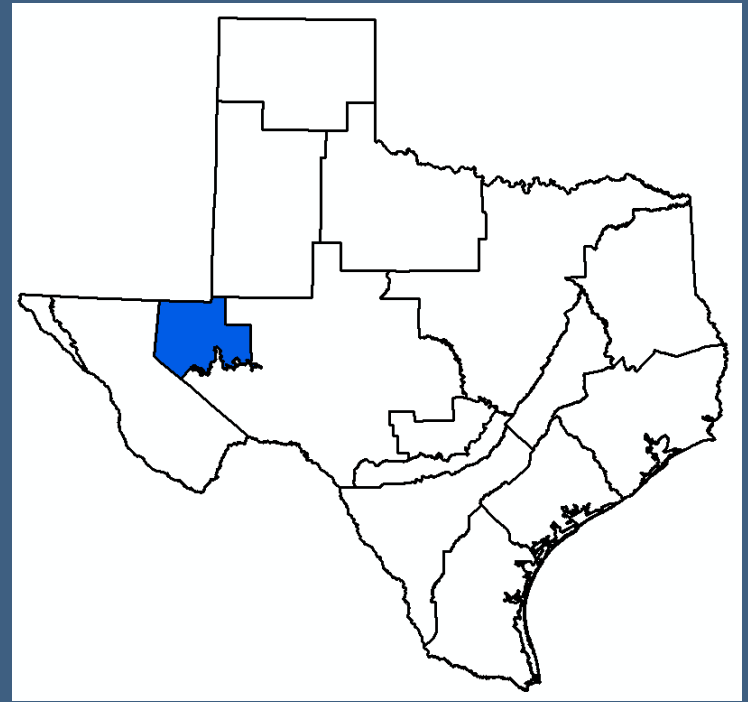
1 in = 9 miles





# GMA 3

- 2 GCDs
- 7 Aquifers
- 29 GAM Runs
- 4 Meetings (2016 and 2017)
- 6 Explanatory Reports
- 8 Technical Memoranda
- Consultant Cost = \$17,400.00



# GMA 3 Aquifers

- DFCs adopted
  - Capitan Reef Complex
  - Dockum
  - Edwards-Trinity (Plateau)
  - Pecos Valley
  - Rustler
- Not Relevant for Purposes of Joint Planning
  - Igneous
  - Ogallala



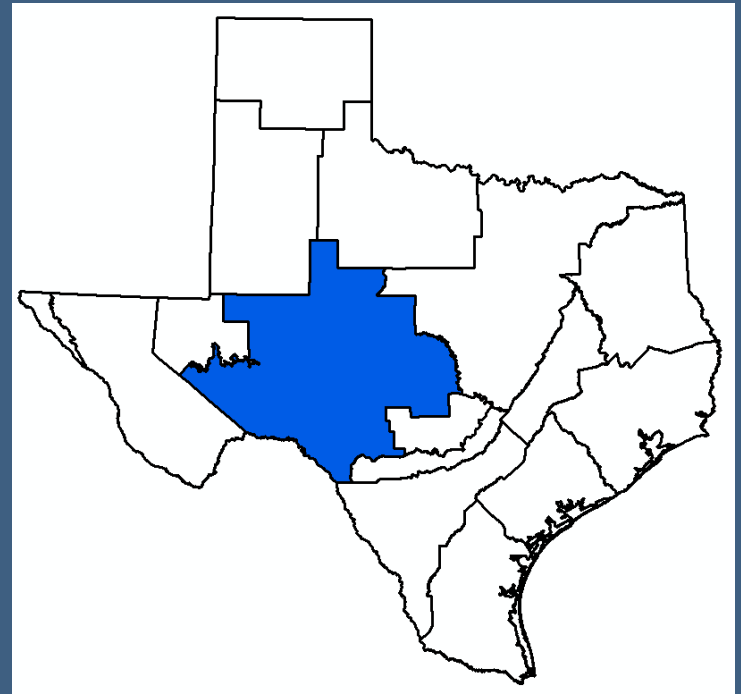
# DFCs in GMA 3

- Proposed on April 26, 2016
- Final adoption on October 26, 2016
- DFCs for Edwards-Trinity (Plateau) and Pecos Valley aquifers revised on December 13, 2017
  - TWDB identified issue with grid file used for calculation of average drawdowns



