

**GUADALUPE COUNTY  
GROUNDWATER CONSERVATION DISTRICT  
WATER LEVEL REPORT  
BY  
WILLIAM B. KLEMT, P.G.  
JANUARY 2023**



**Measurement of Water Level Decline and Achievability of the  
Desired Future Conditions for the Carrizo-Wilcox Aquifer within Guadalupe County**

A handwritten signature in black ink, appearing to read 'B. Klemt', written over a horizontal line.

William B. Klemt, P.G.

WILLIAM B.KLEMT  
CONSULTING GEOLOGIST

-----  
billklemt@gmail.com  
(512) 837-2115

February 8, 2023

Kelley Cochran  
Manager  
Guadalupe County GCD  
P.O. Box 1221  
Seguin, Texas 78156

The District's water-level observation wells were measured in January 2023. Twelve (12) of the District's current wells are completed in the Carrizo aquifer and twelve (12) in the Wilcox aquifer. Most of the District's current observation wells were used to provide water level change or elevation information. Also used in this report were three Carrizo wells from Gonzales County.

The 2013 DFC water levels and January 2023 measured water levels are shown on the attached tables. Comparisons of water-level measurements and water-level decline calculations can be made using the tables. The attached maps show well locations, Carrizo and Wilcox water-level information.

### **Carrizo Water Levels**

Average GCGCD Carrizo water levels changed about -1.43 feet for the period January 2022 to January 2023 in the 12 wells. These wells are either located in the outcrop or close to the outcrop. Largest water-level decline (- 5.82 feet) included in the above average was in Monitor Well MWCZ-8. The recently completed 6 Carrizo outcrop monitor wells are also included in the above average.

Average water levels, from January 2022 to January 2023, changed an estimated -3.25 feet in the SSLGC Area (Well 67-34-706(6), and in the CRWA Area, average water levels changed about -2.97 feet (Wells 67-34-302, 67-34-505, and 67-34-612).

It is anticipated Carrizo water-level declines will increase moderately within the District due to the addition of the proposed SSLGC Carrizo Well Field in the vicinity of Well 67-34-706(6). The increased rate of decline will slowly decrease with time as water levels approach a new equilibrium.

The Carrizo long-term (2013 - January 2023) water-level declines in the SSLGC and CRWA areas of Guadalupe County are about 21 feet (-2.1 feet/year) and 34 feet (-3.4 feet/year), respectively. Six (6) monitor wells, located near the middle of the Carrizo outcrop, averaged about - 0.58 feet/year.

### **Wilcox Water Levels**

The January 2022 - January 2023 Wilcox water-level measurements indicate an average change of -1.01 feet for 10 wells. Not included in the water-level change calculation were the following wells:

- a) Ullrich Well 67-25-910, -11.48 feet; and
- b) Schwenn Well was not included for lack of a 1/2022 water level measurement.

### **Additional Comments Regarding Carrizo Outcrop Monitor Wells**

The Table of DFC measurements provided, on an annual basis, the data needed to track progress toward meeting the District's Desired Future Condition (DFC) Requirements. The data provided on the DFC Table provides the following information:

- a) estimated 2013 water level;
- b) estimated saturated thickness of the aquifer in 2013;
- c) allowable water level drawdown and water level measurement in order to meet the District's 2070 - 2080 DFC Requirements; and
- d) January 2023 measured water levels.

Analysis of the Table, with respect to the Carrizo, indicates the following:

- a) subtracting column 6 from column 2 provides the water level change for the period 2013 - January 2023;
- b) the total change for the 6 wells is -35 feet for the 10 year period and per well, -5.83 feet for the 10 years, and on an annual basis, -0.583 feet/year
- c) the total available drawdown to meet the DFC Requirements is 225 feet for the 6 wells (column 4);
- d) dividing 225 feet by the six monitor wells indicates there is an average of 37.5 feet of saturated thickness per well;
- e) dividing the average saturated thickness (37.5 feet) by the average annual decline per well (0.583 feet/year) indicates it would take about 65 years before the total available drawdown is exceeded.

