

EDWARDS UNDERGROUND WATER DISTRICT

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San Antonio, Texas

BULLETIN 10

CHEMICAL ANALYSES OF WATER FROM OBSERVATION WELLS IN THE EDWARDS AND ASSOCIATED LIMESTONES, SAN ANTONIO AREA, TEXAS, 1965

Compiled by
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Prepared in cooperation with the Geological Survey,
United States Department of the Interior,
the Texas Water Commission, and
the City of San Antonio

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A program to resample observation wells tapping a zone of transition between water of good quality and saline water in the Edwards and associated limestones was begun in 1959. The chemical analyses of the resampling program are being used to detect possible encroachment of saline water into the fresh-water areas as the head in the aquifer changes. Those analyses compiled through 1964 were published by the Edwards Underground Water District (Garza, 1962b, 1964, 1965), and this report presents the chemical analyses compiled during 1965. This program is part of a more extensive hydrologic investigation carried on by the U.S. Geological Survey in cooperation with the Edwards Underground Water District, the Texas Water Commission, and the city of San Antonio.

Listed in this report are chemical analyses from 72 wells most of which are sampled twice a year, but some are sampled only once a year because they are little used.

The water samples are analyzed in the laboratory of the U.S. Geological Survey in Austin, Texas, for specific conductance, pH, chloride, sulfate, bicarbonate, and hardness. A more complete analysis has been made for one sample from each well, and these analyses are on file in the offices of the Geological Survey in Austin and San Antonio. Locations of wells and other data pertaining to the resampling program may be found in reports listed below.

REFERENCES

- Garza, Sergio, 1962a, Recharge, discharge, and changes in groundwater storage in the Edwards and associated limestones, San Antonio area, Texas. A progress report on studies, 1955-59: Texas Water Commission Bull. 6201.
- _____, 1962b, Chemical analyses of water from observation wells in the Edwards and associated limestones, San Antonio area, Texas: Edwards Underground Water District Bull. 1.
- _____, 1964, Chemical analyses of water from observation wells in the Edwards and associated limestones, San Antonio area, Texas, 1963: Edwards Underground Water District Bull. 4.
- _____, 1965, Chemical analyses of water from observation wells in the Edwards and associated limestones, San Antonio area, Texas, 1964: Edwards Underground Water District Bull. 7.

Chemical analyses of water from observation wells and springs in the San Antonio area, Texas
 (Analyses are in parts per million, except specific conductance and pH)

Well	Owner	Depth of well (ft.)	Date of Collection	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Dis-solved solids	Hard-ness as CaCO ₃	Specific Conduct-ance (micromhos at 25°C)	pH	Tempera-ture °F
<u>Kinney County</u>											
M-10	Wardlaw Bros.	750	Apr. 15, 1965	258	218	16		412	830	7.3	82
			Aug. 24, 1965	296	162	29		394	820	7.1	82
M-14	F. Beidler	618	Mar. 2, 1965	268	94	10		290	607	8.1	69
			Sept. 9, 1965	280	89	10		282	632	7.3	81
N-5	Wardlaw Bros.	756	Apr. 15, 1965	286	114	26		276	729	7.5	83
U-15	V.L. Condry (Richards)	1408	Apr. 15, 1965	198	1710	7.9		1920	2480	6.8	93
			Aug. 24, 1965	220	1680	20		1900	2720	6.7	94
V-7	Las Moras Springs		May 19, 1965	240	6.8	10		216	426	7.1	73
			Aug. 24, 1965	246	8.2	9.5		222	431	6.9	76
V-28	L. Langston	1320	Apr. 15, 1965	220	1220	12		1470	2050	6.7	87
V-29	R. Dodd	930	May 20, 1965	234	374	7.5		570	983	7.1	80
			Sept. 9, 1965	228	358	7.1		518	973	6.9	84

Chemical analyses of water from observation wells and springs in the San Antonio area - continued

