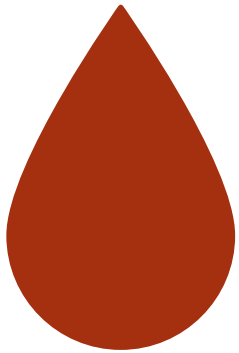
RED RIVER
GROUNDWATER CONSERVATION DISTRICT

2021 Annual Report

SEPTEMBER 15, 2022
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	2021	Total
Agriculture	5	3	1	5	5	0	0	2	0	1	22
Commercial	1	2	0	0	0	2	4	3	2	1	15
Domestic	46	61	40	69	65	66	68	50	67	73	605
Golf Course	0	2	0	0	0	0	0	0	0	0	2
Industrial	0	0	0	0	0	0	0	0	0	0	0
Irrigation	1	1	1	0	1	0	1	0	1	0	6
Livestock	6	9	7	9	4	4	1	2	1	6	49
Monitoring	6	0	0	0	0	1	0	12	0	0	19
Oil / Gas	0	2	1	0	0	0	0	0	0	0	3
Other	0	0	0	0	0	0	0	0	0	0	0
Public Water	40	6	1	0	0	1	1	0	0	6	55
Surface Impoundments	1	1	3	1	1	2	2	1	0	0	12
Total	106	87	54	84	76	76	77	70	71	87	788

Non-Exempt Wells Registered with the District

Use	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Agriculture	8	3	5	0	0	0	2	1	1	1	21
Commercial	4	0	0	1	1	1	2	2	3	0	14
Domestic	0	0	0	0	0	0	0	0	0	0	0
Golf Course	7	5	0	1	0	0	0	0	0	0	13
Industrial	0	0	0	0	0	0	0	0	0	2	2
Irrigation	0	1	1	0	0	0	0	0	2	0	4
Livestock	0	0	0	0	0	0	0	0	0	0	0
Monitoring	1	0	0	0	0	0	0	0	0	0	1
Oil / Gas	5	7	3	0	2	1	0	0	0	0	18
Other	0	0	0	0	0	0	0	0	0	1	1
Public Water	184	26	1	0	2	2	5	3	1	0	224
Surface Impoundments	1	0	0	5	1	0	0	1	2	1	11
Total	210	42	10	7	6	4	9	7	9	5	309

Wells Registered with the District

Use	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Agriculture	13	6	6	5	5	0	2	3	1	2	43
Commercial	5	2	0	1	1	3	6	5	5	1	29
Domestic	46	61	40	69	65	66	68	50	67	73	605
Golf Course	7	7	0	1	0	0	0	0	0	0	15
Industrial	0	0	0	0	0	0	0	0	0	2	2
Irrigation	1	2	2	0	1	0	1	0	3	0	10
Livestock	6	9	7	9	4	4	1	2	1	6	49
Monitoring	7	0	0	0	0	1	0	12	0	0	20
Oil / Gas	5	9	4	0	2	1	0	0	0	0	21
Other	0	0	0	0	0	0	0	0	0	1	1
Public Water	224	32	2	0	2	3	6	3	1	6	279
Surface Impoundments	2	1	3	6	2	2	2	2	2	1	23
Total	316	129	64	91	82	80	86	77	80	92	1097

Well Inspections During 2021

Month	*Fannin County*	*Grayson County*	*Total*
January	0	5	5
February	10	5	15
March	2	25	27
April	0	8	8
May	0	3	3
June	1	4	5
July	2	8	10
August	3	4	7
September	1	6	7
October	0	8	8
November	0	6	6
December	2	9	11
Total	*21*	*91*	*112*

Wells Measured for the District's Monitoring Program

Year	*Fannin*	*Grayson*	*Total*
2010	6	25	31
2011	5	25	30
2012	7	10	17
2013	6	30	36
2014	5	10	15
2015	6	8	14
2016	7	10	17
2017	6	9	15
2018	5	11	16
2019	3	9	12
2020	5	23	28
2021	7	35	42

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%
2021	90%

Late Fees and Payments

	Late Fee	*Late Payment*
Number of Occurrence	64	26
Percentage of Accounts with at Least 1 Occurrence	35%	19%
Percentage of Readings/Payments were Late	16%	7%
Amount Paid	$3,200.00	$1,459.79

Percentage of Registered Non-Exempt Wells Inspected Annually

Year	*Percentage of Well Inspected*
2017	44%
2018	48%
2019	15%
2020	24%
2021	17%

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

Year	*Fannin*	*Grayson*	*Total*
2013	2,648	12,051	14,699
2014	2,634	12,603	15,236
2015	2,960	12,313	15,274
2016	2,973	11,750	14,723
2017	2,661	11,683	14,344
2018	3,143	13,759	16,902
2019	3,457	12,912	16,370
2020	3,478	13,398	16,877
2021	3,690	13,110	16,800
Average	***3,072***	***12,620***	***15,692***

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

Year	River Alluvial	Trinity (Antlers)	Trinity (Paluxy)	Washita Group	Woodbine
2013	31	6,946	131	218	7,373
2014	48	6,839	148	204	7,998
2015	125	7,169	276	139	7,566
2016	81	6,547	180	161	7,754
2017	47	6,703	248	145	7,200
2018	50	7,499	398	131	8,823
2019	201	6,511	221	120	9,317
2020	213	6,839	246	120	9,459
2021	254	6,981	289	121	9,155
Average	***117***	***6,893***	***237***	***151***	***8,294***

