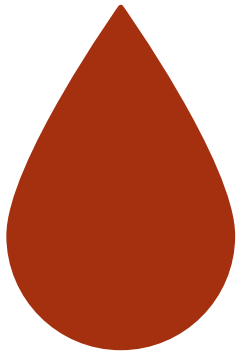
RED RIVER
GROUNDWATER CONSERVATION DISTRICT

2020 Annual Report

DECEMBER 16, 2021
BOARD OF DIRECTORS
MEETING

Goal 1: Providing the Most Efficient Use of Water



Exempt Wells Registered with the District

Use	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Agriculture	5	2	1	5	5	0	0	2	0	20
Commercial	1	2	0	0	0	2	4	3	2	14
Domestic	47	61	41	69	65	66	68	50	75	542
Golf Course	0	2	0	0	0	0	0	0	0	2
Industrial	0	0	0	0	0	0	0	0	0	0
Irrigation	1	1	1	0	1	0	1	0	1	6
Livestock	6	9	7	9	4	4	1	2	1	43
Monitoring	7	0	0	0	0	0	0	12	0	19
Oil / Gas	0	2	1	0	0	0	0	0	0	3
Other	0	0	0	0	0	0	0	0	0	0
Public Water	40	4	1	0	0	1	1	0	0	47
Surface Impoundments	1	1	3	1	1	2	2	0	0	11
Total	***108***	***84***	***55***	***84***	***76***	***75***	***77***	***69***	***79***	***707***

Non-Exempt Wells Registered with the District

Use	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Agriculture	8	4	5	0	0	0	2	1	1	21
Commercial	4	0	0	1	1	2	2	2	3	15
Domestic	0	0	0	0	0	0	0	0	0	0
Golf Course	7	5	0	1	0	0	0	0	0	13
Industrial	0	0	0	0	0	0	0	0	0	0
Irrigation	0	1	1	0	0	0	0	0	2	4
Livestock	0	0	0	0	0	0	0	0	0	0
Monitoring	0	0	0	0	0	0	0	0	0	0
Oil / Gas	5	7	3	0	2	1	0	0	0	18
Other	0	0	0	0	0	0	0	0	0	0
Public Water	184	28	1	0	2	2	5	3	1	226
Surface Impoundments	1	0	0	5	1	0	0	2	2	11
Total	***209***	***45***	***10***	***7***	***6***	***5***	***9***	***8***	***9***	***308***

Wells Registered with the District

Use	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Agriculture	13	6	6	5	5	0	2	3	1	41
Commercial	5	2	0	1	1	4	6	5	5	29
Domestic	47	61	41	69	65	66	68	50	75	542
Golf Course	7	7	0	1	0	0	0	0	0	15
Industrial	0	0	0	0	0	0	0	0	0	0
Irrigation	1	2	2	0	1	0	1	0	3	10
Livestock	6	9	7	9	4	4	1	2	1	43
Monitoring	7	0	0	0	0	0	0	12	0	19
Oil / Gas	5	9	4	0	2	1	0	0	0	21
Other	0	0	0	0	0	0	0	0	0	0
Public Water	224	32	2	0	2	3	6	3	1	273
Surface Impoundments	2	1	3	6	2	2	2	2	2	22
Total	***317***	***129***	***65***	***91***	***82***	***80***	***86***	***77***	***88***	***1015***

Well Inspections During 2020

Month	*Fannin County*	*Grayson County*	*Total*
January	0	6	6
February	5	16	21
March	2	13	15
April	5	10	15
May	5	3	8
June	2	7	9
July	3	22	25
August	1	8	9
September	1	4	5
October	1	7	8
November	1	9	10
December	2	3	5
Total	*28*	*108*	*136*

Wells Measured for the District's Monitoring Program

Year	*Fannin*	*Grayson*	*Total*
2010	7	29	36
2011	7	28	35
2012	7	11	18
2013	7	35	42
2014	7	10	17
2015	7	10	17
2016	8	10	18
2017	7	10	17
2018	7	12	19
2019	7	11	18
2020	11	23	34
2021	3	28	31

Water Quality From TCEQ

ANALYTE	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
NITRATE	0.17	0.12	0.09	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.11
FLUORIDE	0.80	0.89	0.88	0.77	0.81	0.75	0.71	0.75	0.66	0.64	0.77
SULFATE	80.68	97.37	74.51	79.03	95.78	71.96	82.92	96.42	83.95	94.24	85.69
CHLORIDE	66.64	57.08	62.58	66.62	52.48	66.73	73.39	63.26	69.87	71.80	65.04
TDS	613.83	636.32	627.44	615.17	626.07	599.24	586.15	616.70	603.18	623.73	614.78
CONDUCTIVITY@25CUMHOS/CM	1037.09	1079.09	963.17	1026.63	1043.15	1030.59	1031.15	1075.08	1034.62	1061.69	1038.23
ALKALINITY, TOTAL	347.88	356.63	360.42	339.87	355.12	348.82	342.04	350.33	358.79	340.49	350.04
ALKALINITY, BICARBONATE	326.77	331.41	339.91	317.56	329.09	315.38	319.14	326.95	323.18	320.04	324.94
BROMOFORM	3.78	6.94	5.12	3.87	3.52	3.95	4.45	3.57	3.87	3.51	4.26
DIBROMOCHLOROMETHANE	2.98	3.91	3.50	2.94	3.02	3.63	3.48	2.93	3.24	2.83	3.25
SODIUM	224.78	218.75	225.07	221.47	235.07	231.27	211.89	240.23	232.39	256.36	229.73
BARIUM	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.01	0.02
CALCIUM	4.84	4.77	1.64	4.68	2.73	4.44	7.77	4.38	7.02	1.62	4.39
ALKALINITY, PHENOLPHTHALEIN	13.68	16.37	18.57	18.54	21.33	27.94	13.47	13.84	20.51	11.81	17.61
MANGANESE	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
ALKALINITY, CACO3 STABILITY	25.67	32.46	35.81	32.64	38.37	46.59	27.69	27.68	41.03	23.61	33.15
MAGNESIUM	1.50	1.18	0.57	0.75	0.90	1.27	1.39	1.60	1.46	0.64	1.13
COPPER, FREE	0.01	0.01	0.01	0.01	0.01	0.01	0.00	-	-	-	0.01
ZINC	0.02	0.02	0.02	0.02	0.02	0.01	0.03	0.02	0.04	0.01	0.02
BROMODICHLOROMETHANE	2.58	3.60	4.11	2.51	2.57	2.67	2.57	2.20	2.35	2.04	2.72
ALUMINUM	0.01	0.02	0.11	0.01	0.01	0.01	0.01	0.07	0.03	0.01	0.03
CHROMIUM	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PH	8.63	-	-	-	-	-	-	-	-	-	8.63