# GMA 7

- 21 GCDs
- 14 Aquifers
- 35 GAM Runs
- 10 meetings (2014 to 2018)
- 5 Explanatory Reports
- 11 Technical Memoranda
- Consultant Cost = \$62,970.23



# GMA 7 Aquifers

- DFCs adopted
  - Capitan Reef Complex
  - Dockum
  - Ellenburger-San Saba
  - Edwards-Trinity (Plateau)
  - Hickory
  - Ogallala
  - Pecos Valley
  - Rustler
  - Trinity





# GMA 7 Aquifers

- Not Relevant for Purposes of Joint Planning
  - Blaine
  - Igneous
  - Lipan
  - Marble Falls
  - Seymour



# DFCs in GMA 7

- Proposed on April 21, 2016
- Final adoption on September 22, 2016
  - Dockum, Ellenburger-San Saba, Hickory, Ogallala, Rustler
- Final adoption on March 23, 2017
  - Capitan Reef Complex, Edwards-Trinity (Plateau), Pecos Valley, Trinity
- Revised final adoption scheduled for March 22, 2018
  - Edwards-Trinity (Plateau), Pecos Valley, Trinity
  - Issue with grid file used for calculation of average drawdowns (from GMA 3 review)



# GMA 3 Modeled Available Groundwater

- TWDB GAM Run 16-027 MAG
- Issued March 14, 2018



# GMA 3 – Capitan MAG

**TABLE 2. MODELED AVAILABLE GROUNDWATER FOR THE CAPITAN REEF COMPLEX AQUIFER IN GROUNDWATER MANAGEMENT AREA 3 SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN FOR EACH DECADE BETWEEN 2020 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.**

County	RWPA	River Basin	2020	2030	2040	2050	2060	2070
Pecos	F	Rio Grande	4	4	4	4	4	4
Ward	F	Rio Grande	103	103	103	103	103	103
Winkler	F	Rio Grande	274	274	274	274	274	274
<b>Total</b>			<b>381</b>	<b>381</b>	<b>381</b>	<b>381</b>	<b>381</b>	<b>381</b>



# GMA 3 – Dockum MAG

**TABLE 4. MODELED AVAILABLE GROUNDWATER FOR THE DOCKUM AQUIFER IN GROUNDWATER MANAGEMENT AREA 3 SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN FOR EACH DECADE BETWEEN 2020 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.**

County	RWPA	River Basin	2020	2030	2040	2050	2060	2070
Crane	F	Rio Grande	94	94	94	94	94	94
Loving	F	Rio Grande	453	453	453	453	453	453
Pecos	F	Rio Grande	6,142	6,142	6,142	6,142	6,142	6,142
Reeves	F	Rio Grande	2,539	2,539	2,539	2,539	2,539	2,539
Ward	F	Rio Grande	2,150	2,150	2,150	2,150	2,150	2,150
Winkler	F	Rio Grande	5,987	5,987	5,987	5,987	5,987	5,987
Winkler	F	Colorado	13	13	13	13	13	13
<b>Total</b>			<b>17,378</b>	<b>17,378</b>	<b>17,378</b>	<b>17,378</b>	<b>17,378</b>	<b>17,378</b>



# GMA 3 – Edwards-Trinity (Plateau) and Pecos Valley MAG

**TABLE 6. MODELED AVAILABLE GROUNDWATER FOR THE EDWARDS-TRINITY (PLATEAU) AND PECOS VALLEY AQUIFES IN GROUNDWATER MANAGEMENT AREA 3 SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN FOR EACH DECADE BETWEEN 2020 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.**

