



2020 Annual Report

DECEMBER 14, 2021 BOARD OF DIRECTORS MEETING



Goal 1: Providing the Most Efficient Use of Water

Exempt Wells Registered with the District

Use	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Agriculture	0	3	4	13	8	1	1	1	2	4	37
Commercial	6	2	1	7	5	6	3	2	2	6	40
Domestic	60	73	157	194	126	133	150	199	140	174	1406
Golf Course	1	0	0	0	0	0	0	0	0	0	1
Industrial	2	0	0	0	0	0	1	0	0	0	3
Irrigation	0	8	38	24	28	18	18	14	3	5	156
Livestock	26	16	26	13	15	4	10	8	6	17	141
Monitoring	1	0	0	0	0	0	1	0	0	0	2
Oil / Gas	1	0	4	1	1	0	0	0	0	0	7
Other	2	0	1	1	0	3	2	1	2	4	16
Public Water	9	2	1	0	0	0	0	0	0	0	12
Surface Impoundments	2	6	14	10	2	5	11	13	5	10	78
Total	110	110	246	263	185	170	197	238	160	220	1899

Non-Exempt Wells Registered with the District

Use	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Agriculture	3	11	2	0	1	0	0	7	0	0	24
Commercial	2	0	1	1	0	2	2	1	1	1	11
Domestic	0	0	0	0	0	0	0	0	0	0	0
Golf Course	22	12	3	0	0	0	0	0	0	0	37
Industrial	17	1	0	1	1	0	3	1	0	0	24
Irrigation	4	13	9	10	12	11	21	21	8	10	119
Livestock	0	0	0	1	0	1	0	0	0	0	2
Monitoring	1	0	0	0	0	0	0	0	0	0	1
Oil / Gas	47	6	10	0	1	0	0	2	0	0	66
Other	2	0	4	0	0	0	0	3	1	3	13
Public Water	242	21	8	3	4	5	5	8	11	5	312
Surface Impoundments	27	7	5	3	9	9	11	17	3	6	97
Total	367	71	42	19	28	28	42	60	24	25	706

Wells Registered with the District

Use	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Agriculture	3	14	6	13	9	1	1	8	2	4	61
Commercial	8	2	2	8	5	8	5	3	3	7	51
Domestic	60	73	157	194	126	133	150	199	140	174	1406
Golf Course	23	12	3	0	0	0	0	0	0	0	38
Industrial	19	1	0	1	1	0	4	1	0	0	27
Irrigation	4	21	47	34	40	29	39	35	11	15	275
Livestock	26	16	26	14	15	5	10	8	6	17	143
Monitoring	2	0	0	0	0	0	1	0	0	0	3
Oil / Gas	48	6	14	1	2	0	0	2	0	0	73
Other	4	0	5	1	0	3	2	4	3	7	29
Public Water	251	23	9	3	4	5	5	8	11	5	324
Surface Impoundments	29	13	19	13	11	14	22	30	8	16	175
Total	477	181	288	282	213	198	239	298	184	245	2605

Well Inspections During 2020

	Collin	Cooke	Denton	
Month	County	County	County	Total
January	9	5	15	29
February	7	26	17	50
March	17	1	3	21
April	0	38	8	46
May	1	6	8	15
June	4	6	12	22
July	3	1	15	19
August	8	1	19	28
September	2	10	7	19
October	3	4	15	22
November	1	7	9	17
December	3	28	49	80
Total	58	133	177	<i>36</i> 8

Wells Measured for the District's Monitoring Program

Year	Cooke	Collin	Denton	Total
2010	16	10	19	45
2011	22	11	14	47
2012	14	10	21	45
2013	6	0	0	6
2014	17	9	16	42
2015	18	9	16	43
2016	11	8	14	33
2017	16	6	11	33
2018	11	0	3	14
2019	2	0	3	5
2020	37	7	19	63
2021	31	10	21	62

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

	Percentage Meeting
Year	Reporting Requirements
2012	85%
2013	89%
2014	95%
2015	96%
2016	92%
2017	82%
2018	93%
2019	93%
2020	92%

Percentage of Registered Non-Exempt Wells Inspected Annually

	Percentage of
Year	Well Inspected
2012	74%
2013	6%
2014	21%
2015	24%
2016	13%
2017	37%
2018	51%
2019	16%
2020	16%