Percentage of Registered Non-Exempt Wells Meeting Reporting Requirements

Year	*Percentage Meeting Reporting Requirements*
2017	88%
2018	92%
2019	96%
2020	89%

Percentage of Registered Non-Exempt Wells Inspected Annually

Year	*Percentage of Well Inspected*
2017	44%
2018	48%
2019	15%
2020	24%

Non-Exempt Production by County (All Production is in Acre-Feet)

Year	*Fannin*	*Grayson*	*Total*
2012	1,081	9,562	10,643
2013	2,641	12,442	15,083
2014	2,619	12,622	15,241
2015	2,958	12,291	15,249
2016	2,973	11,696	14,669
2017	2,661	11,674	14,335
2018	3,143	13,716	16,860
2019	3,437	12,862	16,299
2020	3,243	13,377	16,620
Average	***2,751***	***12,249***	***15,000***

Non-Exempt Production by Aquifer (All Production is in Acre-Feet)

Year	River Alluvial	Trinity (Antlers)	Trinity (Paluxy)	Washita Group	Woodbine
2012	25	6,155	13	98	4,352
2013	31	7,446	131	218	7,257
2014	48	6,971	148	204	7,870
2015	125	7,215	276	139	7,495
2016	81	6,514	180	161	7,732
2017	47	6,700	248	142	7,198
2018	50	7,469	398	131	8,812
2019	201	6,470	221	120	9,288
2020	213	6,839	246	120	9,202
Average	**91**	**6,864**	**207**	**148**	**7,690**

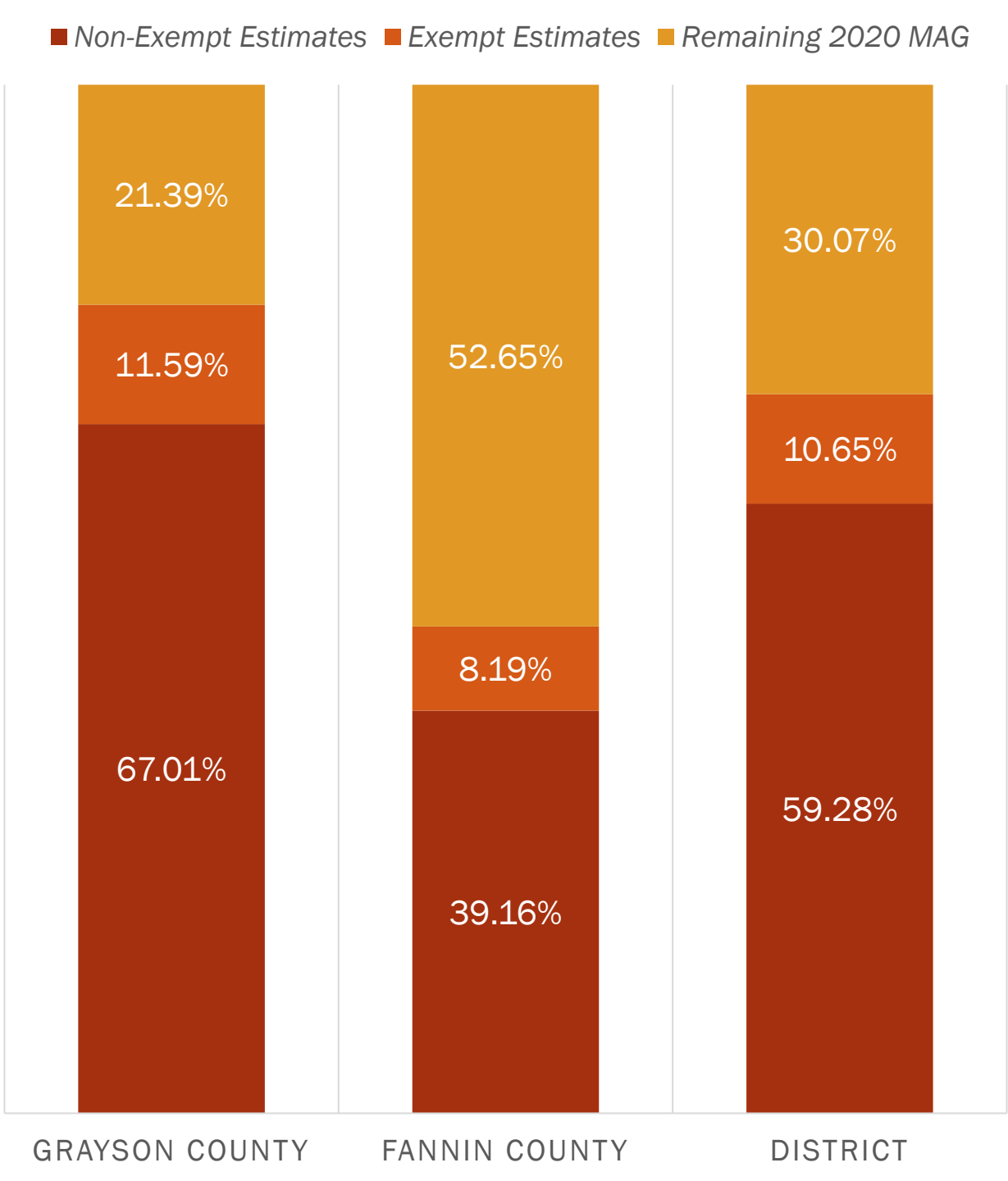
Non-Exempt Production by Use (All Production is in Acre-Feet)