County	RWPA	River Basin	2020	2030	2040	2050	2060	2070
Crane	F	Rio Grande	4,991	4,991	4,991	4,991	4,991	4,991
Loving	F	Rio Grande	2,982	2,982	2,982	2,982	2,982	2,982
Pecos	F	Rio Grande	122,899	122,899	122,899	122,899	122,899	122,899
Reeves	F	Rio Grande	189,744	189,744	189,744	189,744	189,744	189,744
Ward	F	Rio Grande	49,976	49,976	49,976	49,976	49,976	49,976
Winkler	F	Rio Grande	49,949	49,949	49,949	49,949	49,949	49,949
<b>Total</b>			<b>420,541</b>	<b>420,541</b>	<b>420,541</b>	<b>420,541</b>	<b>420,541</b>	<b>420,541</b>



# GMA 3 – Rustler MAG

**TABLE 8. MODELED AVAILABLE GROUNDWATER FOR THE RUSTLER AQUIFER IN GROUNDWATER MANAGEMENT AREA 3 SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN FOR EACH DECADE BETWEEN 2020 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.**

County	RWPA	River Basin	2020	2030	2040	2050	2060	2070
Loving	F	Rio Grande	200	200	200	200	200	200
Pecos	F	Rio Grande	3	3	3	3	3	3
Reeves	F	Rio Grande	2,387	2,387	2,387	2,387	2,387	2,387
Ward	F	Rio Grande	0	0	0	0	0	0
<b>Total</b>			<b>2,590</b>	<b>2,590</b>	<b>2,590</b>	<b>2,590</b>	<b>2,590</b>	<b>2,590</b>



# GMA 7 MAGs

- TWDB has not issued draft report yet
- Awaiting final adoption of revised DFCs
- Summaries in next slides are from Technical Memos that were developed
- Numbers could change as a result of TWDB evaluation





# GMA 7 Capitan

- GMA 7 Technical Memorandum 16-03, Scenario 4
- Pumping in Pecos County = 34,500 AF/yr



# GMA 7 Dockum

- GMA 7 Technical Memorandum 16-01, Scenario 17
- Pecos and Reagan Counties

**Table 4. Summary of Scenario 17 Results - Dockum Aquifer**

Year	Pecos County		Reagan County	
	Pumping (AF/yr)	Drawdown (ft from 2012)	Pumping (AF/yr)	Drawdown (ft from 2012)
2020	17,976	20	2,138	5
2030	17,976	32	2,138	9
2040	17,976	39	2,138	11
2050	17,976	44	2,138	12
2060	17,976	48	2,138	13
2070	17,888	52	2,138	14



# GMA 7 Ellenburger-San Saba and Hickory

- GMA 7 Technical Memorandum 16-02, Scenario 3

**Table 4. Summary of Pumping and Drawdown - Scenarios 1 to 5**

Aquifer	County	2011 to 2070 Pumping (AF/yr)				
		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Marble Falls	San Saba	2,172	3,257	4,343	5,429	6,515
Ellenburger-San Saba	Gillespie	3,231	4,847	6,463	8,078	9,694
Ellenburger-San Saba	Kimble	267	401	535	669	802
Ellenburger-San Saba	Mason	1,932	2,898	3,863	4,829	5,795
Ellenburger-San Saba	McCulloch	2,246	3,369	4,492	5,615	6,738
Ellenburger-San Saba	Menard	155	232	309	387	464
Ellenburger-San Saba	SanSaba	4,195	6,293	8,391	10,488	12,586
Hickory	Concho	13	20	27	34	40
Hickory	Gillespie	907	1,360	1,814	2,267	2,721
Hickory	Kimble	83	124	165	207	248
Hickory	Llano	1,011	1,516	2,021	2,526	3,032
Hickory	Mason	7,533	11,299	15,066	18,832	22,599
Hickory	McCulloch	17,034	20,751	24,468	28,185	31,902
Hickory	Menard	2,562	2,644	2,725	2,806	2,887
Hickory	SanSaba	3,875	5,813	7,751	9,688	11,626