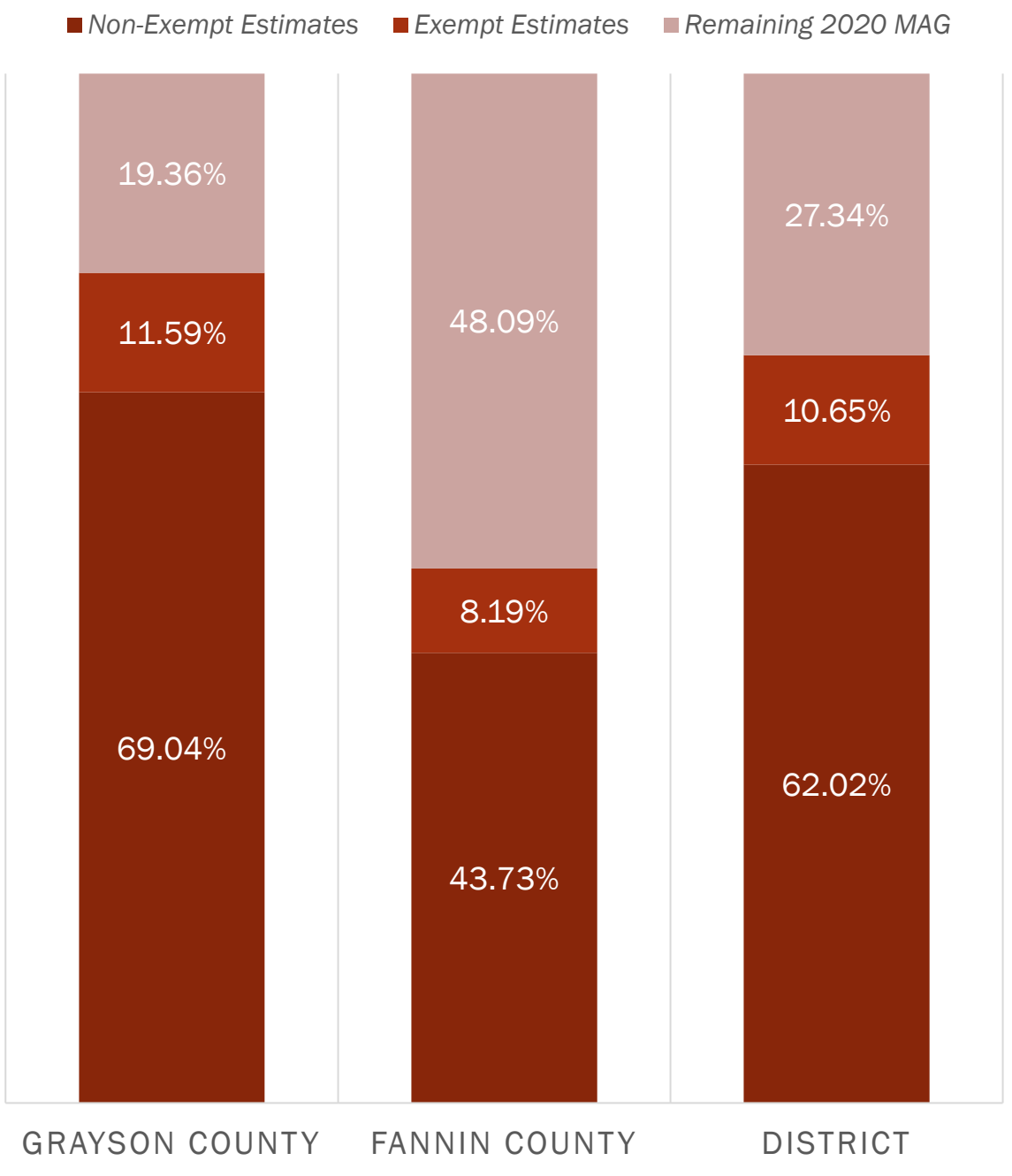
Non-Exempt Production by Use (All Production is in Acre-Feet)

Year	Public Water	Agriculture	Golf Course	Oil/ Gas	Commercial	Surface Impoundments	Irrigation
2013	13,188	1,042	364	103	0	3	0
2014	13,421	1,011	590	146	0	4	64
2015	13,773	662	606	35	0	5	194
2016	13,055	901	373	131	50	5	207
2017	13,090	877	148	4	7	19	198
2018	15,578	908	197	6	37	12	165
2019	15,080	900	157	1	47	30	155
2020	15,020	1,363	152	0	104	33	205
2021	15,103	1,170	160	0	165	42	159
Average	***14,145***	***982***	***305***	***47***	***46***	***17***	***150***

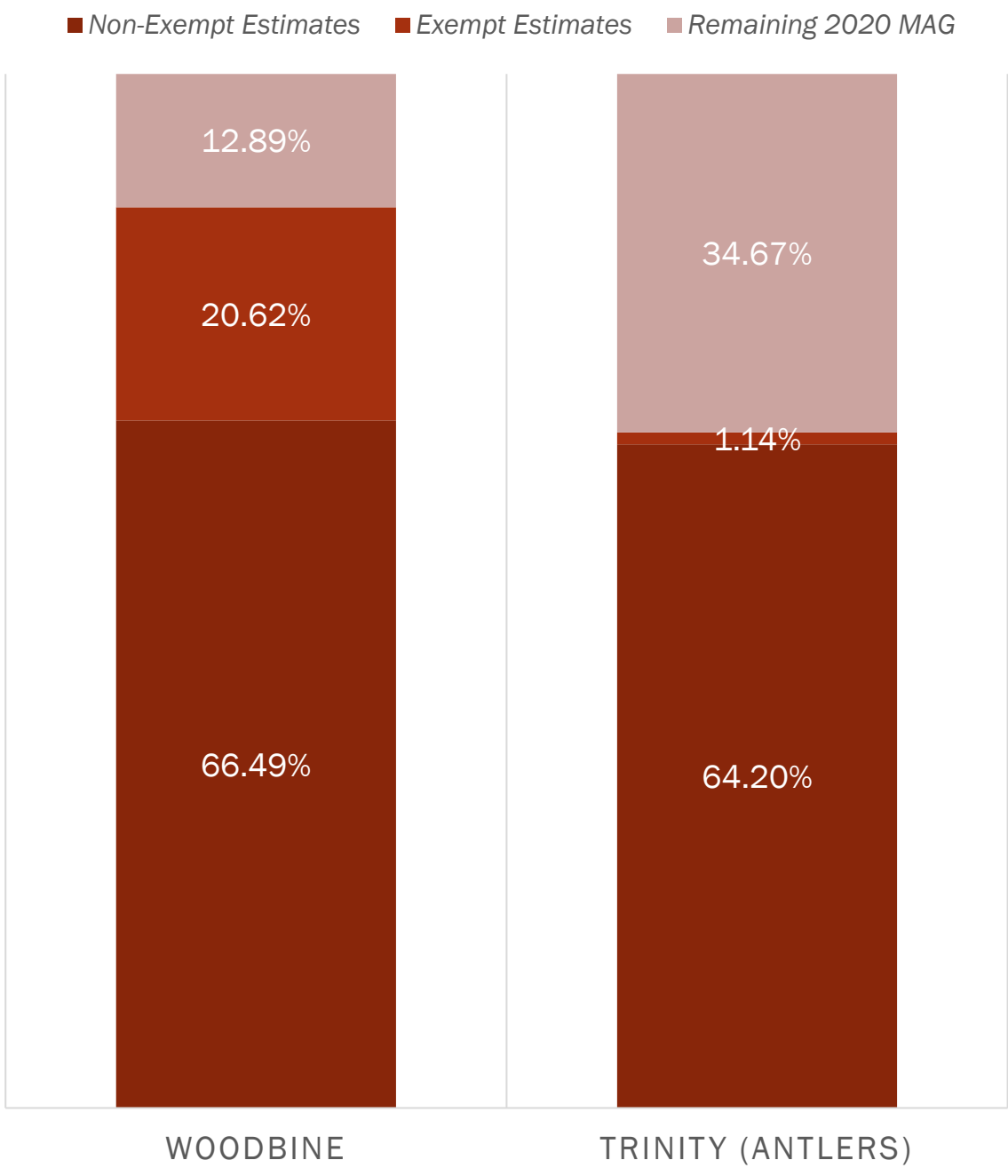
Estimated Exempt Production (All Production is in Acre-Feet)