Well	Owner	Depth of well (ft.)	Date of Collection	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Dis- solved solids	Hard- ness as CaCO ₃	Specific Conduct- ance (micromhos at 25°C)	pH	Tempera- ture °F
X-5	A. Harrison	514	May 19, 1965	262	1270	24		1470	2160	6.8	80
			Aug. 24, 1965	284	1250	24		1500	2330	6.8	85
Y-16	A. Schubach	285	Mar. 25, 1965	-	89	70		-	-	-	69
			May 19, 1965	438	105	80		496	1050	6.8	77
Y-17	A. Schubach	370	Mar. 3, 1965	358	70	68		328	846	8.2	74
<u>Uvalde County</u>											
H-4-64	F. Turner (H. Martin)	842	May 20, 1965	478	196	138		470	1530	7.1	79
			Aug. 25, 1965	558	120	98		388	1320	7.0	79
H-5-72	B. Turner	350	Mar. 2, 1965	-	155	43		-	-	-	73
H-5-163	U.S. Fish & Wildlife	600	May 18, 1965	312	102	180		528	1190	6.9	73
			Aug. 25, 1965	286	125	200		564	1320	6.7	73

Chemical analyses of water from observation wells and springs in the San Antonio area - continued

Well	Owner	Depth of well (ft.)	Date of Collection	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Dis- solved solids	Hard- ness as CaCO ₃	Specific Conduct- ance (micromhos at 25°C)	pH	Tempera- ture of
H-5-240	W. Painter	562	Mar. 2, 1965	276	408	102		662	1340	7.3	-
H-6-25	B. Turner	1410	May 20, 1965	328	890	430		895	3080	7.4	-
H-6-74	C.S. Hunter	1075	Mar. 2, 1965	236	188	82		346	938	7.8	78
H-6-82	F. Kincaid	1524	Apr. 15, 1965	240	352	160		578	1410	7.1	85
H-8-69	J. R. Farr	602	Mar. 23, 1965	250	324	278		578	1730	7.3	88
I-7-15	T.M. Woodley	2575	Aug. 25, 1965	228	120	27		316	656	6.9	100
<u>Medina County</u>											
I-5-55	G.E. Farley	2000	Mar. 2, 1965	252	17	16		224	441	8.1	74
			Aug. 23, 1965	248	17	19		226	481	7.0	75
I-5-74	E. Hood	2260	Mar. 2, 1965	244	14	16		220	451	7.6	74

Chemical analyses of water from observation wells and springs in the San Antonio area - continued

Well	Owner	Depth of well (ft.)	Date of Collection	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Dis-solved solids	Hard-ness as CaCO ₃	Specific Conduct-ance (micromhos at 25°C)	pH	Tempera-ture of
J-4-143	H. Kelso	2765	Sept. 9, 1965	228	37	17		214	475	7.0	96
<u>Atascosa County</u>											
5	City of Lytle	2379	Mar. 1, 1965	-	181	40		382	806	8.1	-

Chemical analyses of water from observation wells and springs in the San Antonio area - continued

Well	Owner	Depth of well (ft.)	Date of Collection	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Dis-solved solids	Hard-ness as CaCO ₃	Specific Conduct-ance (micromhos at 25°C)	pH	Tempera-ture OF
<u>Bexar County</u>											
155	Southern Henke Ice Co.	1300	Mar. 18, 1965	256	56	25		268	552	8.0	82
278	City of San Antonio	1108	Mar. 18, 1965	236	29	15		234	459	8.3	80
284	City of San Antonio	1582	Sept. 10, 1965	246	26	14		234	482	6.9	80
F-249	H. Hoffrichter	804	Mar. 17, 1965	220	268	-		498	1740	7.8	77
G-7	Converse Water Co.	684	Mar. 22, 1965	252	37	22		246	511	7.5	82
			Aug. 25, 1965	242	39	23		244	526	6.9	83
G-33	A. H. Scott	750	Feb. 28, 1965	-	420	830		705	3430	7.8	-