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

Year	Collin	Cooke	Denton	Total
2012	5,037	6,449	14,708	26,194
2013	4,522	5,238	12,843	22,604
2014	4,198	4,922	12,978	22,098
2015	4,934	4,976	12,973	22,883
2016	4,694	4,311	11,670	20,675
2017	4,709	4,386	13,138	22,232
2018	5,368	4,311	14,721	24,400
2019	5,806	4,085	14,129	24,020
2020	5,622	4,358	14,349	24,329
Average	4,988	4,782	13,501	23,270

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

				Trinity		
	River	Trinity	Trinity	(Twin	Washita	
Year	Alluvial	(Antlers)	(Paluxy)	Mountains)	Group	Woodbine
2012	0	16,604	1,742	4,046	0	3,803
2013	0	14,519	1,740	3,314	24	3,007
2014	0	14,093	1,652	3,178	17	3,157
2015	0	13 <i>,</i> 730	1 <i>,</i> 845	3,731	13	3,563
2016	0	12,647	1,459	3,001	16	3,551
2017	34	12,885	1,656	3,324	8	4,324
2018	52	14,284	1,686	4,072	4	4,302
2019	61	13,479	1,997	3,649	0	4,834
2020	64	13,788	1,988	3,333	1	5,154
Average	23	14,003	1,752	3,517	9	3,966

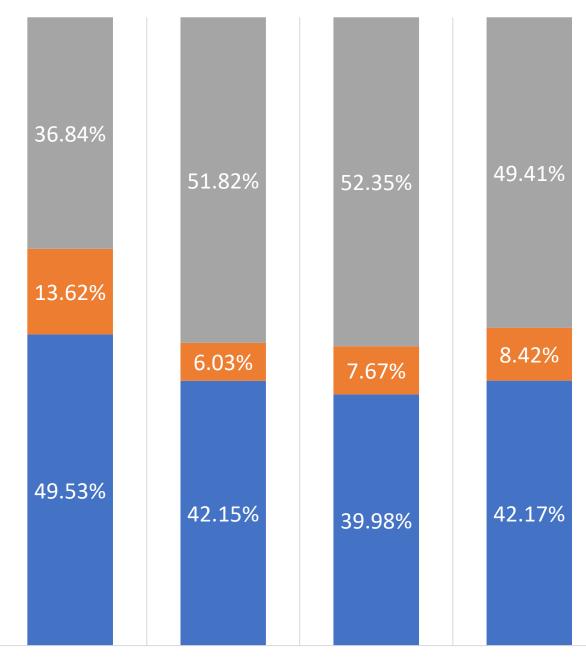
Non-Exempt Production by Use (All Production is in Acre-Feet)

Use	2012	2013	2014	2015	20 16	2017	2018	2019	2020	Average
Public Water	16,915	15,242	15,096	16,320	15,879	16,276	17,301	16,781	17,578	16,376
Agriculture	1,207	896	1,013	1,076	878	1,316	1,061	1,394	1,750	1,177
Commercial	2	2	13	24	37	89	124	132	136	62
Golf Course	3,044	2,665	2,468	2,325	1,661	1,794	2,195	2,252	1,466	2,208
Industrial	279	203	188	210	178	223	245	232	197	217
Irrigation	634	606	688	1,185	994	1,137	1,443	1,743	1,908	1,149
Livestock	749	528	128	4	0	5	5	2	6	159
Monitoring	57	30	22	16	18	22	24	22	22	26
Oil / Gas	2,182	1,287	1,635	1,084	421	399	1,057	283	248	955
Other	9	4	8	9	9	17	13	15	27	12
Surface	1,116	1,141	838	629	600	955	932	1,165	990	930
Impoundments										•

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

	Active	Estimated Production	3x Estimated Production	
Use	Wells	(Ac-ft)	(Ac-ft)	Methodology
Agriculture	30	68	203	Average time pumping per day of 2 hours
Commercial	37	6	19	Assumed average consumption is 150 gallons per day
Domestic Use	1420	239	716	Assumed average consumption is 150 gallons per day
Industrial/Manufacturing	2	5	15	Average time pumping per day of 2 hours
Irrigation	148	368	1,104	Average time pumping per day of 2 hours
Livestock	130	541	1,623	Average time pumping per day of 2 hours
Oil/Gas	6	52	157	Average time pumping per day of 2 hours
Other	11	15	46	Average time pumping per day of 2 hours
Pond/Surface Impoundments	78	202	605	Average time pumping per day of 2 hours
Public Water System	8	52	157	Average time pumping per day of 6 hours
Total	1,870	1,548	4,646	