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

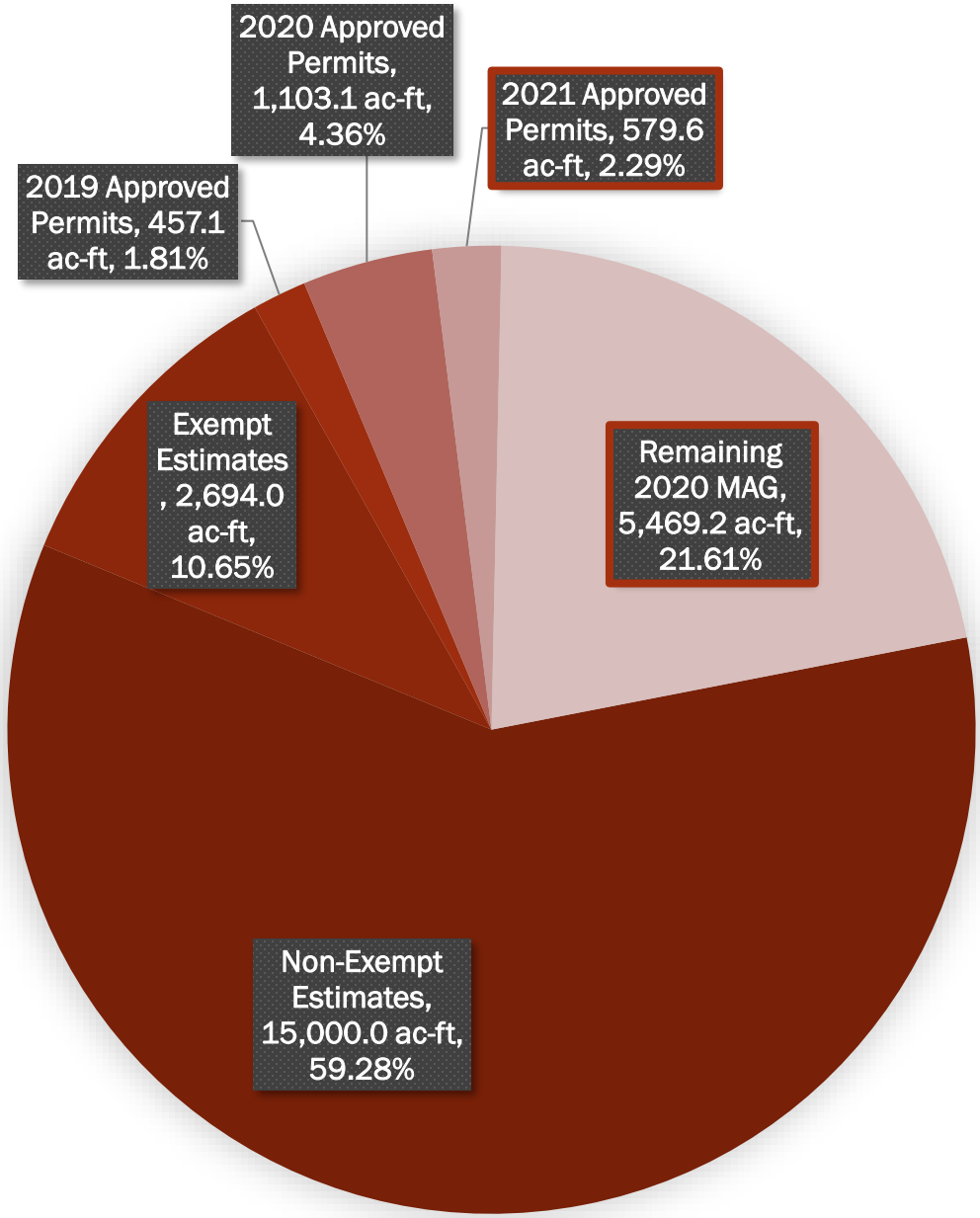
	2019	2020	2021	Total
New Permits	4	10	7	21
Permit Amendments	0	0	1	1
Total Permits	4	10	8	22
# of Wells	6	14	14	34
Requested Amount (gal)	148,943,106	359,451,900	188,864,000	697,259,006

Aquifer	2019	2020	2021	Total
Trinity (Antlers)	1	2	1	4
Trinity (Paluxy)	0	2	0	2
Woodbine	3	6	5	14
River Alluvium	0	0	1	1
Total	4	10	7	21

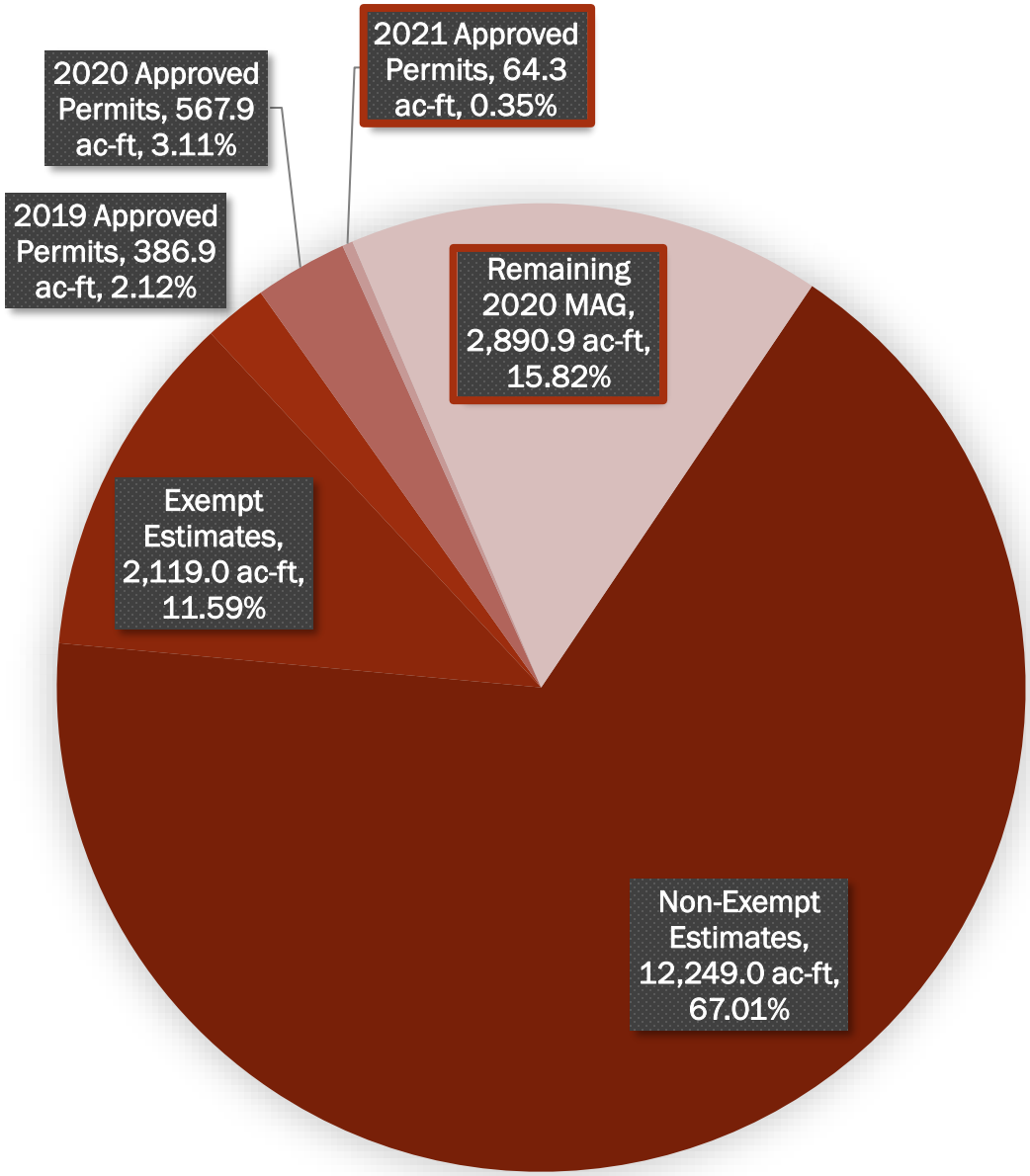
Permits Approved by the Board

Use	2019	2020	2021	Total
Agriculture Irrigation	0	1	2	3
Concrete Production	0	1	2	3
Construction	2	2	1	5
Industrial	1	0	0	1
Landscape Irrigation and Surface Impoundment(s)	0	2	0	2
Manufacturing	0	2	0	2
Public Water System	1	2	0	3
Surface Impoundment(s)	0	0	1	1
Surface Impoundment(s), Livestock & Wildlife Management	0	0	1	1
Total	*4*	*10*	*7*	*21*