With respect to the Wilcox data (2013 -January 2023), the Table indicates, it would take over 300 years before the total available drawdown is exceeded.

### **Carrizo/Wilcox Water Chemistry**

Field Parameters were taken with the District's instrument from the following wells on January 17, 2023:

Carrizo Well

- a) 67-26-9 (MWCZ-7): temperature, 74 deg. F; pH, 6.3, conductivity, 110 umhos/cm.

Wilcox Wells

- b) 67-27-706 (Kallies): temperature, 73 deg. F; pH, 7.9, conductivity, 1010 umhos/cm;
- c) 67-27-1 (Watts #4): temperature, 72 deg F; pH, 7.6; conductivity, 780 umhos/cm;
- d) 68-40-204 (Vogel): temperature, 72 deg. F; pH, 8.4; conductivity, 2900 umhos/cm.

A spike in any of the above parameters may indicate natural changes or contamination of ground water.

**Summary**

In Summary:

1) Short term (1/2022 - 1/2023) Carrizo water levels declined about -1.43 feet; 2) Long-term (2013 - 2022), Carrizo water levels in the outcrop indicate an average decline of -0.58 feet/year; 3) Based on estimated average water-level data for the 6 monitor wells (2013 - 1/2023), the District is projected to meet 2070 and 2080 DFC Requirements; 4) At the present day level of pumpage, small to moderate water-level declines are continuing in the Carrizo; 5) However, additional proposed pumpage is expected to increase the rate of Carrizo water-level decline within the District to a more moderate level; 6) For the most part, Wilcox water levels remain relatively stable; and 7) It is recommended, the District continue monitoring the chemical quality and field parameters in the District's observation wells in order to detect natural changes or contamination of the ground water.

Sincerely,



William B. Klemt, P.G.

DESIRED FUTURE CONDITION  
MONITOR WELLS  
(Water Level Measurements are from Land Surface)

Carrizo Monitor Wells

Observation Well	1/2013 Water Level (feet)	1/2013 Sat/Thick (feet)	DFC Available Drawdown (feet)	DFC Water Level (feet)	1/2023 Water Level (feet)
MWCZ-1A	144	276	69	213	149
MWCZ-1B	163	153	39	202	168
MWCZ-2	145	78	20	165	148
MWCZ-3	91	79	20	111	93
MWCZ-7	20	112	28	48	30
MWCZ-8	170	195	49	219	180

Wilcox Monitor Wells

MWWX-1 (Carter)	33	316	79	112	35
MWWX-2 (Ulrich)	100	410	103	203	103
MWWX-3 (Beltz)	25	111	28	54	27

Note:

Available Drawdown is estimated by multiplying the January 2013 Saturated Thickness by 25 percent

The DFC Water Level is estimated by adding the Available Drawdown to the January 2013 water level

WIBK  
2/8/23

**GCGCD CARRIZO (Cz)/WILCOX (Wx)  
WATER-LEVEL PROGRAM**

Measurements shown are from the measuring point (MP)