Average Production Compared to 2020 MAG by County



■ Non-Exempt Estimates ■ Exempt Estimates ■ Remaining 2020 MAG

COLLIN COUNTY COOKE COUNTY

DENTON COUNTY

TOTAL

■ Non-Exempt Estimates ■ Exempt Estimates ■ Remaining 2020 MAG

44.18%			26.70%
7.70%	72.43%	68.54%	27.61%
48.12%	0.13% 27.45%	0.00% 31.46%	45.69%
TRINITY (ANTLERS)	TRINITY (PALUXY)	TRINITY (TWIN MOUNTAINS)	WOODBINE

Average Production Compared to 2020 MAG by Aquifer

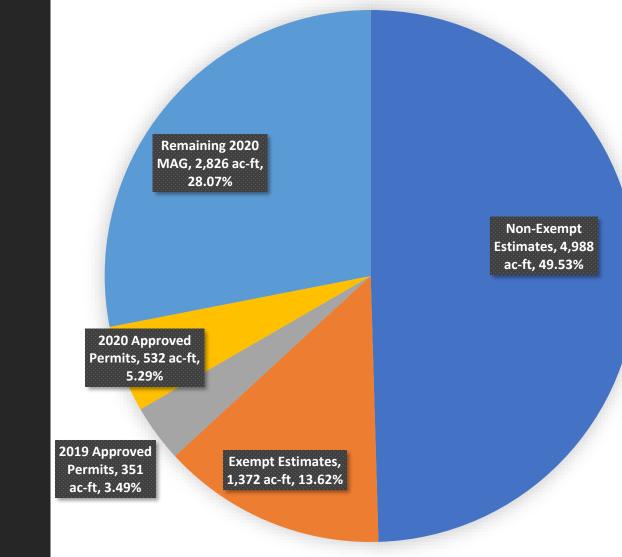
	2019	2020	Total
New Permits	13	20	33
Permit Amendments	0	2	2
Total Permits	13	22	35
# of Wells	21	41	62
Requested Amount (gal)	339,621,618	696,214,100	1,035,835,718

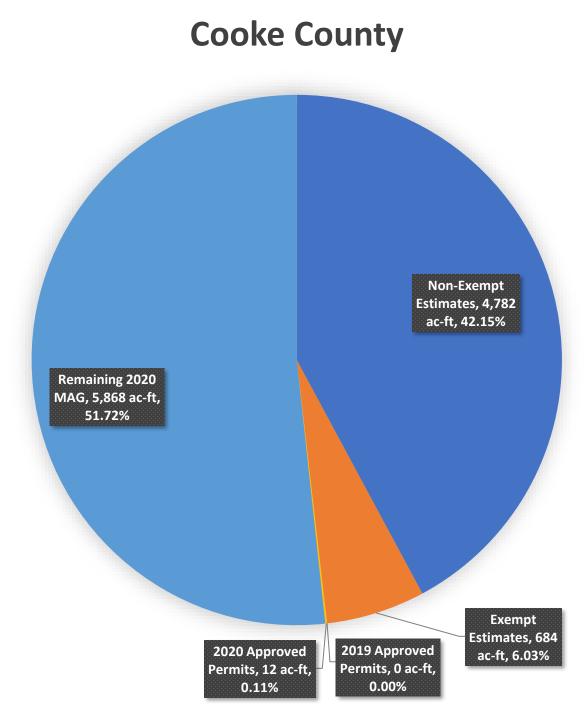
Aquifer	2019	2020	Total
Trinity (Antlers)	4	10	14
Trinity (Paluxy)	4	2	6
Trinity (Twin Mountains)	2	0	2
Woodbine	3	8	11
Total	13	20	33