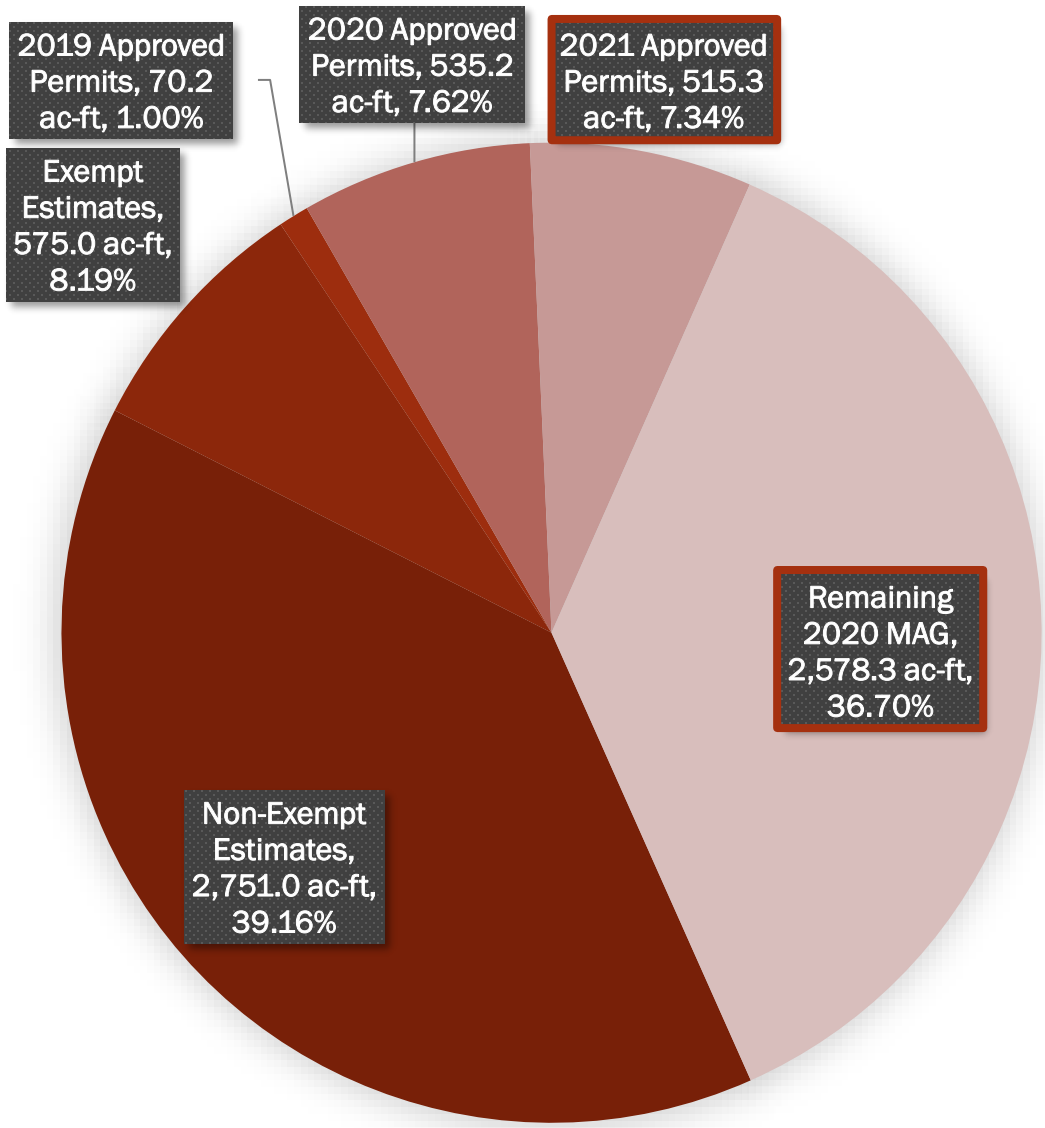
District Wide Permits Approved by the Board



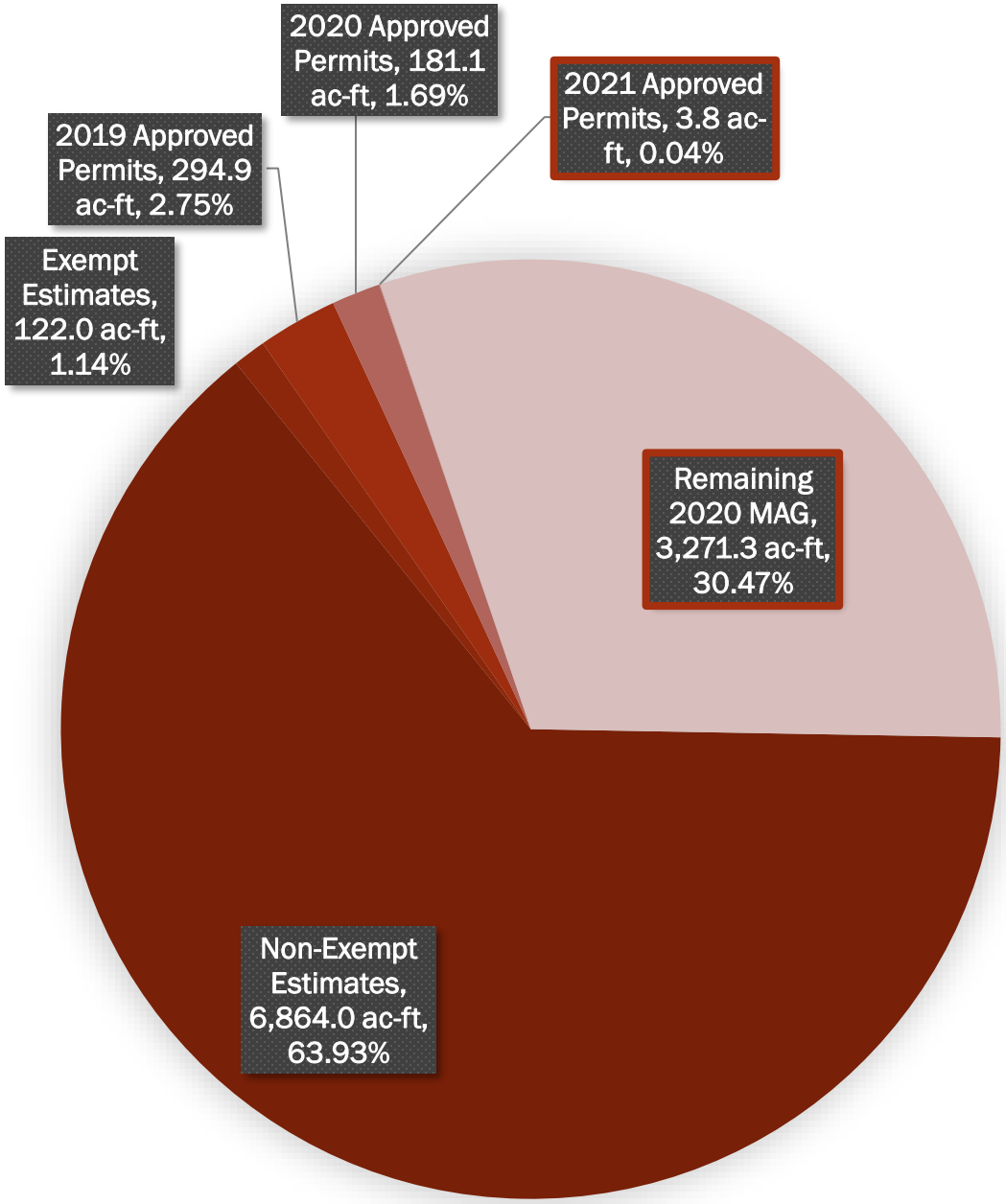
Grayson County Permits Approved by the Board