<u>Date</u>		<u>WL below MP (ft)</u>
David Baker	67-18-8(7c) MP 1.0 ft >GL	LSD + 622
WS	Lat/Long: 29.654272/97.831397	Depth 232 ft
9/17/15		120.66
1/13/16		119.99
1/19/22		120.36
6/15/22		121 Estimated
9/14/22		121.35
1/17/23		120.60
Robert Carter(Wx)	67-19-708(7b) MP 1.9 ft >GL	LSD +416
WS	Lat/Long:29.657673/97.726433	Depth 295 ft
1/20/13,	33feet (+378) <GL Sat/thick (2013) = 349 ft (Brac) -33 ft = 316 ft	
1/14/15		036.67
1/19/22		033.44
6/15/22		036.71
9/14/22		037.82
1/17/23		035.45: oil spill, 100 ft West
Fred Blumberg (Wx)	67-25-709 MP 1.5 ft >GL	LSD +525
	Lat/Long:29.530255/97.973638	Depth 160 ft
3/20/00		053
1/21/13		053.20
1/19/22		049.26
6/15/22		053.96
9/14/22		053.38
1/17/23		052.13
Dickie Ullrich(Wx)	67-25-910(9a) MP 0.5 ft >GL	LSD +506
WS	Lat/Long:29.518904/97.887402	Depth (?)
9/02/10		094.60 <MP
1/21/13		099.98 <GL
1/19/22		091.63
6/15/22		138.25 ?
9/14/22		117.48
1/18/23		103.11
Donald Brady(Wx)	67-26-312(7a) Mp 2.0 ft >GL	LSD +568
WS	Lat/Long:29.616036/97.776164	Depth 410
12/1/99		166
1/21/13		163.33
1/19/22		164.56
6/15/22		165.25
9/15/22		167.69
1/17/23		166.08
SH 466 MWCz-7	67-26-9 (39) MP 0.4 ft <GL after 1/28/20	LSD +393
	Lat/Long:29.502032/-97.76655	Plugged back from 250 to 132 ft
		Screen 92 to 132 ft
		B/Cz 132 ft (+261)
	Estimated 2002 WL Elev. +376	
1/2013 WL-Elev	+373 (20 ft <LSD)	Sat/thick (2013) = 132 - 20 = 112 ft
6/12/19		23
1/28/20		26.28(WS), 24.75(e-line)
1/18/22		26.30

	06/14/22		29.02	
	9/13/22		30.05	
	1/18/23		29.74	
Chris Ayotte		67-27-110(2b) MP 2.0 ft >GL		LSD +431
WS		Lat/Long:29.58612/97.7211		Depth 360 ft
	2/23/12		063	
	1/21/13		059.12	
	1/19/22		052.29	
	6/15/22		052.22	
	9/14/22		054.45	
	1/17/23		052.58	
Sagebiel MWCz-3		67-27-4(2d) MP 3.3 ft >GL		LSD +452
Nash Creek WS		Lat/Long:29.546739/-97.720243		Plug back from 270 to 170 ft
				Screen 170 up to 130 ft
				B/Cz 170 ft (+288)
Estimated 2002 WL Elev. +373				
1/2013 WL 91 ft <LSD)			Sat/thick (2013) 79 ft	
	2/08/19		091.5 < GL	
	1/19/22		096.85	
	6/15/22		094.72	
	9/14/22		093.61	
	1/17/23		092.81	
Pete Kallies(Wx)		67-27-706(2) MP 1.0 >GL		LSD +433
WS		Lat/Long:29.533748/-97.738436		Depth 520 ft
	9/24/03		053.24	
	1/21/13		055.70	
	1/19/22		055.30	
	6/15/22		056.36	
	9/14/22		056.00	
	1/17/23		055.89	
Edward Henk		67-33-602(3b) MP 1.55 ft >GL		LSD +541
WS		Lat/Long:29.424211/-97.879389		Depth 225 ft
	8/17/08		108.17	
	1/21/13		111.62	
	1/19/22		122.34	
	6/15/22		123.21	
	9/14/22		123.44	
	1/17/23		124.04	
Blumberg MWCZ 1-B		67-33-6 MP 3.5 ft >GL		LSD +620
		Lat/Long:29429658-97.901995		Depth 319 feet, plug back from 355 feet
				Screen 279 - 319 feet
				B/CZ 316 feet
Estimated 2002 WL Elev. +459				
1/2013			163.06 < GL, 2013 Sat Thick (316 - 163 = 153 ft)	
7/24/20			169.2 < GL after development	
1/18/22			168.39	
6/14/22			167.704	
9/13/22			167.43	
1/18/23			167.95	
Sandy Oaks Tavern		67-33-803(8) MP 1.8 ft >GL		LSD +584
(Pole Cat) WS		Lat/Long:29.381048/-97.956268		Depth (?)
	8/1964		125 ft < GL	
	1/21/13		152.59	
	1/19/22		157.63	
	6/15/22		158.36	
	9/14/22		158.30	
	1/17/23		158.36	