# GMA 7 Edwards-Trinity (Plateau), Pecos Valley, Trinity

- GMA 7 Technical Memorandum 18-01

**Table 6. Pumping to Achieve the Drawdown (Proposed MAGs)**

County	Pumping (AF/yr) by Decade						
	2010	2020	2030	2040	2050	2060	2070
Coke	997	997	997	997	997	997	997
Crockett	5,447	5,447	5,447	5,447	5,447	5,447	5,447
Ector	5,542	5,542	5,542	5,542	5,542	5,542	5,542
Edwards	5,676	5,676	5,676	5,676	5,676	5,676	5,676
Gillespie	4,979	4,979	4,979	4,979	4,979	4,979	4,979
Glasscock	65,186	65,186	65,186	65,186	65,186	65,186	65,186
Irion	3,289	3,289	3,289	3,289	3,289	3,289	3,289
Kimble	1,387	1,387	1,387	1,387	1,387	1,387	1,387
Menard	2,597	2,597	2,597	2,597	2,597	2,597	2,597
Midland	23,232	23,232	23,232	23,232	23,232	23,232	23,232
Pecos (GMA 7)	117,309	117,309	117,309	117,309	117,309	117,309	117,309
Reagan	68,233	68,233	68,233	68,233	68,233	68,233	68,233
Real	7,524	7,524	7,524	7,524	7,524	7,524	7,524
Schelicher	8,034	8,034	8,034	8,034	8,034	8,034	8,034
Sterling	2,495	2,495	2,495	2,495	2,495	2,495	2,495
Sutton	6,411	6,411	6,411	6,411	6,411	6,411	6,411
Taylor	489	489	489	489	489	489	489
Terrell	1,420	1,420	1,420	1,420	1,420	1,420	1,420
Upton	22,369	22,369	22,369	22,369	22,369	22,369	22,369
Uvalde	1,998	1,998	1,998	1,998	1,998	1,998	1,998



# GMA 7 Edwards-Trinity (Plateau) for Kinney County

- Based on different model (Kinney County Model) for spring flow based DFC
- No change from 2010 DFC expected (TWDB GAM Run 10-043 MAG, Version 2, 11/12/2012)
- MAG = 70,338 AF/yr for all decades



# GMA 7 Edwards-Trinity (Plateau) for Val Verde County

- Based on different model (Val Verde County Model) for spring flow based DFC
- Adopted DFC for average San Felipe Spring flow between 73 and 75 cfs
  - Range is based on different assumed pumping locations of “50K” pumping scenario
- Pumping assumed is 50,000 AF/yr



# GMA 7 Ogallala

- GMA 7 Technical Memorandum 16-01, Scenario 10
- Acknowledges that pumping rates will decline as a result of decreasing saturated thickness
- Applies only to Glasscock County
  - 2012 Pumping: 5,346 AF/yr (last year of calibrated model)
  - 2013 Pumping: 8,019 AF/yr (initial year of simulation)
  - 2070 Pumping: 6,577 AF/yr (final year of simulation)



# GMA 7 Rustler

- GMA 7 Technical Memorandum 15-05, Scenario 4

**Table 5. Summary of Pumping for Initial Scenarios**

County	Scenario						
	1	2	3	4	5	6	7
Loving	140	160	180	200	220	240	260
Pecos(GMA3)	2	2	3	3	3	4	4
Pecos(GMA7)	4,929	5,634	6,338	7,042	7,746	8,450	9,155
Reeves	1,671	1,910	2,148	2,387	2,626	2,864	3,103
Ward	0	0	0	0	0	0	0
Total	6,742	7,706	8,669	9,632	10,595	11,558	12,522





# Draft MAG Differences (2016 vs. 2021)

## Minor Changes

- Edwards-Trinity (Plateau), Pecos Valley, Trinity
- Dockum
- Rustler
- Ellenburger-San Saba