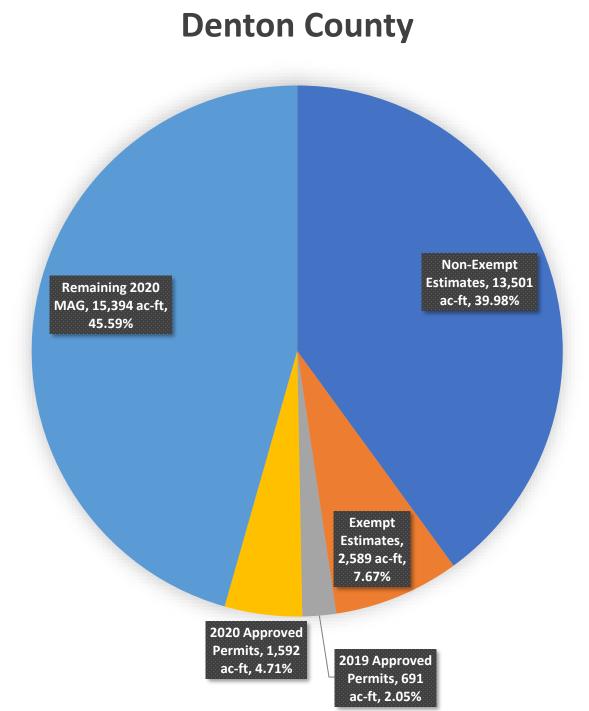
Use	2019	2020	Total
Agriculture Irrigation and Surface Impoundment(s)	0	1	1
Concrete Production	1	0	1
Construction	0	2	2
Fire Suppression System	0	1	1
Landscape Irrigation	4	5	9
Landscape Irrigation and Surface Impoundment(s)	3	6	9
Public Water System	5	4	9
Surface Impoundment(s)	0	1	1
Total	13	20	33

District Wide Non-Exempt Remaining 2020 Estimates, 23,271 MAG, 24,088 ac-ft, ac-ft, 42.17% 43.65% Exempt Estimates, 4,645 ac-ft, 8.42% 2020 Approved 2019 Approved Permits, 2,137 ac-Permits, 1,042 ft, 3.87% ac-ft, 1.89%

Collin County

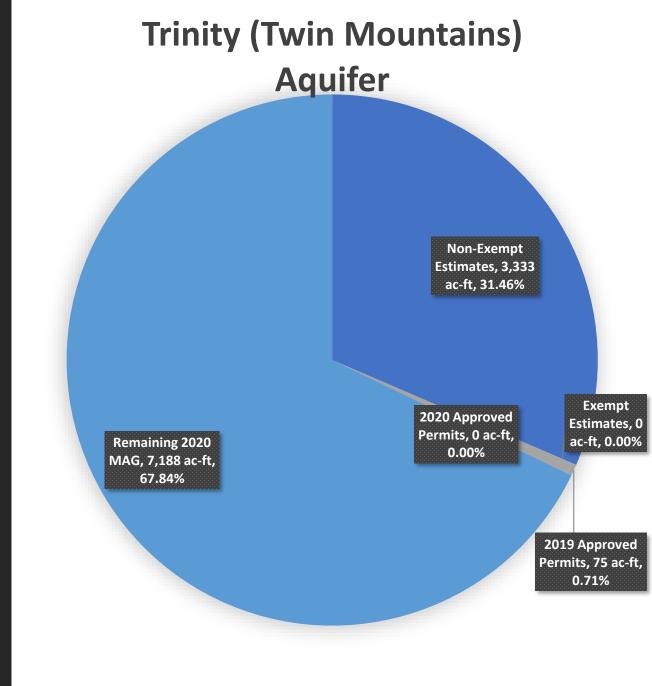






Trinity (Antlers) Aquifer Remaining 2020 MAG, 10,804 ac-ft, 37.13% Non-Exempt Estimates, 14,003 ac-ft, 48.12% Exempt Estimates, 2020 Approved 2,240 ac-ft, Permits, 1,509 ac-7.70% ft, 5.19% 2019 Approved Permits, 545 ac-ft, 1.87%

Trinity (Paluxy) Aquifer Non-Exempt Estimates, 1,752 ac-ft, 27.45% **Exempt Estimates**, 8 ac-ft, 0.13% Remaining 2020 MAG, 4,217 ac-ft, 66.06% 2020 Approved Permits, 96 ac-ft, 1.51% 2019 Approved Permits, 310 ac-ft, 4.86%



Remaining 2020 MAG, 1,675 ac-ft, 19.29% Non-Exempt 2020 Approved Estimates, 3,966 ac-Permits, 531 ac-ft, ft, 45.69% 6.12% 2019 Approved Permits, 112 ac-ft, 1.29% **Exempt Estimates**, 2,397 ac-ft, 27.61%

