

GUADALUPE RIVER BASIN METALS DATA AND WATER QUALITY CRITERIA**

(All values in µg/L, except hardness as CaCO₃ in mg/L.)

	Guadalupe R. at Saltwater Barrier 12578	Guadalupe R. at FM 766 12592	Lake Dunlap at AC's Place 12596	Guadalupe R. at Split Rock Road 15113	Guadalupe R. at G St. 12616	Peach Creek 14937	San Marcos River at Luling 12626	Geronimo Creek 14932	Dry Comal River 12570
HARDNESS (15th percentile)	209	209	214	206	196	39	223	285	229
HARDNESS (average)	159	244	244	206	207	126	256	309	298
Ag (SILVER)									
Dissolved									
Nov-99	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
May-01	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
July-01	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sept/Nov-02	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Jun-03	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aug-04	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Mar-05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Mar-06	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Apr-07	< 0.1					< 0.1		< 0.1	
Aug-08	< 0.5								
Jul-09	< 0.5								
May-10	< 0.5								
Jul-11	< 0.5					< 0.5			
Aug-12	< 0.5					< 0.5			
Average^{2,3}	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1	< 0.1
Acute Criteria	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Chronic Criteria	-	-	-	-	-	-	-	-	-
Al (ALUMINUM)									
Dissolved									
Nov-99	3	4	2	3	3	122	2	3	2
May-01	28.2	9.84	5.4	5.31	4.82	79.3	5.15	3.0	4.13
July-01	5.69	53.4	1.3	6.44	4.59	121	4.03	2.3	1.7
Sept/Nov-02	< 2	< 2	3.62	4.11	< 2	161	< 2	< 2	< 2
Jun-03	5.43	6.08	< 2	< 2	2.06	2.4	< 2	6.04	< 2
Aug-04	20.7	12.4		4.4	3.72	32.7	2.78		12
Mar-05	17.1	19.9		3.79	7.84	208	6.27		1.5
Mar-06	8.23	2.29		10.2	3.08	4080	2.03		2.19
Apr-07	2770					865		17.2	
Aug-08	< 4								
Jul-09	< 4								
May-10	< 4								
Jul-11	8					176			
Aug-12	< 450.0					< 450.0			
Average³	< 450.00	13.74	2.86	4.91	3.89	584.74	3.28	5.59	3.44
Acute Criteria	991	991	991	991	991	991	991	991	991
Chronic Criteria	-	-	-	-	-	-	-	-	-
As (ARSENIC)									
Dissolved									
Nov-99	3.26	1.71	0.68	0.97	1.12	7.45	0.68	1.12	0.89
May-01	2.4	0.69	< 2	0.57	0.44	1.7	0.26	0.88	2.71
July-01	2.53	1.4	0.6	1.4	1.4	3.94	0.73	1.4	1.1
Sept/Nov-02	2.92	1.43	< 0.5	0.92	0.84	5.39	0.51	0.84	1.09
Jun-03	1.42	0.86	0.58	0.84	0.52	1.21	0.63	1.17	1.09
Aug-04	2.69	1.35		0.96	0.92	3.56	0.69		1.88
Mar-05	2.07	< 1		< 1	< 1	2.57	< 1		1.88
Mar-06	2.01	1.1		< 1	< 1	2.56	< 1		1.26
Apr-07	3.27					3.38		2.39	
Aug-08	4.37								
Jul-09	5.9								
May-10	2.4								
Jul-11	5.4					< 0.5			
Aug-12	4.6					5.4			
Average³	3.23	1.19	0.87	0.96	0.91	3.42	0.69	1.30	1.49
Acute Criteria	360	360	360	360	360	360	360	360	360
Chronic Criteria	190	190	190	190	190	190	190	190	190
Human Health	10*	10*	10*	10*	10*	10*	10*	10*	10*
Cd (CADMIUM)									
Dissolved									
Nov-99	< 0.05	< 0.05	0.14	< 0.05	< 0.05	< 0.05	0.07	< 0.05	0.12
May-01	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
July-01	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Sept/Nov-02	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Jun-03	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.5	< 0.1
Aug-04	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Mar-05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Mar-06	< 0.1	< 0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Apr-07	< 0.1					< 0.1		< 0.1	