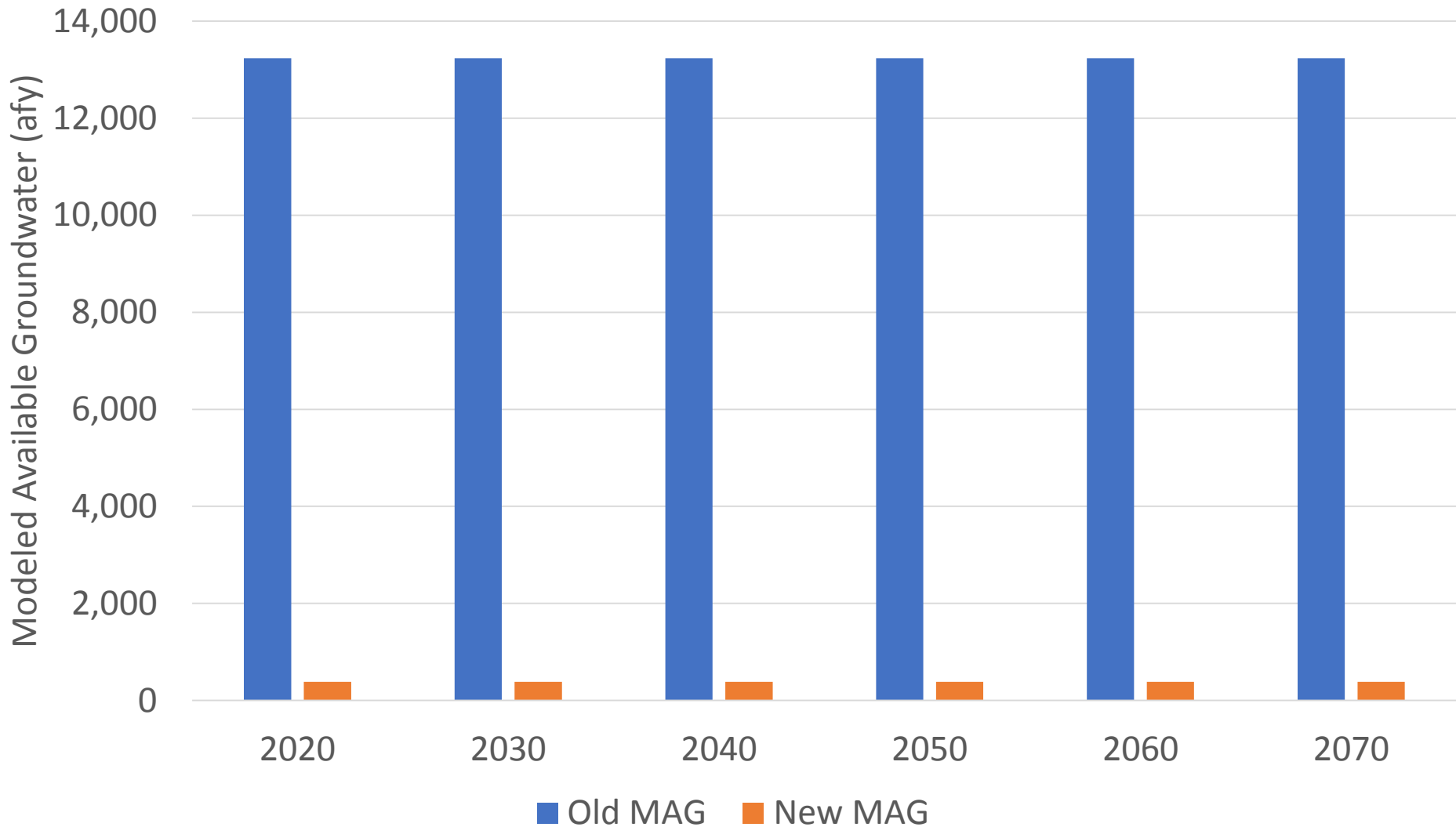
## Significant Changes

- Capitan Reef
- Hickory
  - San Angelo McCulloch County Well Field



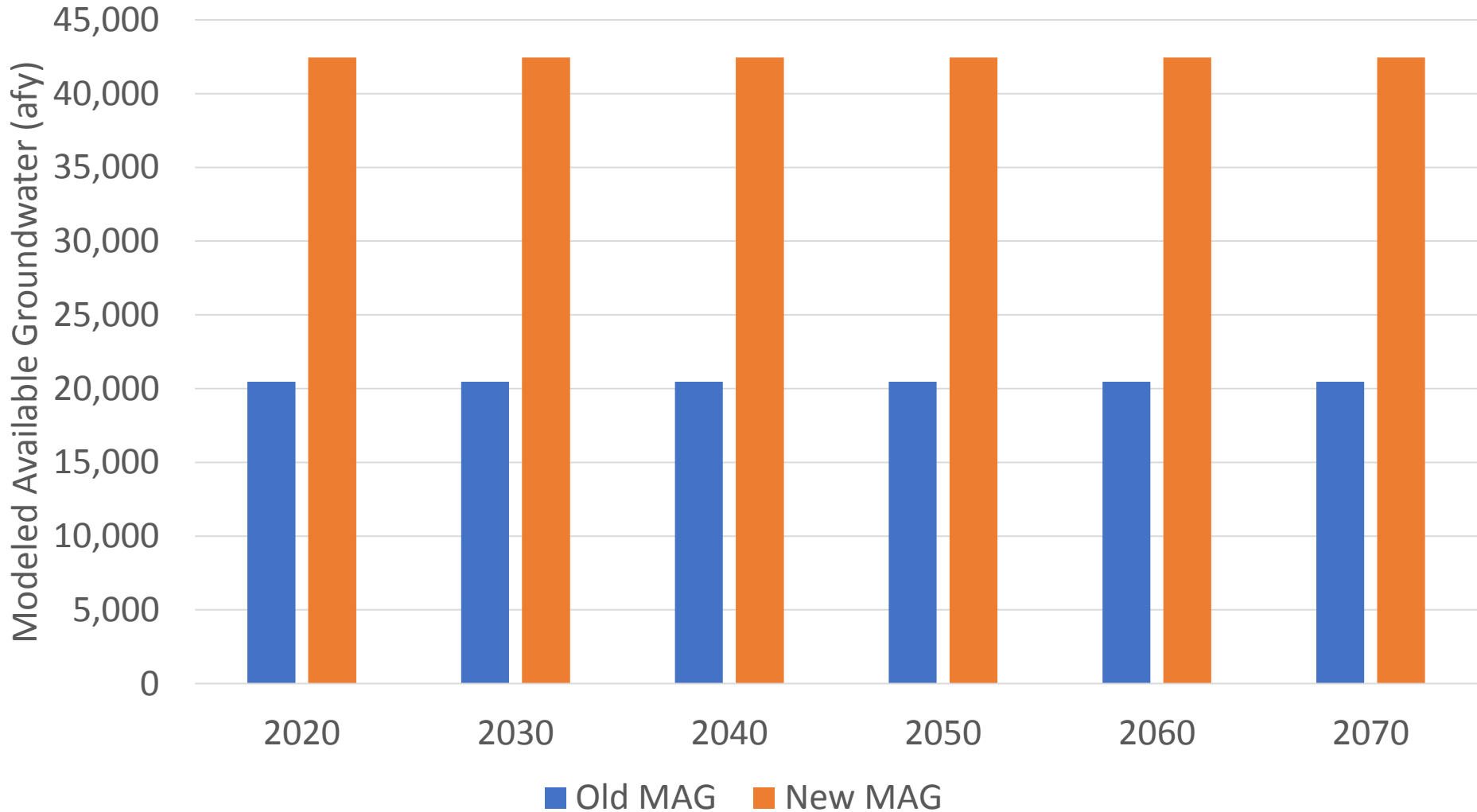
# Capitan

## GMA3 Capitan Total MAG



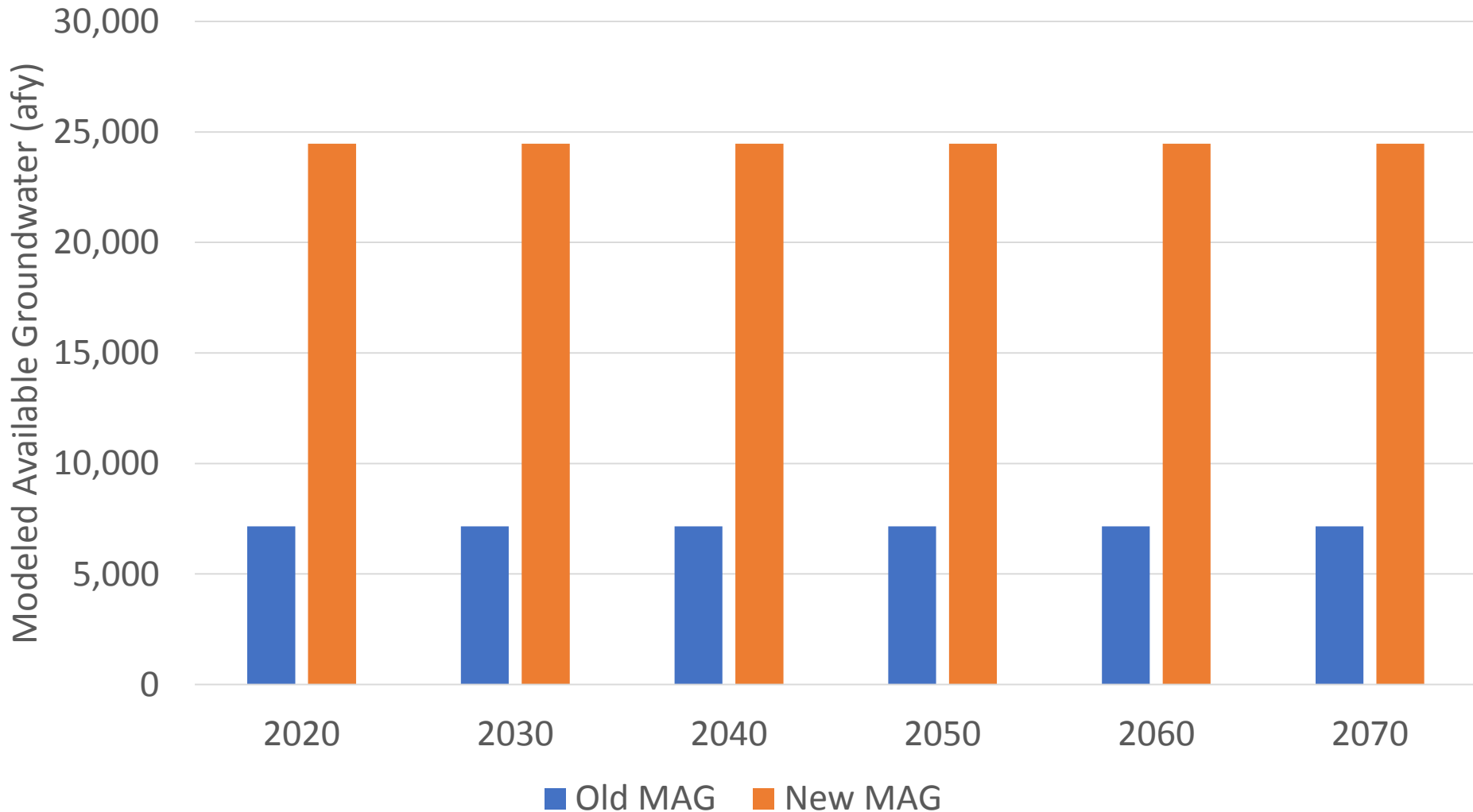
# Hickory

GMA7 Hickory Total MAG

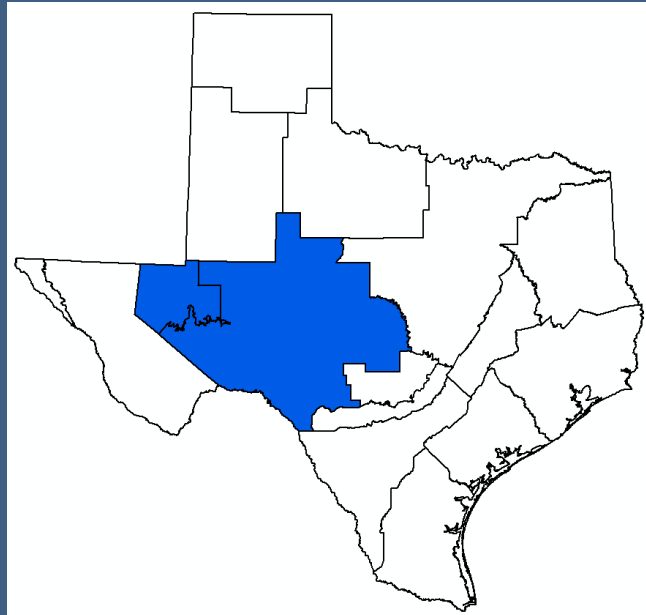


# McCulloch County (Hickory)

GMA7 McCulloch County MAG



# Questions and Discussion



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**CONSIDER REQUESTING EXTENSION OF  
TIME FOR REGION F TO SUBMIT THE  
TECH MEMO TO THE TWDB**



**PRESENTATION AND DISCUSSION  
OF DRAFT METHODOLOGY TO  
IDENTIFY POTENTIALLY FEASIBLE  
WATER MANAGEMENT STRATEGIES**