Woodbine Aquifer



Goal 2: Controlling and Preventing Waste of Groundwater

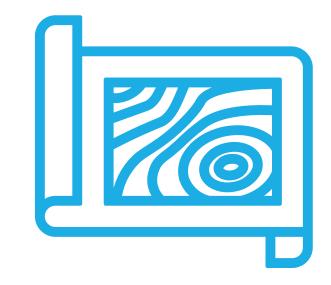
Total Fees Paid and Groundwater Usage Based on the Fees Paid

	Total Fees	Total Groundwater Used
Year	Paid	(gallons)
2015	\$739,685	7,396,850,000
2016	\$625,978	6,259,780,000
2017	\$625,969	6,259,690,000
2018	\$792,081	7,290,180,000
2019	\$713,307	7,133,070,000
2020	\$714,995	7,149,950,000
Average	\$702,003	6,914,920,000

Violations and Investigations of Potential Waste of Groundwater

3 Owners/Drillers accounting for 4 violationsNo 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.



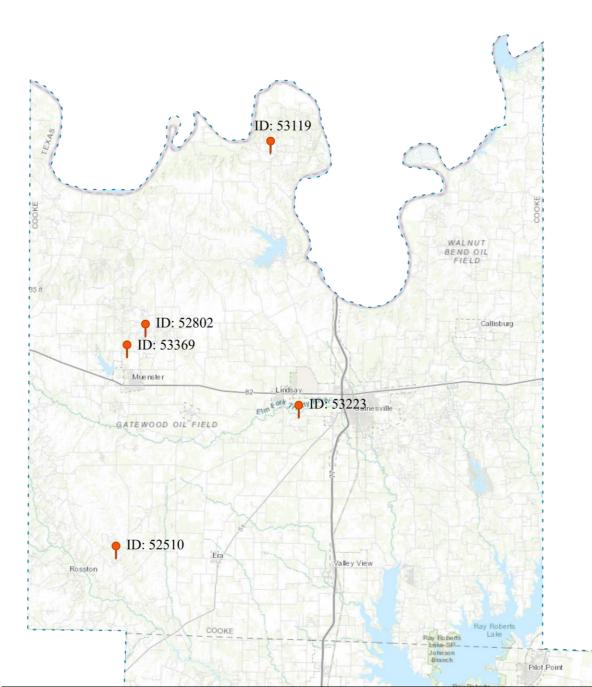
Goal 4: Addressing Conjunctive Surface Water Management Issues

Region C and GMA 8

- Region C Water Planning Group held 2 meetings in 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 Ronny Young was unable to attend the October 27, 2020 meeting, but attended all others in 2020.

Goal 5: Addressing Natural Resource Issues

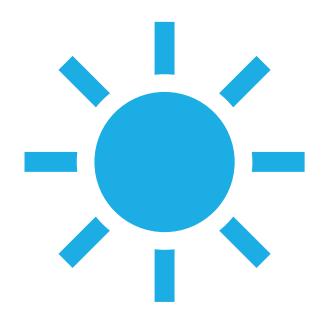




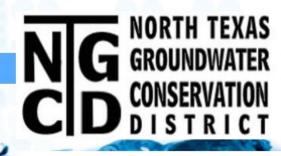
Reported Injection Well

- 5 Injection Wells Applications
- 5 Applications were Granted
- None of the Application were Protested

Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS



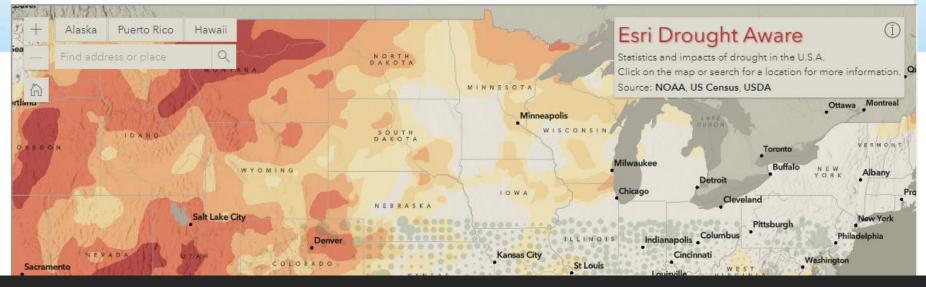
Goal 6: Addressing Drought Conditions



Phone: (855) 426-4433, Fax: (903) 786-8211

Home District Information Meetings Well Registration Report Usage Billing Contact Information More

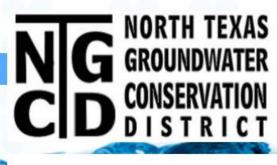
Drought Information



Drought Information

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





Phone: (855) 426-4433, Fax: (903) 786-8211

Home District Information Meetings Well Registration Report Usage Billing Contact Information More

Conservation

Conservation Tips:

The NTGCD would like to encourage residents to conserve water. During fall and winter months, lawns in our region require much less irrigation as the grasses go dormant.