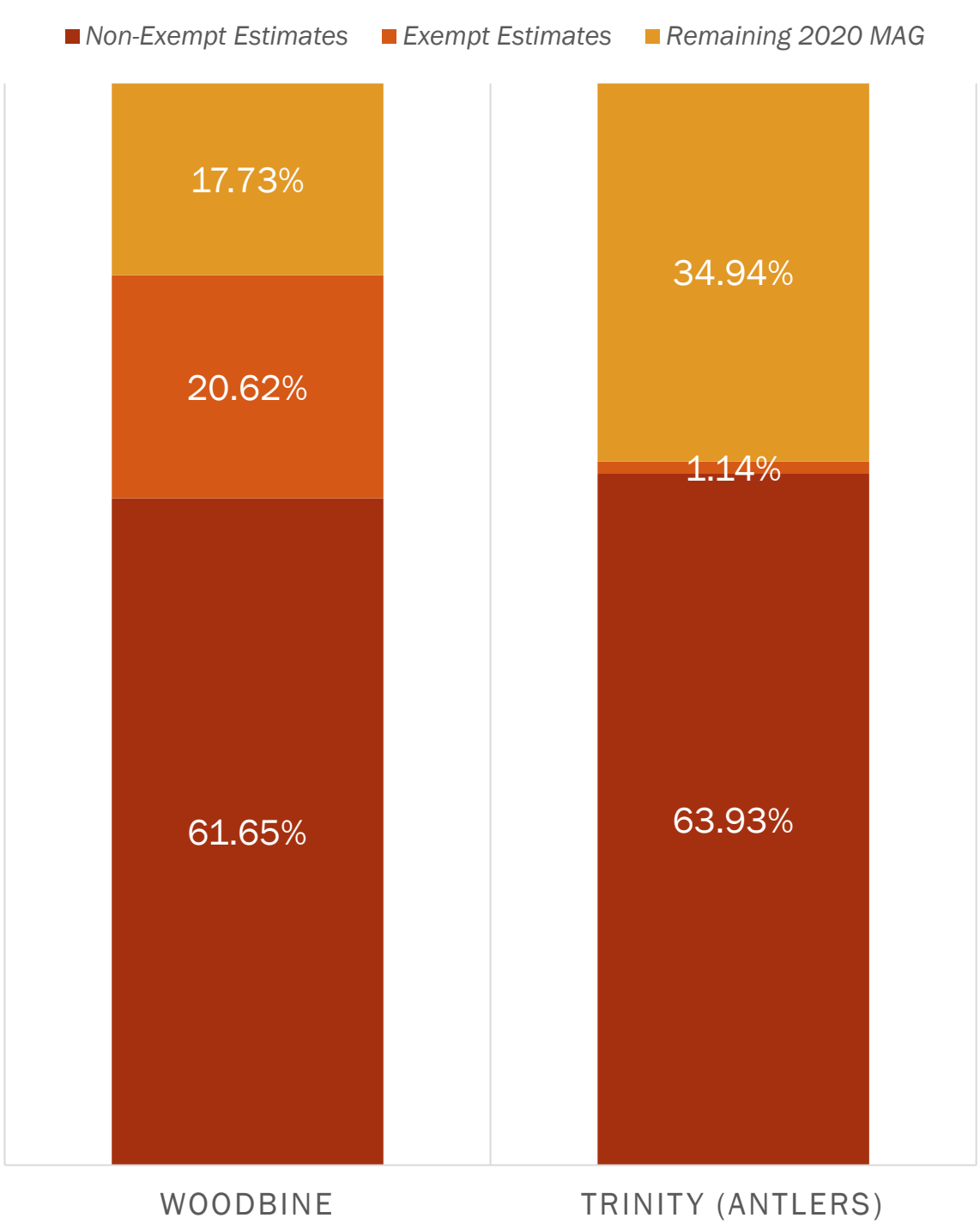
Use	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
Public Water	10,087	13,563	13,343	13,706	13,052	13,090	15,547	15,017	14,785	13,577
Agriculture	514	1,033	997	659	885	869	897	881	1,358	899
Commercial	0	0	0	0	50	7	37	47	104	27
Golf Course	0	333	529	606	312	148	197	157	152	270
Irrigation	0	0	200	194	207	198	165	155	189	145
Monitoring	42	48	53	45	0	0	0	11	0	22
Oil / Gas	0	103	115	35	158	4	6	1	0	47
Surface Impoundments	0	3	4	5	5	19	12	30	33	12

Estimated Exempt Production (All Production is in Acre-Feet)

Use	Active Wells	Estimated Production (Ac-ft)	3x Estimated Production (Ac-ft)	Methodology
Agriculture	19	366	1,098	Average time pumping per day of 2 hours
Commercial	15	3	8	Assumed average consumption is 150 gallons per day
Domestic Use	571	96	288	Assumed average consumption is 150 gallons per day
Golf Course Irrigation	2	3	8	Average time pumping per day of 2 hours
Irrigation	6	15	46	Average time pumping per day of 2 hours
Livestock	46	322	967	Average time pumping per day of 6 hours
Oil/Gas	2	5	16	Average time pumping per day of 2 hours
Pond/Surface Impoundments	10	88	263	Average time pumping per day of 2 hours
Total	***671***	***898***	***2,693***	

Average Production Compared to 2020 MAG by County





Average Production Compared to 2020 MAG by Aquifer

Permits Approved by the Board

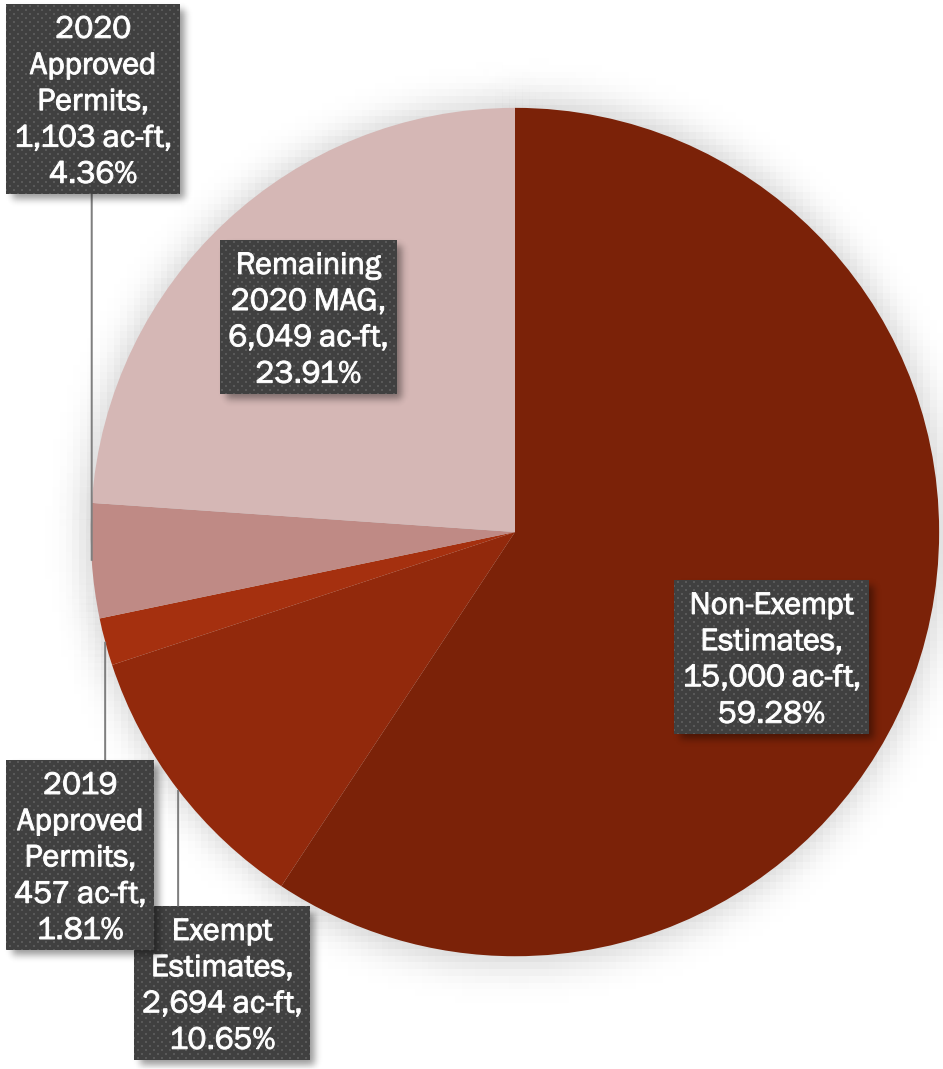
	2019	*2020*	*Total*
New Permits	4	10	14
Permit Amendments	0	0	0
Total Permits	4	10	14
# of Wells	6	14	20
Requested Amount (gal)	148,943,106	359,451,900	508,395,006