Hwy 123 MWCz-2	67-33-8(8a)	MP 3.6 ft >GL	LSD +628
Flying W	Lat/Long: 29.400309/-97.954371		Screen 180 - 220 ft
Estimated 2002 WL Elev. +494			TD 280 ft (+351)
1/20/13 WL 145 ft <GL		B/Cz @ TWCZ-1 (+406 Elev.)	
2/17/18			146.3
2/20/18			146.25 <GL Reported
1/15/19			148.87
1/18/22			147.76
6/14/22			147.832
9/13/22			147.93
1/18/23			147.98
Hwy 123 (Wx)	67-33-8	MP 1.5 ft >GL	LSD +620
Flying W	Lat/Long: 29.409830/-97.954708		Depth 535 ft
6/06/88			140
6/22/21			148.85
1/19/22			157.43
6/15/22			159.62
9/14/22			162.26
1/18/23			156.95
Blumberg MWCz-1A	67-33-9(6d)	MP 3.0 ft >GL	LSD +570
	Lat/Long: 29.413811/-97.887355		Plug back from 477 ft to 420 ft
Estimated 2002 WL Elev. +430			Screen 360 - 420 & 180 -200 ft
1/20/13 WL 144ft <GL)		Sat/thick (2013) 420 -144 = 276 ft	B/Cz 420 ft (+150)
3/12/19			147.5
4/04/19			147.5
4/23/19			147.51
1/18/22			149.50
6/14/22			149.298
9/13/22			149.91
1/18/23			149.19
Wells Ranch (Cz)	67-34-302(3a)	MP 1.5 ft >GL	LSD +491
WS	Lat/Long: 29.4706/-97.7747		Depth 250 ft
2002			106 Estimated
4/29/08			110
1/03/13			118.70
1/04/22			147.44
6/02/22			148.61
9/06/22			150.22
1/09/23			152.06
MWCz-8, FM 1117	67-34-4(4b)	MP 0.3 ft <GL	LSD +610
	Lat/Long: 29.452258/97.845193		Depth 415 ft
Estimated 2002 WL Elev. +443			Screen 325 - 365 ft
1/20/13 WL 170 ft <GL)		B/Cz 365 ft (+245)	
7/25/19		Sat/Thick (2013) = 365 - 170 = 195 ft	
8/09/19			179
8/14/19			178.2
1/18/22			179.67
6/14/22			174.63
9/13/22			179.10
1/17/23			179.08
Bexar Met #2 (Cz)	67-34-505(5)	MP 2.2 ft >GL	180.45
Deer stand	Lat/Long: 29.450425/-97.796486		LSD +474
8/20/02			Depth 460 ft
			084.09



	1/03/13		102.18
	1/02/22		137.6
	6/10/22		141.4
	9/11/22		141.6
	1/06/23		135.6
CRWA (Wx)	67-34-5	MP 2.2 ft >GL	LSD +483
Deer stand #3	Lat/Long: 29.449793/-97.797889		Depth 1602 ft
	09/07/16		092.1
	10/14/18		149.9
	01/02/19		178.2
	1/03/22		105.9
	6/10/22		136.5
	9/15/22		172.2
	1/06/23		109
Blumberg #1 (Cz)	67-34-706(6)	MP 2.0 ft >GL	Estimated
WS	Lat/Long: 29.385406/-97.852584		LSD +514
			Depth 770 ft, T/MCz 330 ft(+184)
			Screen 526 - 772 ft
	1/21/04		109.10 <GL
	1/21/13		121.28
	1/19/22		141.20
	6/15/22		144
	9/14/22		Estimated
	1/17/23		147.01
			144.45
Baethge (Cz)	67-34-710(6c)	MP 2.0 ft >GL	LSD +468
(Lakey) WS	Lat/Long: 29.411429/-97.836769		Depth (?)
	8/17/08		069.84
	1/21/13		074.23
	1/19/22		096.00
	6/15/22		099.60
	9/14/22		101.50
	1/17/23		100.24
Mundt (Cz)	67-34-7	MP 1.5 ft >GL	LSD +520
	Lat/Long: 29.391694/-97.840694		Depth 444 ft
	1/19/22		142.68
Norvin Vogel (Wx)	68-40-204(10a)	MP 1.0 ft >GL	LSD +560
WS	Lat/Long: 29.4929/-98.0703		Depth 90 ft
	10/4/85		024
	1/15/19 (2013)		025.75
	1/19/22		026.29
	6/15/22		026.71
	9/14/22		026.92
	1/17/23		026.37
Belz (Wx)	68-40-401	MP 1.0 ft >GL	LSD +537
	Lat/Long: 29.447778/-98.0950556		Depth 64 ft
	1/19/22		027.00
	6/15/22		027.05
	1/17/23		026.86
Randy Schween	68-40-7	Mp 1.74 >GL	LSD +540
	Lat/Long: 29.40888/-98.114721		Depth 180 ft
	2/09/02		060
	4/05/22		068.38
	6/15/22		071.57
	9/14/22		080.01 Had been pumping
	1/17/23		063.35