How much water do you use at your home? Estimate your daily and annual water use and learn methods to conserve water at the Home Water Works site.

Water Conservation Links

Home Water Conservation Guide Water IQ by the Texas Water Development Board Drought Preparedness Council Situation Report Brush 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

Conservation Links of the District Website



Major Rivers Curriculum



Goal 8: Achieving Desired Future Conditions of Groundwater Resources

Summary

♦ Woodbine Well Ar

🗠 Woodbine Spatial

polygig	Select County or entire GCD
alysis	GCD
Analysis	

- laterative Paluxy Well Analysis 🗠 Paluxy Spatial Analysis
- I Glen Rose Well Analysis
- 🗠 Glen Rose Spatial Analys
- Antlers Well Analysis
- 🗠 Antlers Spatial Analysis
- ♦ Twin Mountains Well Ar
- 🗠 Twin Mountains Spatial

Select County or entire GCD	
GCD	•

DFC Summary for Slope Analysis

lysis	Aquifer 🍦	County 🍦	Adopted DFC (ft of Avg. Drawdown)	DFC Period (Years)	Annual DFC (ft/yr of Avg. Drawdown)	Current Trend (ft/yr of Avg. Drawdown)	Current Status (+ indicates value above DFC/ - indcates value below DFC)
	Woodbine	GCD	278	60	-4.63	-0.72	3.91
is	Paluxy	GCD	671	60	-11.18	-6.38	4.8
Analysis	Glen Rose	GCD	341	60	-5.68		
al Analysis	Antlers	GCD	290	60	-4.83	-2.78	2.05
	Twin Mountains	GCD	569	60	-9.48	-7.11	2.37

DFC Summary for Spatial Analysis



Aquifer	County 🌲	Adopted DFC (ft of Avg. Drawdown)	DFC Period (Years)	Annual DFC (ft/yr of Avg. Drawdown)	Current Trend (ft/yr of Avg. Drawdown)	Current Status (+ indicates value above DFC/ - indcates value below DFC)
Woodbine	GCD	278	60	-4.63	13.11	17.74
Paluxy	GCD	671	60	-11.18	9.98	21.16

DFC Evaluation Tool

Slope and Spatial Analysis Comparison

		Slope Analysis	Spatial Analysis
Aquifer	County	Current Status	Current Status
	Collin	-	(21.77)
Tripity (Aptlara)	Cooke	0.69	(67.42)
Trinity (Antlers)	Denton	13.97	(6.74)
	District	3.07	(10.67)
	Collin	10.47	23.07
Trinity (Paluxy)	Denton	5.06	14.51
	District	7.45	21.16
	Collin	(4.75)	-
Trinity (Twin Mountains)	Denton	7.14	-
	District	2.75	-
	Collin	10.47	16.48
Woodbine	Cooke	0.15	(12.74)
	Denton	(0.01)	(42.31)
	District	3.95	13.58

Any Questions?

PAUL M. SIGLE, GROUNDWATER TECHNICAL LEAD

Slope and Spatial Analysis Comparison

		Slope Analysis Current Status	Spatial Analysis
Aquifer	County		Current Status
	Collin	-	(17.05)
Trinity	Cooke	0.15	(7.11)
(Antlers)	Denton	3.83	(7.56)
	District	2.05	(6.69)
Trivity	Collin	10.47	23.07
Trinity	Denton	1.80	14.51
(Paluxy)	District	4.80	21.16
Trivity (Twin	Collin	(5.48)	-
Trinity (Twin	Denton	6.85	-
Mountains)	District	2.37	-
	Collin	6.26	16.48
Woodbine	Cooke	0.15	11.64
wooudine	Denton	(0.06)	23.31
	District	3.91	17.74