From TAC 357.12b

*“A RWPG shall hold a public meeting to determine the process for identifying potentially feasible water management strategies; the process shall be documented and shall include input received at a public meeting; ...”*





# Identification Process

1. Identify entities with needs
2. Review recommended strategies in 2016 plan
3. Review new studies/reports
4. Identify potential new or changed strategies
5. Review strategy types appropriate for Region F
6. Contact entity for input
7. Contact RWPG representative for county-wide WUGs
8. Verify recommendations



**Seek Input** → Identify PF WMSs



Evaluate WMSs

Quantity, Cost, and Reliability  
Environmental Factors  
Impacts  
Other Relevant Considerations



**Seek Input**



Recommended  
WMS

Alternative  
WMS

Considered &  
Not Selected  
WMS



# Feasible Strategies

## Considerations

- A strategy must use proven technology
- A strategy should have an identifiable sponsor
- Must consider end use. Includes water quality, economics, geographic constraints, etc.
- Must meet existing regulations



# Feasible Strategies by Type

- 24 Water Management Strategy Types required to consider by TWDB
  - Not all are applicable to every situation
  - Not all are applicable to Region F



# Feasible Strategies by Type

- Strategy Types Likely Not Appropriate for Region F
  - Drought Management (not a long-term supply strategy)
  - New Surface Water Supplies
  - Enhancement of Yields
- Strategy Types Not Appropriate for Region F
  - Marine Seawater Desalination
  - Cancellation of Water Rights
  - Rainwater Harvesting



**PUBLIC COMMENTS ON DRAFT  
METHODOLOGY TO IDENTIFY OF  
POTENTIALLY FEASIBLE WATER  
MANAGEMENT STRATEGIES**



**CONSIDER ADOPTION OF  
METHODOLOGY TO IDENTIFY  
POTENTIALLY FEASIBLE WATER  
MANAGEMENT STRATEGIES**



**CONSIDER APPROVING A PARTIAL  
SCOPE OF WORK FOR TASK 5A AND  
AUTHORIZE THE DESIGNATED  
POLITICAL SUBDIVISION TO SUBMIT  
A REQUEST TO THE TWDB FOR A  
NOTICE-TO-PROCEED WITH THE  
PARTIAL SCOPE OF WORK FOR TASK  
5A AND EXECUTE ANY REQUIRED  
CONTRACT AMENDMENTS**





# Questions?