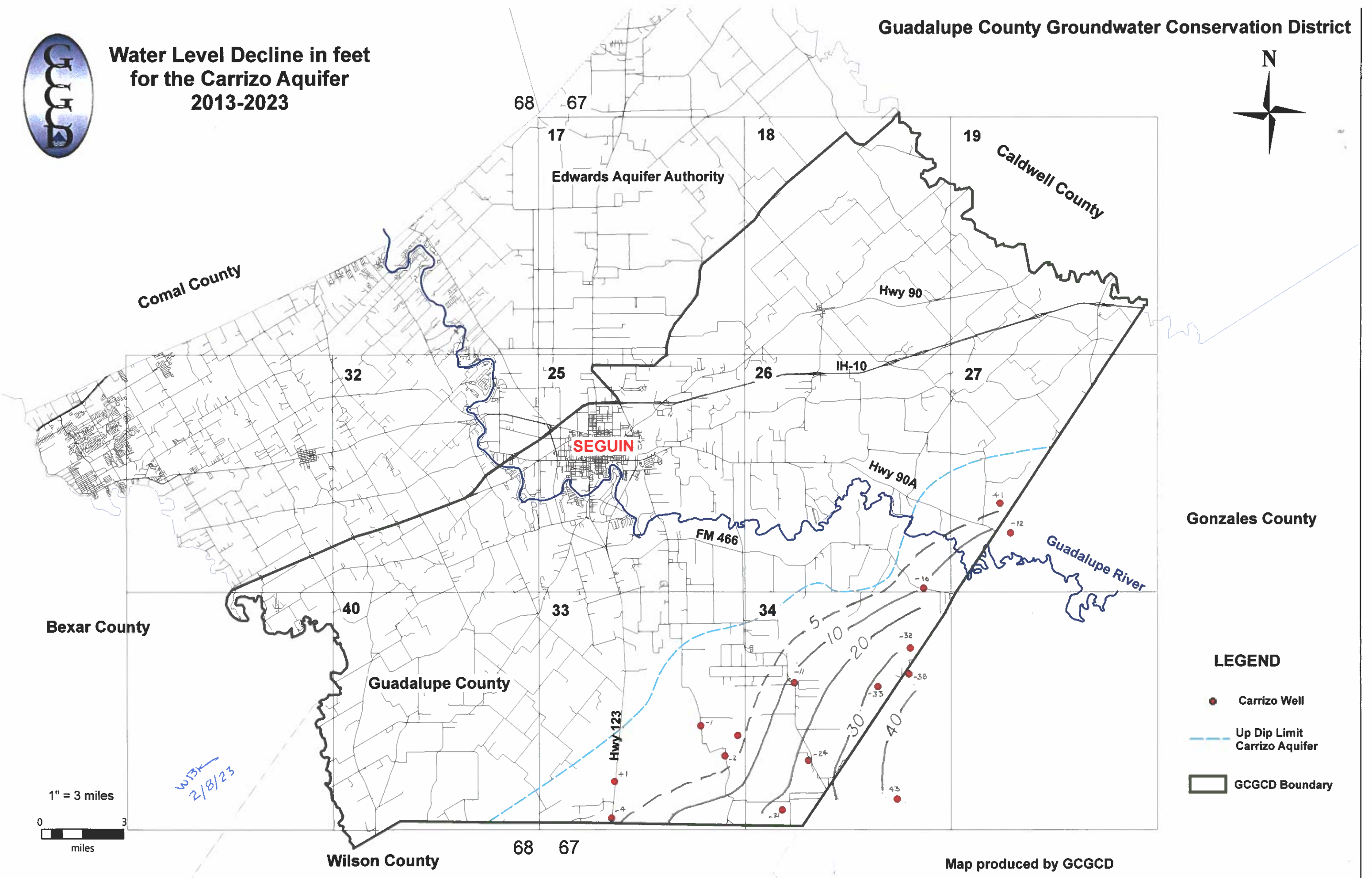
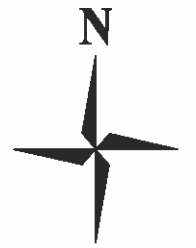
**GCUWCD WATER LEVELS**