Chemical analyses of water from observation wells and springs in the San Antonio area - continued

Well	Owner	Depth of well (ft.)	Date of Collection	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Dis-solved solids	Hard-ness as CaCO ₃	Specific Conduct-ance (micromhos at 25°C)	pH	Tempera-ture OF
I-206	Patio Foods, Inc.	1400	Feb. 26, 1965	-	37	16		248	492	7.8	78
I-266	Patio Foods, Inc.	1373	Sept. 3, 1965	248	39	17		244	513	7.2	-
J-40	E. Ackerman	900	May 18, 1965	216	220	156		390	1180	7.5	79
			Aug. 25, 1965	246	269	180		482	1420	6.9	82
J-50	San Antonio Hot Wells	1878	Mar. 18, 1965	176	1980	920		2520	5210	7.1	101
			Sept. 9, 1965	284	1950	910		2370	5650	6.6	102
J-78	V.E. Berry	840	May 15, 1965	250	31	16		232	483	7.5	81
J-87	City of San Antonio	1185	Feb. 26, 1965	250	25	18		228	465	7.4	79
			Aug. 25, 1965	242	27	14		230	474	7.2	82

Chemical analyses of water from observation wells and springs in the San Antonio area - continued

Well	Owner	Depth of Well (ft.)	Date of Collection	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Dis-solved solids	Hard-ness as CaCO ₃	Specific Conduct-ance (micromhos at 25°C)	pH	Tempera-ture OF
J-90	Holt Machinery	2179	May 18, 1965	306	1930	950		2500	5300	7.2	99
			Aug. 25, 1965	280	1970	940		2520	5720	6.5	111
J-91	A.L. Wilson	800	Feb. 26, 1965	-	137	71		312	810	7.8	80
J-93	A. Brucks	775	Feb. 26, 1965	-	36	24		232	550	7.8	73
K-2	R. Schirmer	854	Feb. 26, 1965	-	1700	1580		2200	6900	7.7	-
			Aug. 25, 1965	326	1830	1680		2300	7630	6.5	89
M-44	R. Aeervoet	2226	May 26, 1965	270	1650	780		2180	4570	7.0	106
			Aug. 24, 1965	258	1680	770		2180	4920	6.7	105
M-45	A.H. Grothues	2300	Feb. 26, 1965	-	113	46		-	-	-	-

Chemical analyses of water from observation wells and springs in the San Antonio area - continued

Well	Owner	Depth of well (ft.)	Date of Collection	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Dis- solved solids	Hard- ness as CaCO ₃	Specific Conduct- ance (micromhos at 25°C)	pH	Tempera- ture OF
M-47	K.L. Haggard	1950	Mar. 1, 1965	-	235	117	-	-	1060	-	-
M-48	A. Ballard	2190	Mar. 12, 1965	-	182	79	-	-	819	-	97
N-6	G. Verstuyft	1532	May 10, 1965	250	29	17	-	238	476	7.5	80
			Aug. 24, 1965	248	29	15	-	238	487	7.0	82
N-7	Paul Persyn	1830	May 26, 1965	298	39	36	-	206	620	7.2	85
N-119	F. Vargas	1660	May 18, 1965	276	852	428	-	1220	2810	7.2	87
N-121	E.M. Baker	2274	Mar. 1, 1965	-	900	438	-	-	-	-	-

Chemical analyses of water from observation wells and springs in the San Antonio area - continued