Aquifer	*2019*	*2020*	*Total*
Trinity (Antlers)	1	2	3
Trinity (Paluxy)	0	2	2
Woodbine	3	6	9
Total	***4***	***10***	***14***

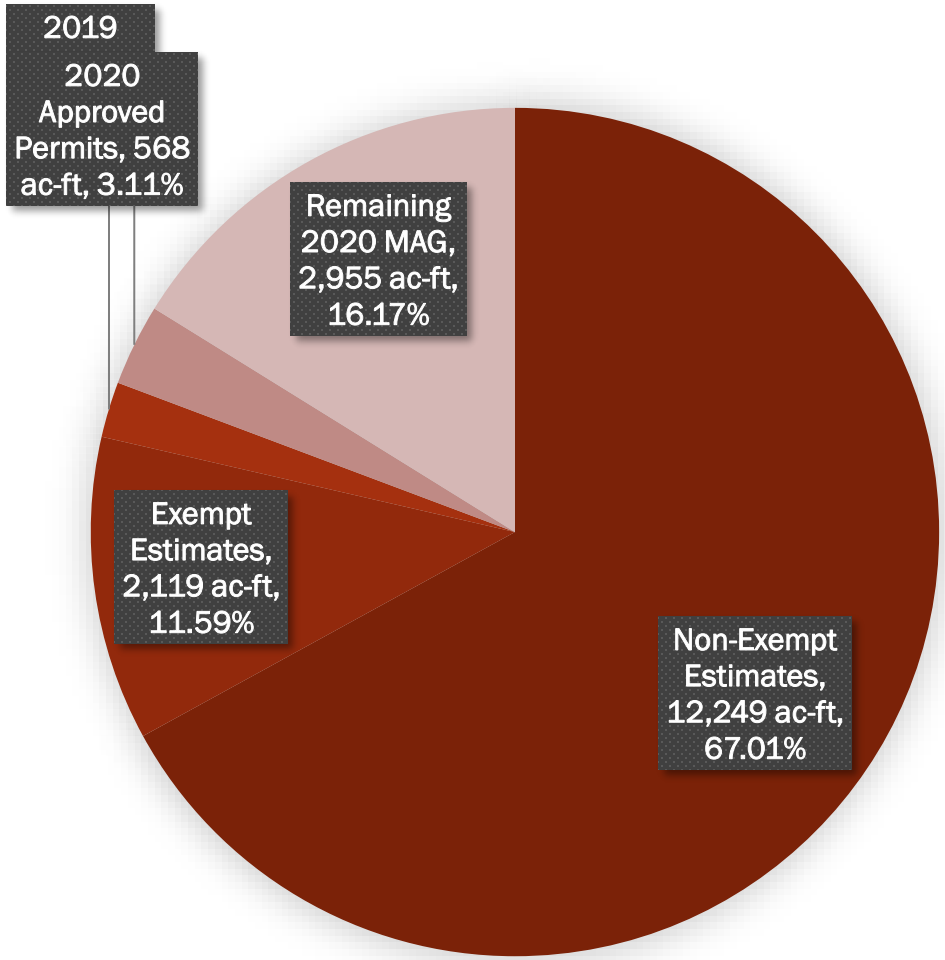
Permits Approved by the Board

Use	*2019*	*2020*	*Total*
Agriculture/Sod Production	0	1	1
Concrete Production	0	1	1
Construction	2	2	4
Industrial	1	0	1
Landscape Irrigation and Surface Impoundment(s)	0	2	2
Manufacturing	0	2	2
Public Water System	1	2	3
Total	*4*	*10*	*14*