	Aug-08	< 1.0								
	Jul-09	< 0.1								
	May-10	< 1.0								
	Jul-11	< 1.0					< 1.0			
	Aug-12	< 1.0					< 1.0			
	Average³	< 1.0	< 0.2	< 0.2	< 0.2	< 0.2	< 1.0	< 0.2	< 0.2 ¹	< 0.2
Acute Criteria		75.3	75.3	77.3	74.1	70.0	11.3	81.0	106.8	83.5
Chronic Criteria		1.84	1.84	1.87	1.82	1.75	0.49	1.94	2.35	1.98
Human Health		5*	5*	5*	5*	5*	5*	5*	5*	5*
Cr (CHROMIUM)	Nov-99	1.4	0.8	0.8	0.9	0.8	2.0	0.7	1.2	0.7
Dissolved	May-01	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	July-01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	Sept/Nov-02	2.61	1.99	2.51	2.03	2.35	3.49	2.39	3.37	3.3
	Jun-03	1.61	1.28	1.11	< 1	< 1	3.01	1.08	1.2	1.53
	Aug-04	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Mar-05	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Mar-06	3.8	3.6		2.9	3.0	5.2	3.6		4.7
	Apr-07	2.2					< 1.0		< 1.0	
	Aug-08	1.0								
	Jul-09	< 1.0								
	May-10	< 1.0								
	Jul-11									
	Aug-12	4.7					4.8			
	Average³	1.79	1.45	1.20	1.35	1.40	2.35	1.47	1.35	1.78
Acute Criteria		1000	1000	1020	990	950	250	1060	1290	1080
Chronic Criteria		326	326	332	322	309	82	343	420	351
Human Health		100*	100*	100*	100*	100*	100*	100*	100*	100*
Cu (COPPER)	Nov-99	1.3	0.7	0.5	0.5	0.7	0.4	0.3	0.5	0.5
Dissolved	May-01	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	July-01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	Sept/Nov-02	1.42	0.73	0.45	0.44	0.38	0.73	0.81	0.34	0.57
	Jun-03	1	0.64	0.49	0.51	0.48	1.06	0.54	0.56	0.75
	Aug-04	0.87	0.59		0.42	0.45	1.07	0.44		0.86
	Mar-05	1.03	0.52		0.45	0.48	1.55	0.37		0.95
	Mar-06	0.892	0.482		0.462	0.405	1.1	0.379		0.477
	Apr-07	2.18					1.76		0.79	
	Aug-08	1.71								
	Jul-09	1.4								
	May-10	2.2								
	Jul-11	1.8								
	Aug-12	1.5					< 3			
	Average³	1.38	0.71	0.69	0.60	0.59	1.38	0.62	0.67	0.76
Acute Criteria		36.9	36.9	37.7	36.4	34.7	7.6	39.2	49.4	40.2
Chronic Criteria		23.1	23.1	23.5	22.8	21.8	5.5	24.4	30.1	24.9
Hg (MERCURY)	Nov-99	0.006	< 0.005	< 0.005	0.010	0.009	< 0.005	< 0.005	< 0.005	< 0.005
Total	May-01	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
	July-01	0.207	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
	Sept/Nov-02	0.0148	0.00546	0.00212	0.00194	0.00042	0.01137	0.00507	0.00282	0.00252
	Jun-03	0.00272	0.00105	0.00073	0.00083	0.00056	0.00239	0.00137	0.00086	0.00096
	Aug-04	0.00179	0.00128		0.00088	0.00076	0.0023	0.00056		0.00142
	Mar-05	0.00374	0.00169		0.0005	0.00052	0.00438	0.00103		0.00087
	Mar-06	0.00161	0.00061		0.00071	0.00048	0.0045	0.00053		0.00118
	Apr-07	0.0149					0.00881		0.00105	
	Aug-08	< 0.2								
	Jul-09	< 0.2								
	May-10	< 0.2								
	Jul-11	< 0.2					< 0.2			
	Aug-12	< 0.2					< 0.2			
	Average³	< 0.20000	0.05858	0.10071	0.05784	0.05753	< 0.20000	0.05837	0.08095	0.05814
Acute Criteria		2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Chronic Criteria		1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Human Health		0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122
Ni (NICKEL)	Nov-99	2.3	1.1	1.0	0.7	0.6	1.2	0.9	0.9	1.2
Dissolved	May-01	1.94	1.18	0.9	1.14	0.84	4	1.12	1.66	2.28
	July-01	3.05	2.6	2.91	1.85	1.77	1.34	2.5	3.76	3.48
	Sept/Nov-02	2.62	1.56	1.32	1.07	< 1	1.65	1.41	1.85	1.87
	Jun-03	3.52	3.04	2.78	1.94	2.01	6.76	2.77	3.56	4.15
	Aug-04	0.87	1.88		1.46	1.38	2.96	1.65		2.17
	Mar-05	2.41	1.57		1.35	1.25	5.42	1.39		3.01
	Mar-06	2.94	1.98		1.5	1.35	1.4	1.88		2.74
	Apr-07	3.35					4.08		2.38	