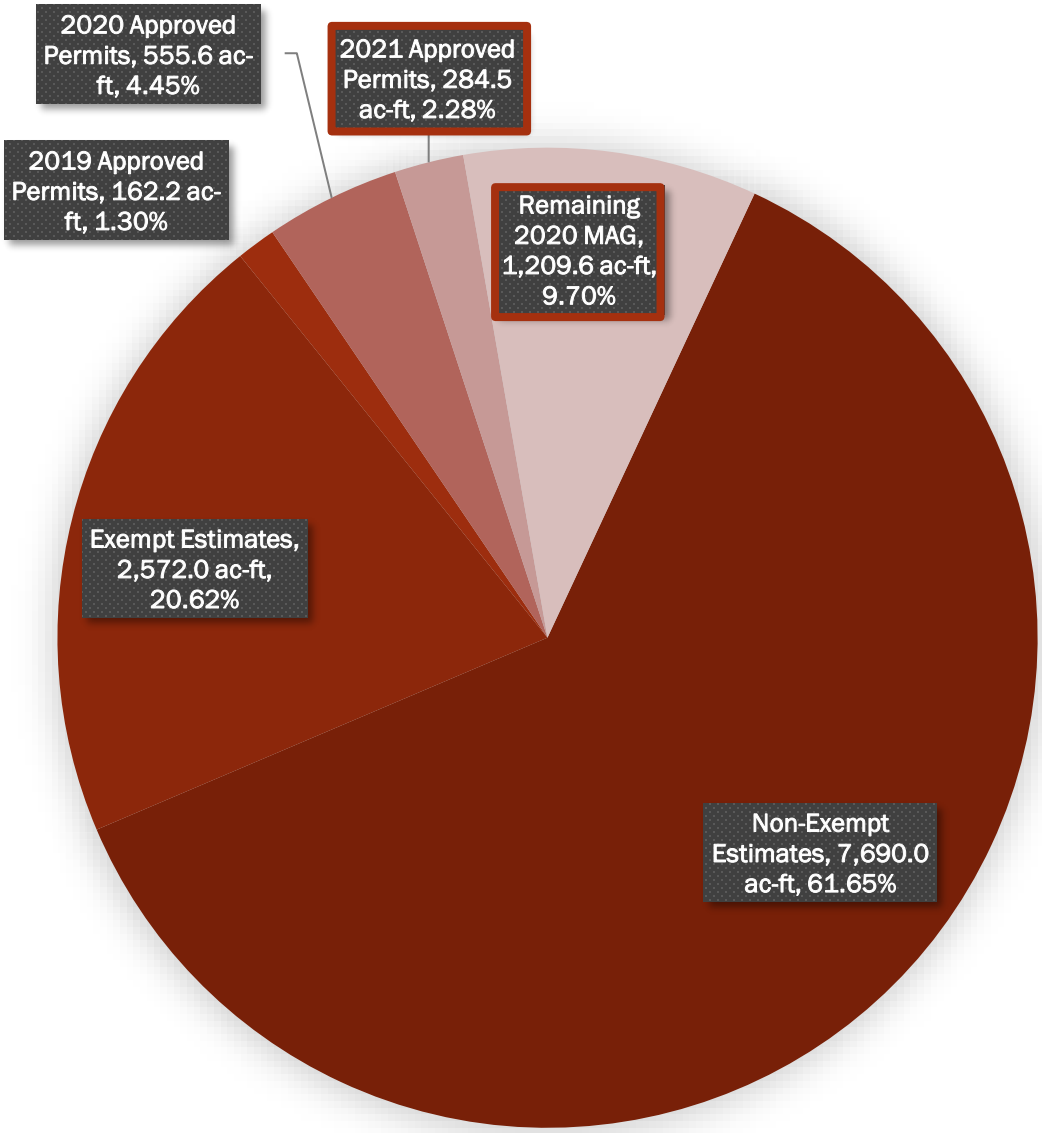
Fannin County Permits Approved by the Board