<b>James Miller (Cz)</b>	<b>67-27-705</b>	<b>MP 0.5 ft &gt;GL</b>	<b>LSD +391</b>
	<b>Lat/Long:29.530824/-97.71026</b>		<b>Depth (?)</b>
8/20/02			030.07
1/03/13			036.58
1/04/22			045.52
6/02/22			44.50
9/06/22			43.68
1/09/23			48.70
<b>Bexar Met #3</b>	<b>67-34-612</b>	<b>MP 2.2 ft &gt;GL</b>	<b>LSD +465</b>
<b>Harden #1 Tommy's Well</b>	<b>Lat/Long: 29.457182/-97.775855</b>		<b>Depth 680 ft</b>
8/20/02			075.13 MP 1.5 ft >GL
1/03/13			096.8
1/02/22			128.6
6/10/22			130.6
9/09/22			134.8
1/06/23			134.9
<b>Thyra Harvey(Cz)</b>	<b>67-34-904</b>	<b>MP 1.2 ft &gt;GL</b>	<b>LSD +410</b>
	<b>Lat/Long:29.39102/-97.782671</b>		<b>Depth (?)</b>
10/25/00			032.17 Barry Miller
01/17/12			054.57
1/05/22			092.84
6/02/22			095.93
9/06/22			106.10
1/09/23			098.02