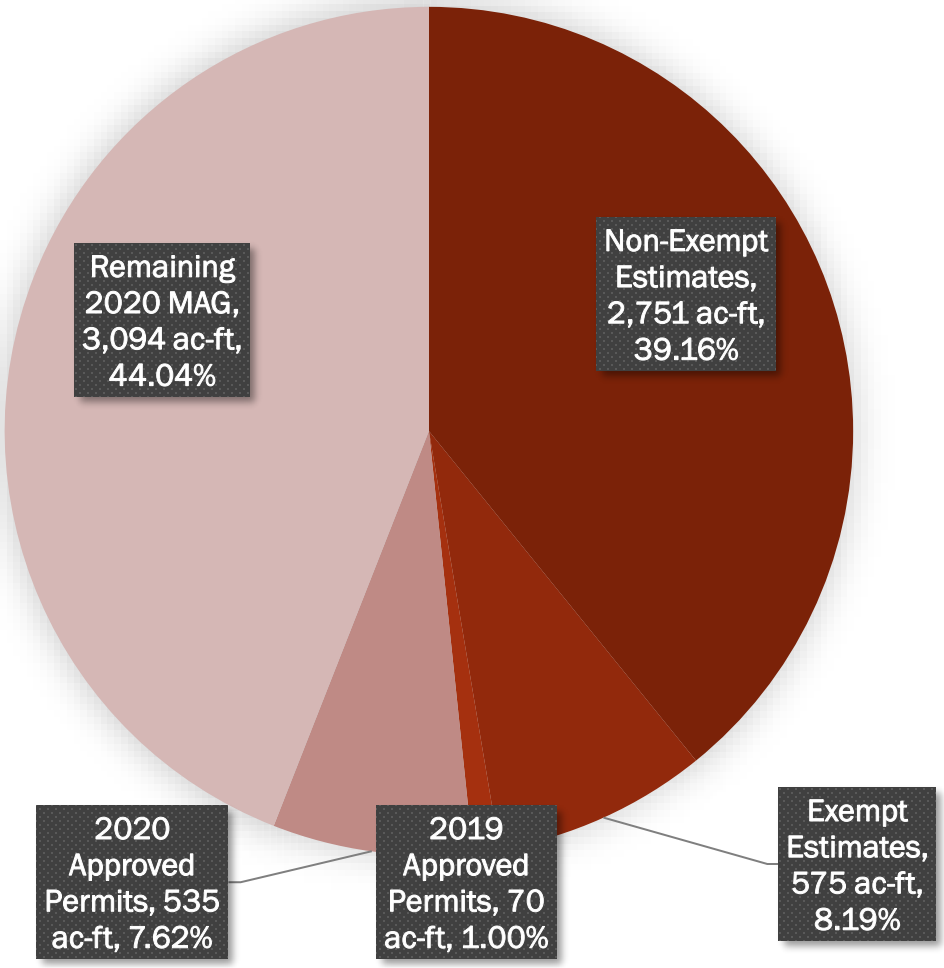
District Wide Permits Approved by the Board



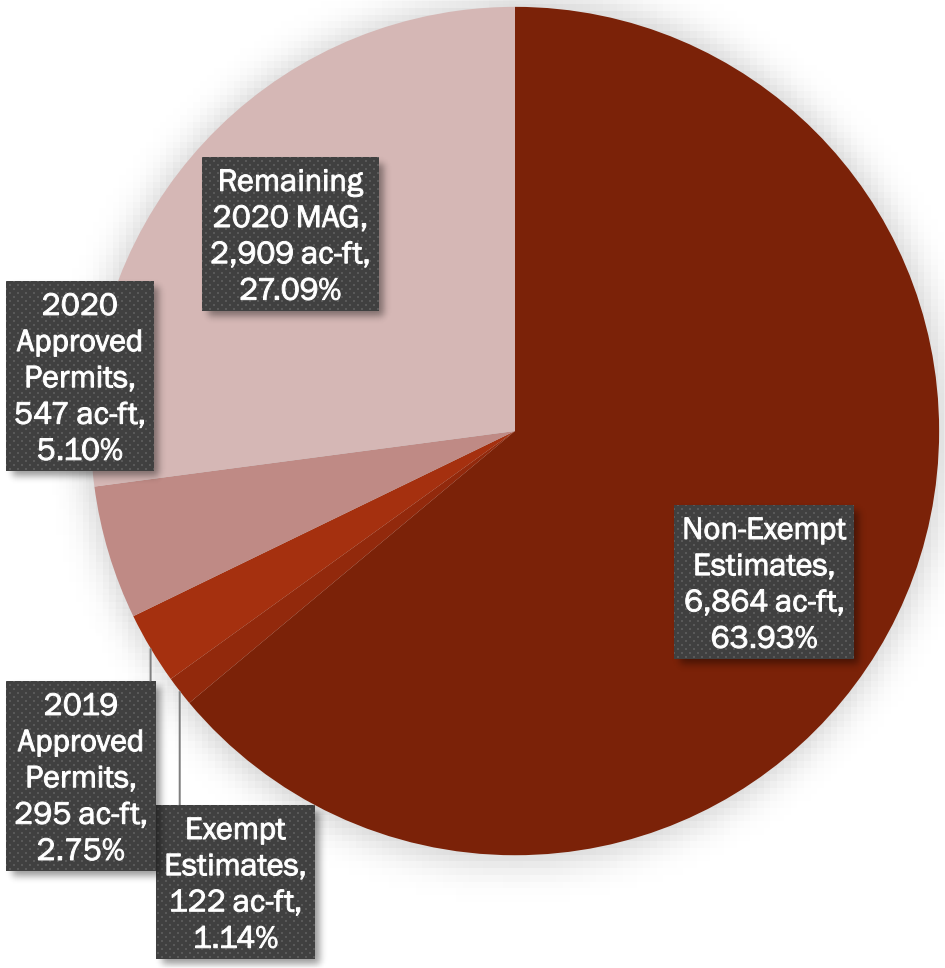
Grayson County Permits Approved by the Board



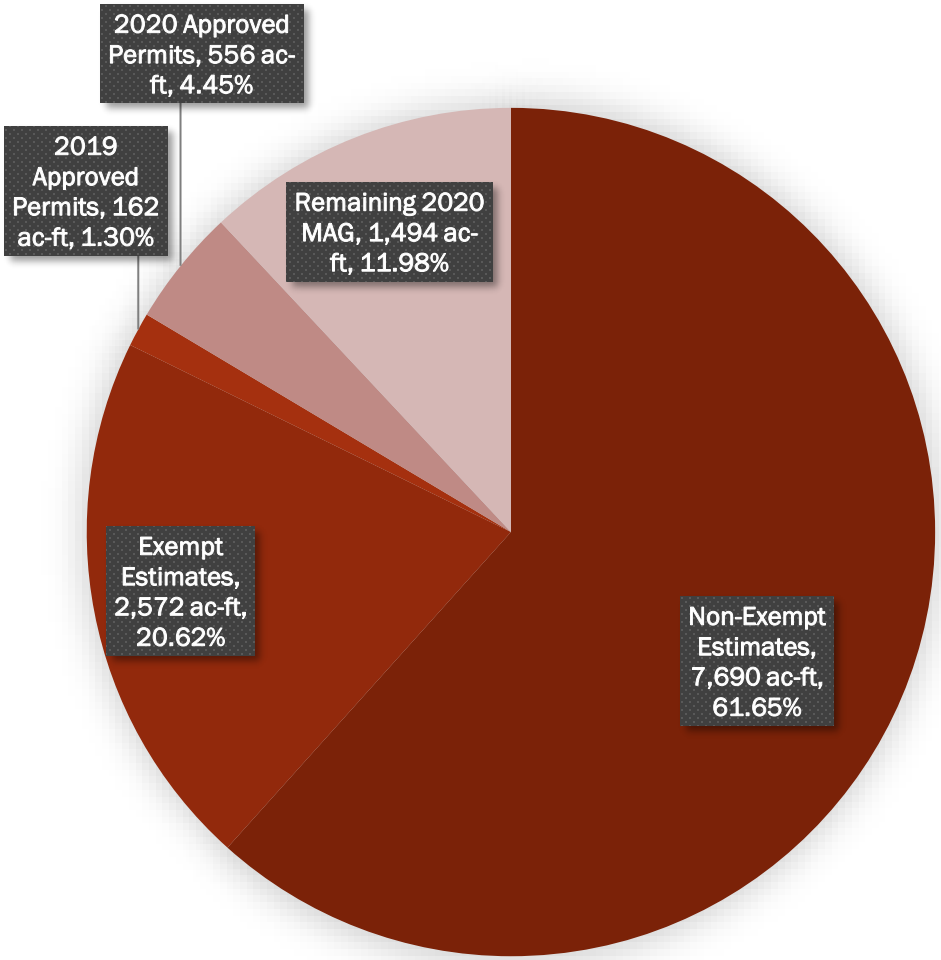
Fannin County Permits Approved by the Board