	Aug-08	5.17								
	Jul-09	4.2								
	May-10	3.1								
	Jul-11	6					2.6			
	Aug-12	2.6					< 1			
	Average³	3.15	1.86	1.78	1.38	1.21	3.14	1.70	2.35	2.61
Acute Criteria		2640	2640	2690	2610	2500	640	2790	3430	2850
Chronic Criteria		293	293	299	290	278	71	310	381	317
Pb (LEAD)	Nov-99	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.61	< 0.05	< 0.05	< 0.05
Dissolved	May-01	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	July-01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	Sept/Nov-02	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.33	< 0.1	< 0.1	< 0.1
	Jun-03	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	9.21	< 0.1
	Aug-04	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.17	< 0.1	< 0.1	0.12
	Mar-05	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.355	< 0.1	< 0.1
	Mar-06	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1.24	< 0.1	< 0.1	< 0.1
	Apr-07	1.13					0.718		< 0.1	
	Aug-08	< 1								
	Jul-09	< 1								
	May-10	< 1								
	Jul-11	< 1					< 1			
	Aug-12	< 1					< 1			
	Average³	< 1.0	0.05	0.05	0.05	0.05	< 1.0	0.111	1.88	0.064
Acute Criteria		186	186	191	182	171	22	201	275	208
Chronic Criteria		6.44	6.44	6.64	6.32	5.93	0.76	6.99	9.56	7.24
Human Health		4.98	4.98	4.98	4.98	4.98	4.98	4.98	4.98	4.98
Se (SELENIUM)	Nov-99	0.67	0.42	0.35	0.17	0.17	0.12	0.35	2.00	0.46
Total	May-01	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
	July-01	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
	Sept/Nov-02	0.68	0.41	0.42	0.17	0.20	0.13	0.37	2.19	0.43
	Jun-03	0.514	0.422	0.419	0.232	0.214	0.131	0.351	1.830	0.478
	Aug-04	0.46	0.23		< 0.20	0.28	< 0.20	0.35		0.24
	Mar-05	0.375	0.297		0.222	0.230	0.178	0.285		0.378
	Mar-07	0.711	0.399		0.208	0.228	0.092	0.348		0.380
	Apr-07	0.526					0.272		2.420	
	Aug-08	2.210								
	Jul-09	< 2.000								
	May-10	< 2.000								
	Jul-11	2.030					< 2.000			
	Aug-12	< 2.000					< 2.000			
	Average³	< 2.00	0.35	0.42	0.19	0.23	< 2.00	0.34	2.15	0.38
Acute Criteria		20	20	20	20	20	20	20	20	20
Chronic Criteria		5	5	5	5	5	5	5	5	5
Human Health		50*	50*	50*	50*	50*	50*	50*	50*	50*
Zn (ZINC)	Nov-99	1.4	1.4	1.2	0.7	0.7	1.7	0.8	0.6	1.8
Dissolved	May-01	11.4	< 4	13.2	1.3	3.8	13.7	1.5	8.46	12.9
	July-01	1.9	5.71	< 1	2.8	1.2	1.7	< 1	1.4	< 1
	Sept/Nov-02	1.21	< 0.5	1.37	0.69	< 0.5	1.37	1.05	0.78	1.49
	Jun-03	0.75	< 0.5	0.96	1.1	< 0.5	1.12	< 0.5	< 0.5	0.68
	Aug-04	1.23	< 0.5		< 0.5	< 0.5	0.65	0.52		1.52
	Mar-05	< 1	< 1		< 1	< 1	2.66	< 1		1.94
	Mar-06	0.952	< 0.5		0.625	< 0.5	5.37	0.538		1
	Apr-07	5.86					3.22		0.6	
	Aug-08	< 5								
	Jul-09	< 5								
	May-10	6.5								
	Jul-11	9.8					5.5			
	Aug-12	7.5					6.8			
	Average³	4.25	1.33	3.45	1.00	0.90	3.98	0.71	2.02	2.73
Acute Criteria		214	214	218	211	202	52	226	278	231
Chronic Criteria		195	195	199	193	185	47	206	254	211

**Water Quality Criteria based on hardness are computed with the 15th percentile values. Criteria are for aquatic life unless otherwise noted.

* Based on Maximum Contaminant Levels (MCL's) specified in 30 TAC Ch. 290 (relating to Water Hygiene).

¹ Average computed using half reporting limits

² Average computed using only more recent high quality data from 2002 to present

³ Average computed using the reporting limit