Well	Owner	Depth of well (ft.)	Date of Collection	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Dis-solved solids	Hard-ness as CaCO ₃	Specific Conduct-ance (micromhos at 25°C)	pH	Tempera-ture of
<u>Guadalupe County</u>											
D-18	C.L. Worthy	370	Feb. 26, 1965	250	80	54		296	688	8.0	73
D-67	W. Kramer	565	Mar. 16, 1965	252	622	600		940	2980	7.8	76
			Aug. 25, 1965	270	476	442		770	2560	6.7	78
<u>Comal County</u>											
F-75	U.S. Gypsum	209	Apr. 16, 1965	288	22	12		262	521	7.6	74
G-50	City of New Braunfels (Comal Springs)		May 18, 1965	286	-	13		-	508	7.3	75
			Aug. 26, 1965	284	23	11		256	518	6.7	75
G-67	W. Sippel	502	Mar. 26, 1965	266	56	51		262	649	7.3	73
G-83	C. Hernandez	345	Mar. 21, 1965	-	216	190		-	1400	-	-

Chemical analyses of water from observation wells and springs in the San Antonio area - continued

Well	Owner	Depth of well (ft.)	Date of Collection	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Dis-solved solids	Hard-ness as CaCO ₃	Specific Conduct-ance (micromhos at 25°C)	pH	Tempera-ture °F
G-84	H.C. Nelson	272	May 18, 1965	378	192	155		518	1310	7.1	-
			Aug. 26, 1965	368	206	165		544	1420	6.8	75
G-86	H. Soechting	168	Feb. 25, 1965	326	70	42		386	801	7.5	68
H-6	A.W. Feick	700	Mar. 4, 1965	192	108	102		360	909	7.9	70
H-20	W. Schaeffer	300	Mar. 26, 1965	290	21	14		252	525	7.3	74
H-49	E. Feick	515	Mar. 10, 1965	296	550	640		915	2990	7.4	-
			Sept. 10, 1965	310	550	630		875	3250	7.2	-
H-51	Buckner Dairy	530	Mar. 17, 1965	324	374	640		740	2890	7.9	75
H-52	P. Hansmann	380	Feb. 25, 1965	-	35	28		-	-	-	69

Chemical analyses of water from observation wells and springs in the San Antonio area - continued

Well	Owner	Depth of well (ft.)	Date of Collection	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific Conductance (micromhos at 25°C)	pH	Temperature of
<u>Hays County</u>											
E-70	H.K. Wilbern	450	May 18, 1965	270	272	225		440	1650	7.4	-
E-76	City of Buda	390	Sept. 20, 1965	324	30	9.8		298	575	7.0	73
E-80	D.A. Dacy	492	Mar. 19, 1965	296	250	208		386	1520	8.3	-
			Aug. 29, 1965	300	284	212		366	1610	7.4	-
F-7	R.M. Turner	665	Feb. 25, 1965	266	308	208		368	1570	8.3	71
F-22	A.H. Whitten	502	Feb. 25, 1965	-	386	350		-	-	-	74
H-19	City of Kyle	600	Mar. 17, 1965	252	129	16		348	660	7.9	77
			Aug. 26, 1965	280	129	12		360	708	7.0	76
H-25	Four Seasons Farm (Hillview Dairy)	600	Aug. 26, 1965	252	528	730		732	3480	7.3	74

Chemical analyses of water from observation wells and springs in the San Antonio area - continued

Well	Owner	Depth of well (ft.)	Date of Collection	Bicar-bonate (HCO ₃)	Sul-fate (CO ₄)	Chlo-ride (Cl)	Dis-solved solids	Hard-ness as CaCO ₃	Specific Conduct-ance (micromhos at 25°C)	pH	Tempera-ture of
H-59	W.N. Goforth (Spring)		Feb. 25, 1965	328	29	16		314	592	7.7	64
H-66	A.B. Rogers Estate (San Marcos Springs)		May 18, 1965	314	24	20		284	569	7.3	72
			Aug. 26, 1965	308	24	17		290	578	6.9	72
H-84	J.B. Netherland	250	Mar. 4, 1965	330	33	27		312	629	7.5	66
H-114	A.A. Hale	500	Mar. 8, 1965	258	246	50		454	988	7.7	-
K-5	E. Jackson	200	May 18, 1965	378	192	170		530	1340	7.2	74
			Aug. 26, 1965	362	280	248		620	1740	6.7	-