Trinity (Antlers) Permits Approved by the Board



Woodbine Permits Approved by the Board



Goal 2: Controlling and Preventing Waste of Groundwater

Total Fees Paid and Groundwater Usage Based on the Fees Paid

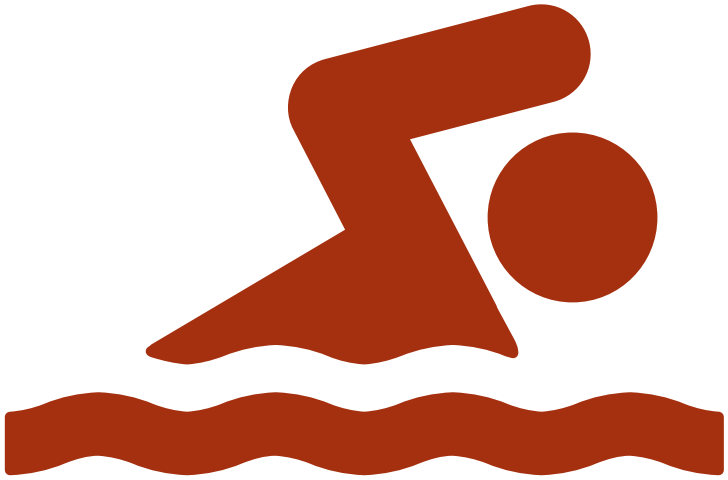
Year	*Total Fees Paid*	*Total Groundwater Used (gallons)*
2013	$297,037.92	4,243,398,860
2014	$284,250.06	4,060,715,143
2015	$322,861.01	4,612,300,150
2016	$303,474.94	4,331,070,580
2017	$302,897.59	4,327,108,428
2018	$337,667.83	4,823,826,143
2019	$357,879.11	5,112,558,714
2020	$343,835.00	4,911,928,571
Average	*$315,737.93*	*4,552,863,324*

Violations and Investigations of Potential Waste of Groundwater

- 3 Owners/Drillers accounting for 4 minor and 2 major violations
- One report of potential waste

Goal 3: Controlling and Preventing Subsidence

Due to the geology of the Northern Trinity/Woodbine Aquifers in the District, problems resulting from water level declines causing subsidence are not technically feasible and as such, a goal addressing subsidence is not applicable. The District's Hydrogeologist presented subsidence information to the Board of Directors in 2019.



Goal 4: Addressing Conjunctive Surface Water Management Issues

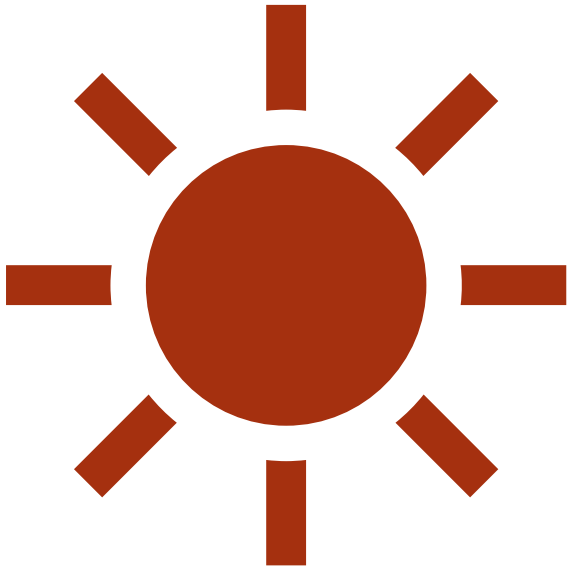
Region C and GMA 8

- Region C Water Planning Group held 2 meetings in 2020, on February 25th and September 21st. General Manager Drew Satterwhite attended both meetings.
- Groundwater Management Area 8 (GMA 8) held 4 meetings in 2020, on February 26th, May 15th, August 7th, and October 27th. General Manager Drew Satterwhite and District Staff attended all four meetings. GMA 8 representative David Gattis attend all GMA 8 meetings.