Trinity (Antlers) Permits Approved by the Board



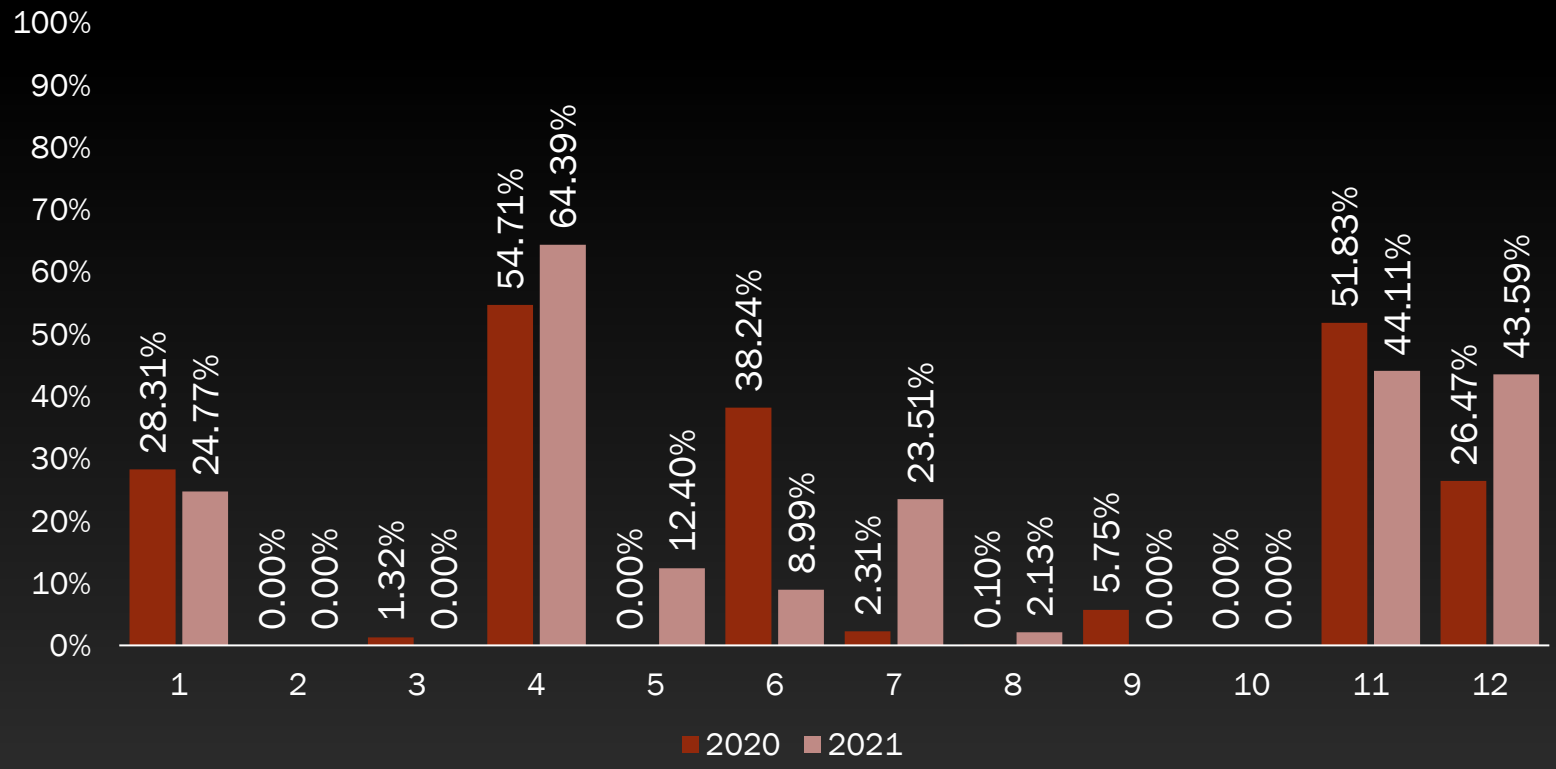
Woodbine Permits Approved by the Board



Actual Production vs Permitted Amount

	2020	*2021*
Approved Permits as of January 1	4	12
Permitted Amount (gal/yr)	223,683,106	482,244,913
Annual Production (gal/yr)	102,127,417	204,230,493
Percentage	45.66%	42.35%
Over Production (gal)	0	0

Actual Production vs Permitted Amount



Goal 2: Controlling and Preventing Waste of Groundwater

Total Fees Paid and Groundwater Usage Based on the Fees Paid

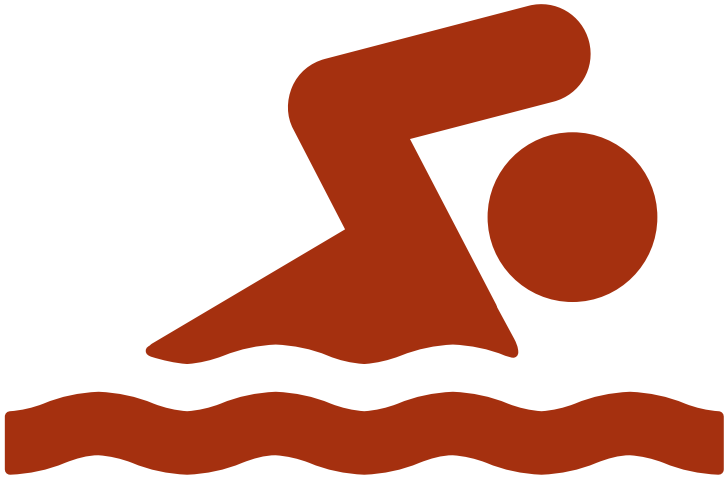
Year	*Total Fees Paid*	*Total Groundwater Used (gallons)*
2013	$297,037.92	4,243,398,860
2014	$284,250.06	4,060,715,143
2015	$322,861.01	4,612,300,150
2016	$303,474.94	4,331,070,580
2017	$302,897.59	4,327,108,428
2018	$337,667.83	4,823,826,143
2019	$357,879.11	5,112,558,714
2020	$343,835.00	4,911,928,571
2021	$329,155.00	5,063,923,077
Average	*$319,895.38*	*4,609,647,741*

Violations and Investigations of Potential Waste of Groundwater

- 1 Owners/Drillers accounting for 1 major violations
- No reports 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.