# Water Level Decline in feet for the Carrizo Aquifer 2013-2023

## Guadalupe County Groundwater Conservation District



1" = 3 miles  
0 3  
miles

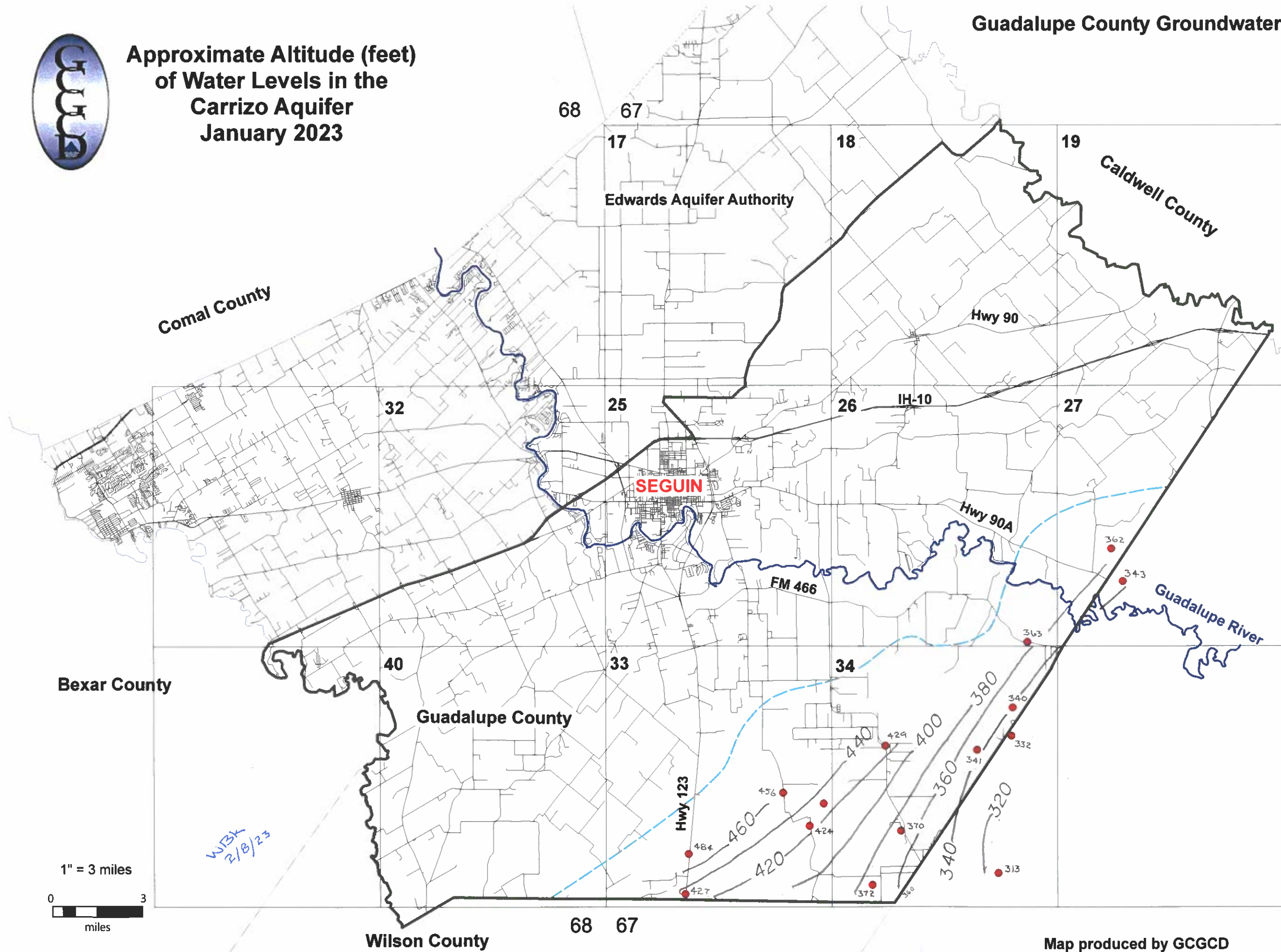
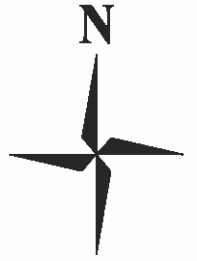
W13K  
2/8/23