Goal 5: Addressing Natural Resource Issues

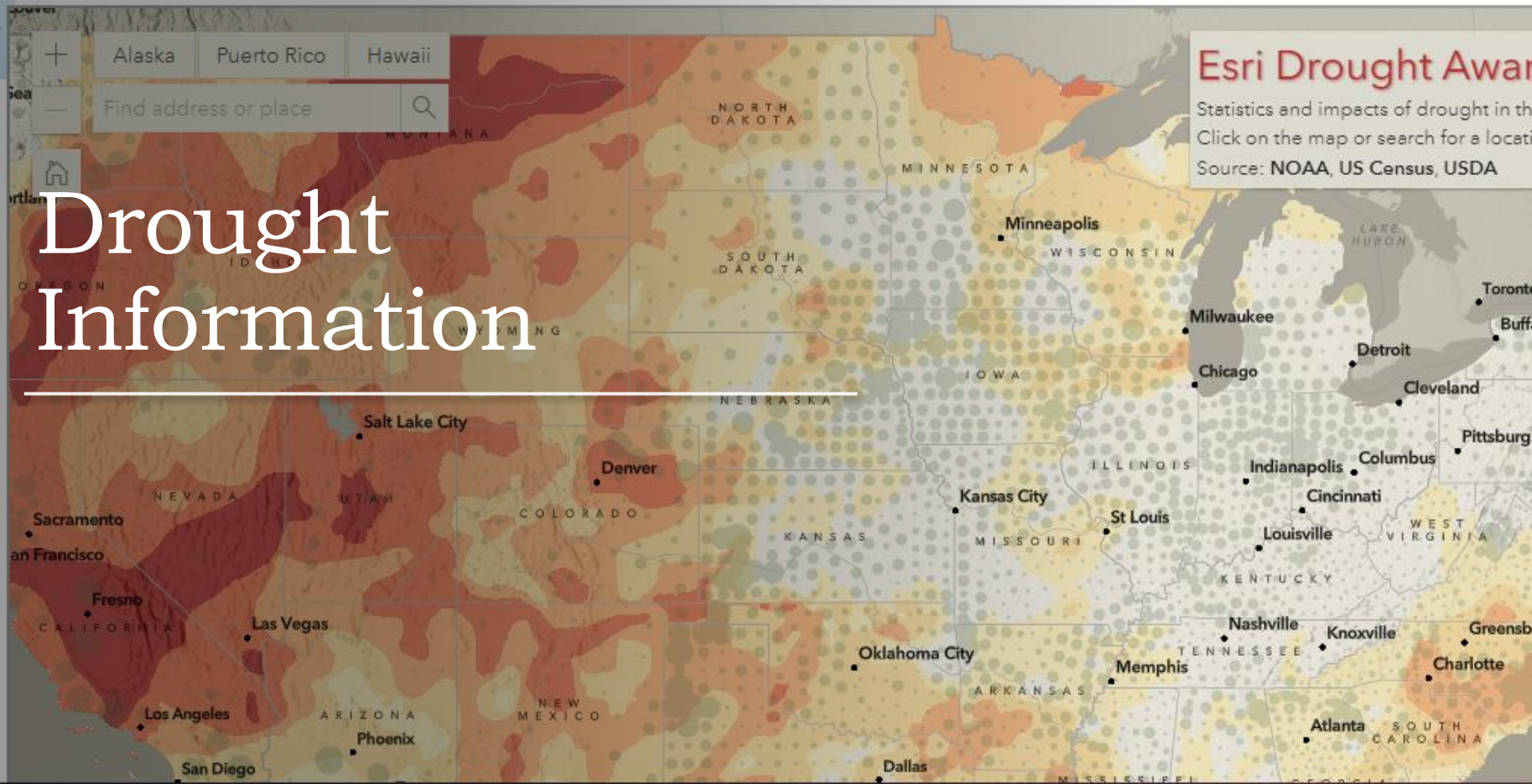
Reported Injection Well

- 1 Injection Wells Applications
- The application was protested by the District
- The application was approved after resolving the issues the District had with the application



Goal 6: Addressing Drought Conditions

Drought Information



Drought Information

Goal 7: Addressing Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, and Brush Control

Water Conservation

Links

Home Water Conservation Guide
Home Water Works home water usage water calculator
25 things you can do to save water
How to Conserve Water in the Bathroom
Home Intelligence At-Home Water Conservation Guide
Drought Pr[illegible]

Best Ma[illegible]t Practices

TWDB Best Management Practices for Conservation
Agricultural Best Management Practices
Municipal Best Management Practices
Wholesale Supplier Best Management Practices
2011 Region C Water Plan - Chapter 4 - Identification, Evaluation, and Selection of Water Management Strategies (4A, 4B, 4C, 4D, 4E, 4F, 4G, 4H)
Water Advisory Council Best Management Practices

Brochures

A Watering guide for Texas Landscape

Brochures In Spanish

Cuarenta Y Nueve Consejos Practicos Para Conservar Agua (Forty-Nine Water Saving Tips)
Xeriscape (Xeriscape - Principles and Benefits)
The Dillos Demonstrate Wordless Water Conservation

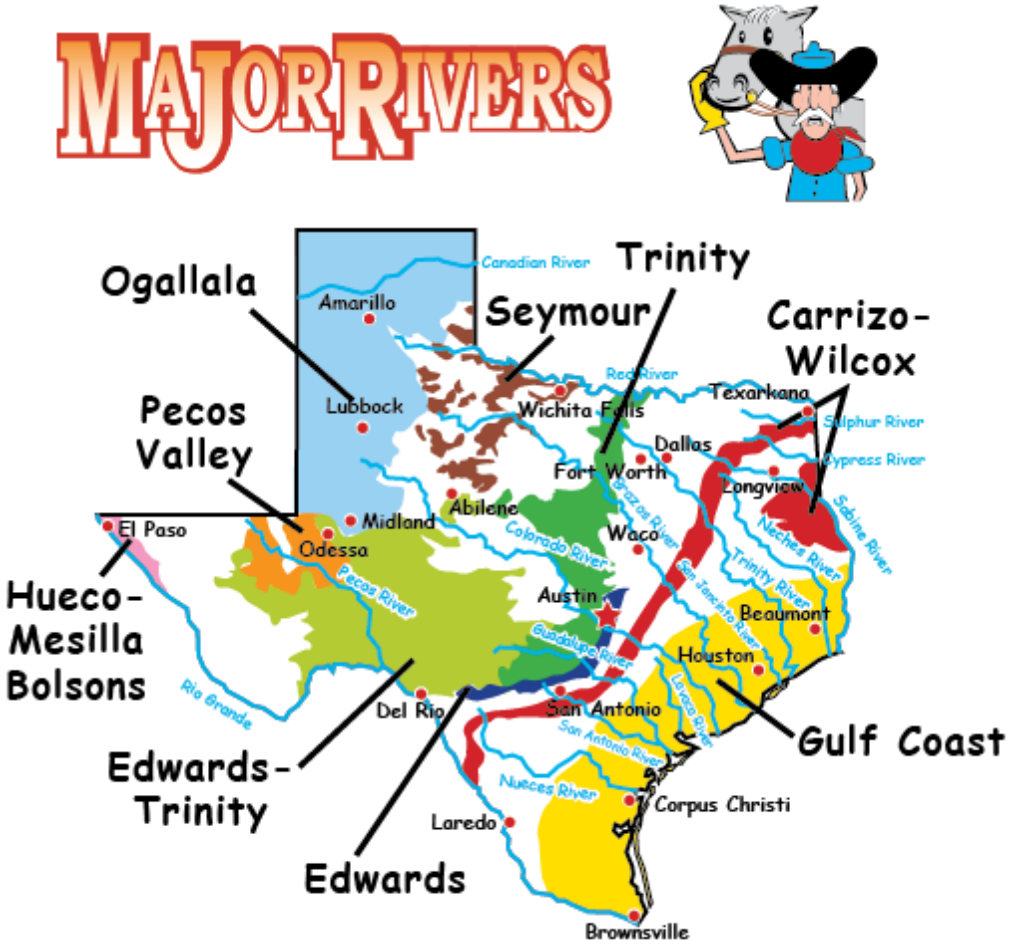
B[illegible]r Control Links

State Water supply Enhancement Plan (January 2017)
Texas State Soil and Water Conservation Board
AgriLife Extension Texas A&M System Brush Control Program