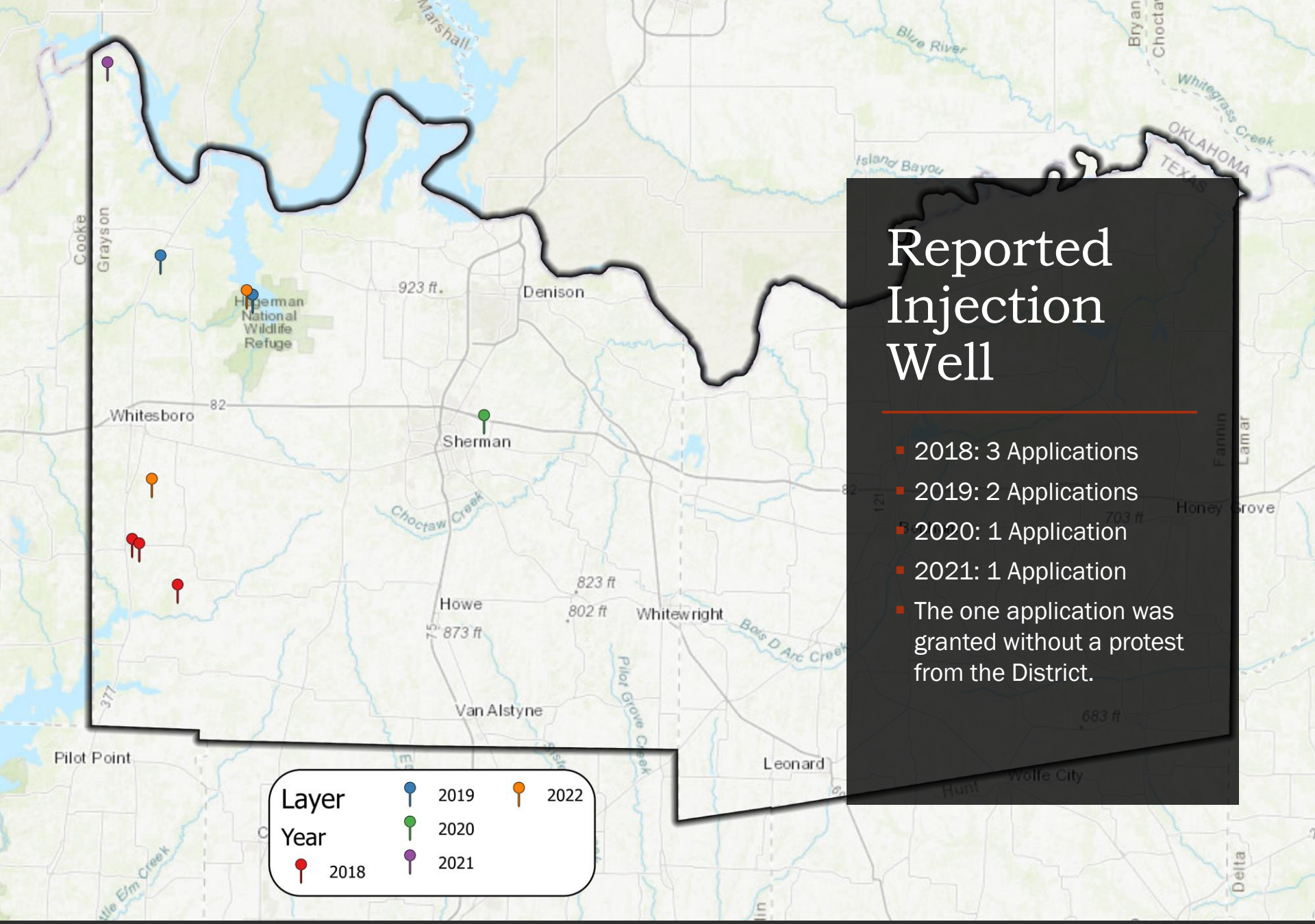


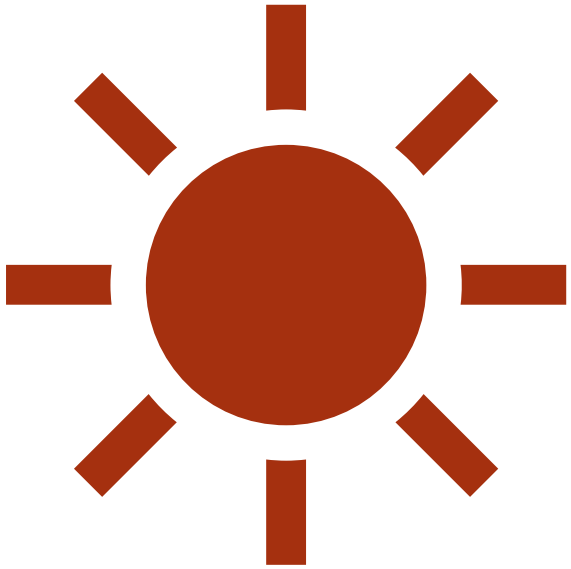
Goal 4: Addressing Conjunctive Surface Water Management Issues

Region C and GMA 8

- Region C Water Planning Group held 2 meetings in 2021, on August 2nd and November 1st. General Manager Drew Satterwhite attended both meetings.
- Groundwater Management Area 8 (GMA 8) held one meeting in 2021, on November 4th. General Manager Drew Satterwhite, Board Member David Gattis and District Staff attended the meeting.

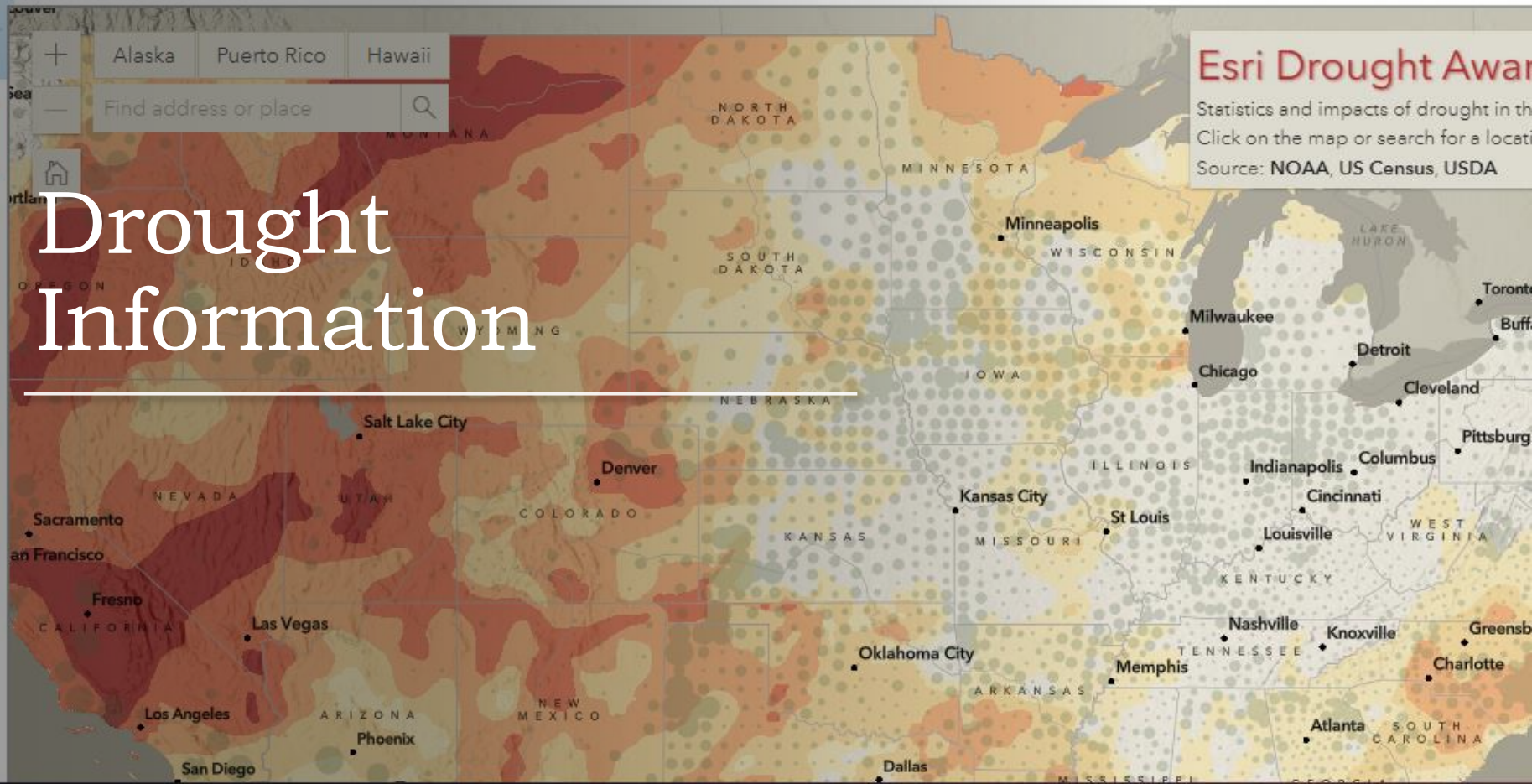
Goal 5: Addressing Natural Resource Issues


Reported Injection Well
2018: 3 Applications
2019: 2 Applications
2020: 1 Application
2021: 1 Application
The one application was granted without a protest from the District.
Layer
Year
2018
2019
2020
2021
2022
Cooke
Grayson
Hagerman National Wildlife Refuge
Denison
Whitesboro
Sherman
Howe
Whitewright
Van Alstyne
Pilot Point
Leonard
Honey Grove
Choctaw Creek
Pilot Grove Creek
Bois D Arc Creek
Blue River
Island Bayou
Whitegrass Creek
OKLAHOMA
TEXAS
923 ft.
823 ft
802 ft
873 ft
703 ft
683 ft