- LEGEND**
- Carrizo Well
  - Up Dip Limit Carrizo Aquifer
  - GCGCD Boundary



**Approximate Altitude (feet)  
of Water Levels in the  
Carrizo Aquifer  
January 2023**

**Guadalupe County Groundwater Conservation District**



**Gonzales County**

**Bexar County**

**Guadalupe County**

**Wilson County**

68

67

18

19

32

25

26

27

40

33

34

68

67

Edwards Aquifer Authority

Caldwell County

Comal County

**SEGUIN**

Hwy 90

IH-10

Hwy 90A

FM 466

Hwy 123

Guadalupe River

**LEGEND**

● Carrizo Well

--- Up Dip Limit  
Carrizo Aquifer

□ GCGCD Boundary

1" = 3 miles



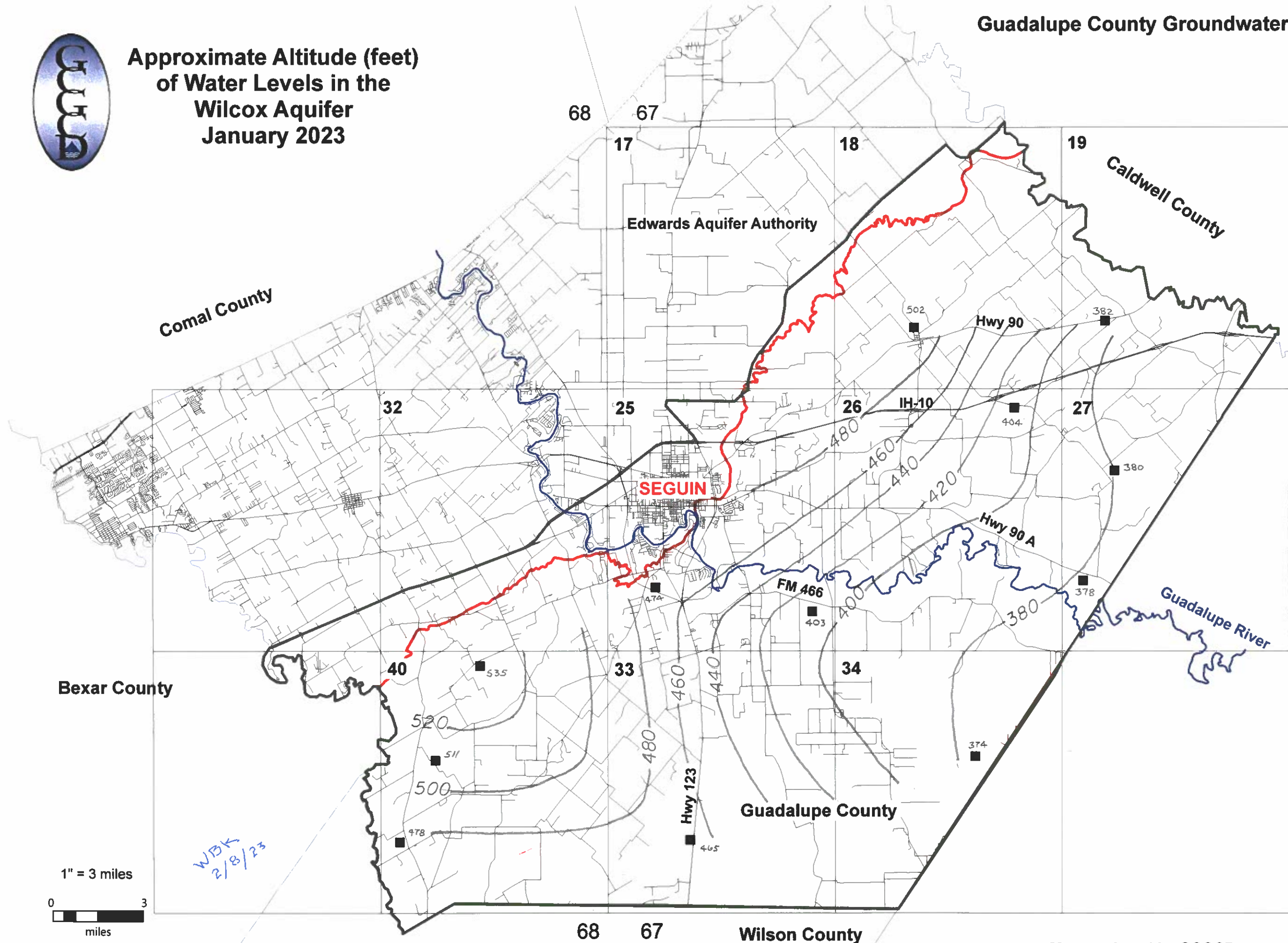
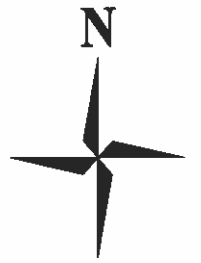
WIBX  
2/8/23

Map produced by GCGCD



**Approximate Altitude (feet)  
of Water Levels in the  
Wilcox Aquifer  
January 2023**

**Guadalupe County Groundwater Conservation District**



**Gonzales County**

**LEGEND**

■ Wilcox Well

□ GCGCD Boundary

— Wilcox Outcrop

1" = 3 miles



WBK  
2/8/23

Map produced by GCGCD