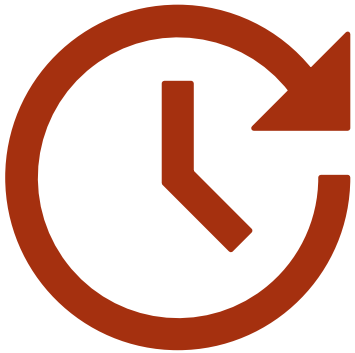
Rainwater Harvesting Links

TWDB Rainwater Harvesting Information
Texas Water by Texas A&M
TWDB Manual on Rainwater Harvesting
Harvesting Rainwater with Rain Barrels

Conservation Links of the District Website



Major Rivers Curriculum



Goal 8: Achieving Desired Future Conditions of Groundwater Resources

RRGCD DFC Tool

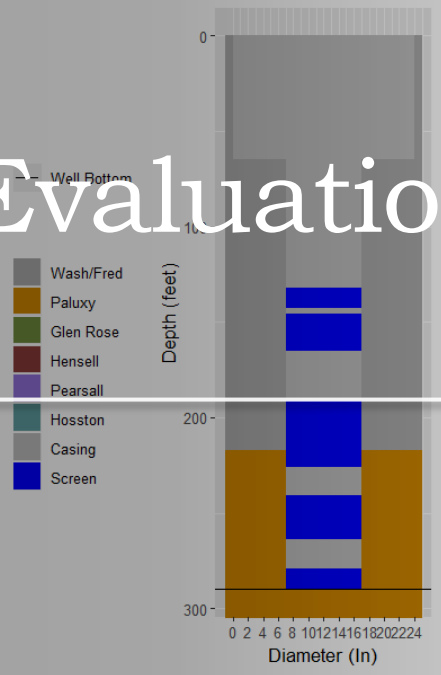
- Summary
- Woodbine Well Analysis
- Woodbine Spatial Analysis
- Paluxy Well Analysis
- Paluxy Spatial Analysis
- Glen Rose Well Analysis
- Glen Rose Spatial Analysis
- Antlers Well Analysis
- Antlers Spatial Analysis
- Twin Mountains Well Analysis
- Twin Mountains Spatial Analysis
- Travis Peak Well Analysis
- Travis Peak Spatial Analysis

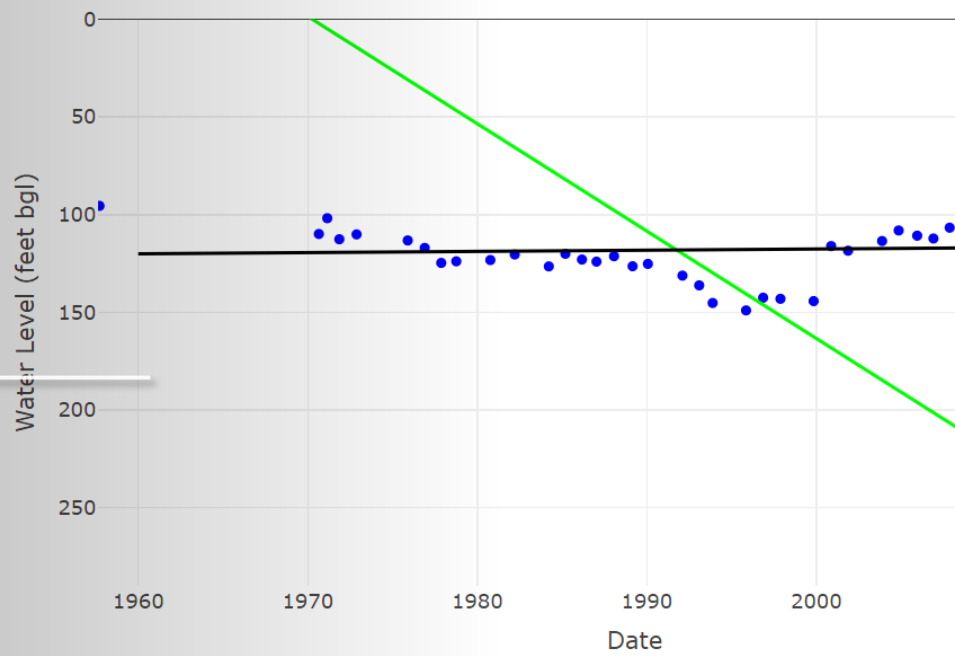
DFC Evaluation Tool

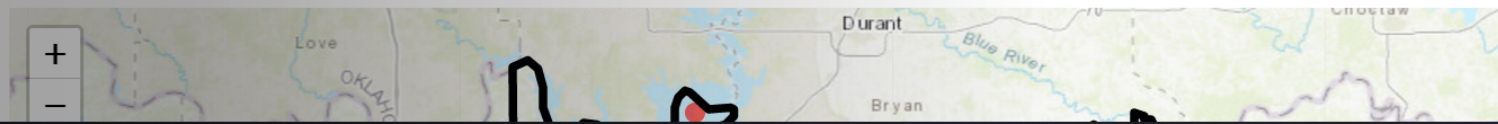
Select Antlers Well to View: 1803901

Select Water Level or Drawdown Graph: Water Level

Highest Water Level (Feet Below Ground Level)	Lowest Water Level (Feet Below Ground Level)	Slope (feet/year)	NTWGAM Slope (fee
95.51 (09/17/1957)	149 (11/09/1995)	0.06	-5.49







Current Aquifer Trends and DFC Status

		Slope Analysis		*Spatial Analysis*	
Aquifer	*County*	*Current Trend (ft/yr)*	*Current Status*	*Current Trend (ft/yr)*	*Current Status*
Trinity (Antlers)	Fannin	-	-	(30.31)	(25.29)
	Grayson	(2.91)	4.05	(30.38)	(23.42)
	District	***(2.91)***	***3.17***	***(30.34)***	***(24.26)***
Woodbine	Fannin	0	4.94	(51.66)	(46.72)
	Grayson	0.73	3.93	(1)	2.20
	District	***0.56***	***4.64***	***(27.36)***	***(23.28)***

Any Questions?

PAUL M. SIGLE,
GROUNDWATER
TECHNICAL LEAD