Goal 6: Addressing Drought Conditions

Drought Information



Drought Information

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

Phone : (800) 256-0935 Fax: (903) 786-8211

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

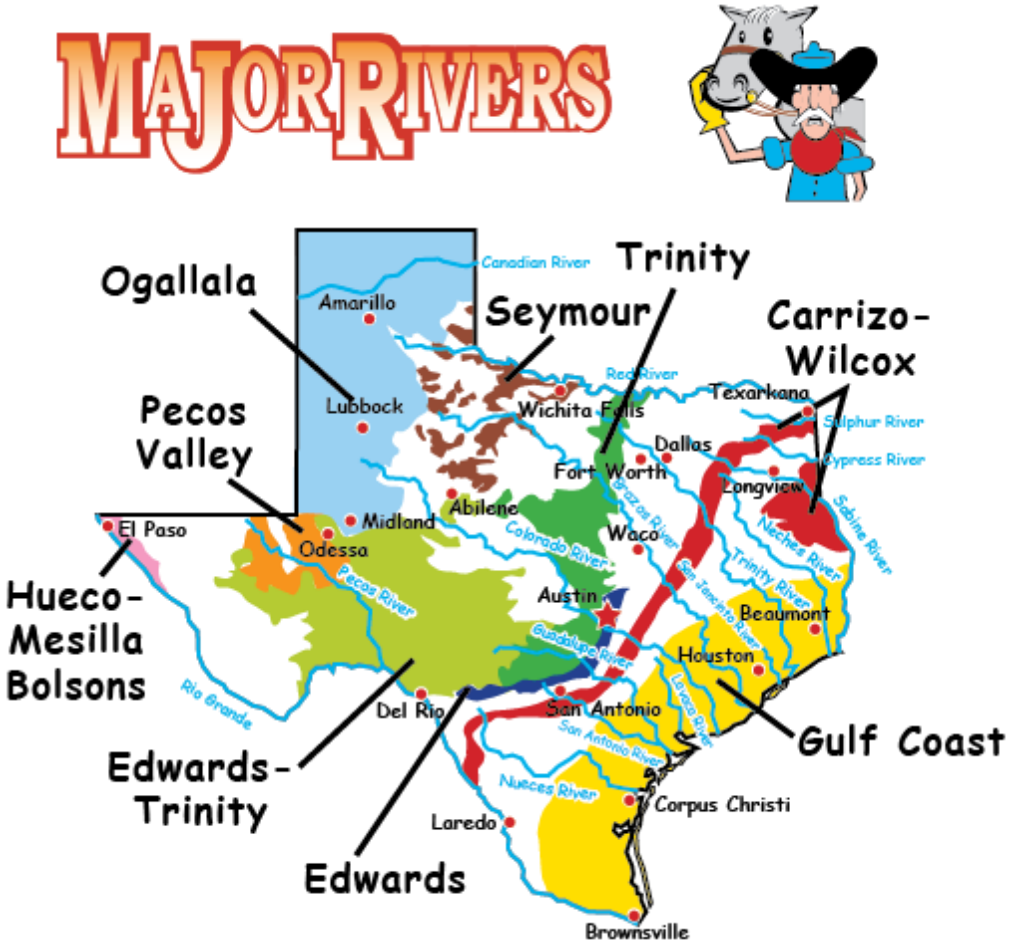
B[illegible]r Control Links

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

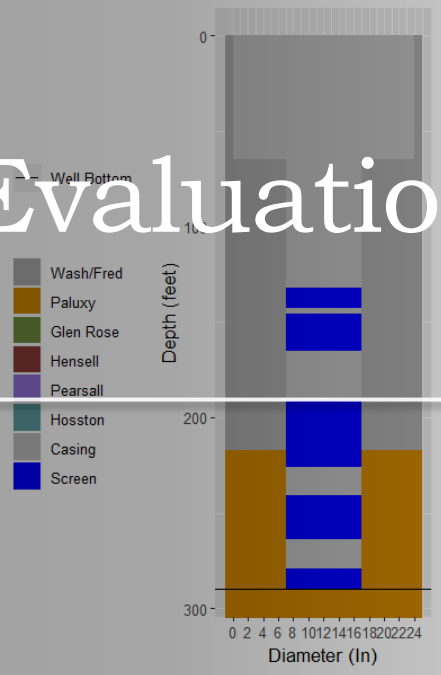
- Summary
- Woodbine Well Analysis
- Woodbine Spatial Analysis
- Paluxy Well Analysis
- Paluxy Spatial Analysis
- Glen Rose Well Analysis
- Glen Rose Spatial Analysis
- Antlers Well Analysis
- Antlers Spatial Analysis
- Twin Mountains Well Analysis
- Twin Mountains Spatial Analysis
- Travis Peak Well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

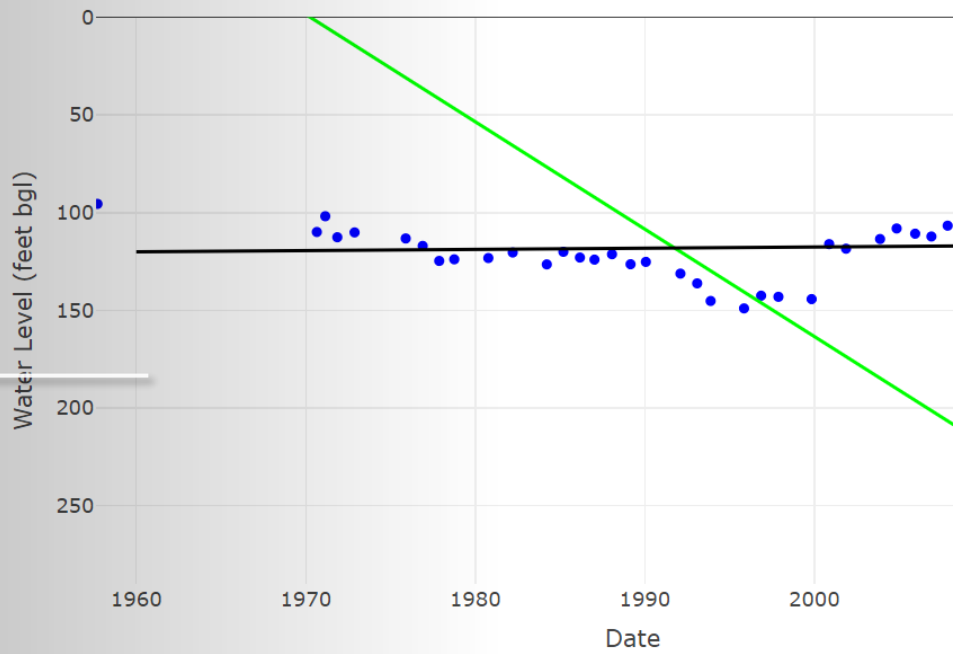
DFC Evaluation Tool

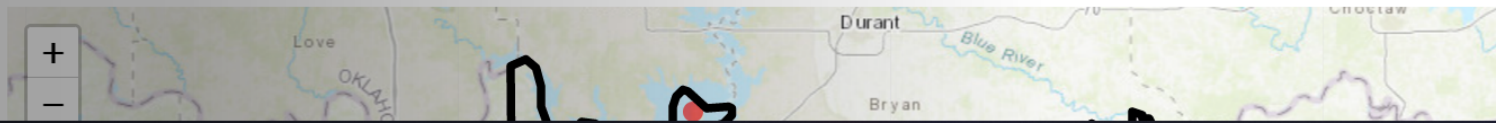
Select Antlers Well to View: 1803901

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	-	-	8.86	13.88
	Grayson	(2.89)	4.07	2.65	9.61
	District	***(2.89)***	***3.19***	***5.4***	***11.48***
Woodbine	Fannin	0.00	4.94	1.07	6.01
	Grayson	0.73	3.93	0.48	3.68
	District	***0.56***	***4.64***	***(1.14)***	***2.94***

Any Questions?

PAUL M. SIGLE,
GROUNDWATER
TECHNICAL LEAD