

EDWARDS UNDERGROUND WATER DISTRICT

1619 Tower Life Building
San Antonio, Texas

BULLETIN 1

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

Compiled by
Sergio Garza, Hydraulic Engineer
United States Geological Survey

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

December 1962

CHEMICAL ANALYSES OF WATER FROM OBSERVATION WELLS
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The city of San Antonio and other water users in the San Antonio area have been concerned about the possibility of the encroachment of saline water into the fresh water-bearing part of the aquifer supplying the area. As a result, a program was begun in 1959 to resample wells tapping the zone of transition between water of good quality and saline water in the Edwards and associated limestones, in order to detect changes in quality of the water as the head in the aquifer changed. This program is part of a more extensive hydrologic investigation being 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. As part of this program, about 120 wells are resampled twice a year; the water is analyzed in the laboratory of the Geological Survey in Austin, Tex., for specific conductance, pH, chloride, sulfate, bicarbonate, and hardness. A more complete chemical analysis is made for one of the samples from each well in the program. These more complete analyses are on file in the offices of the Geological Survey in Austin and San Antonio.

Chemical analyses of water from 129 wells are shown in the table in this report. The analyses of samples collected before 1959 for many of the wells are shown also. Some of the wells are no longer in use, but chemical analyses of previous samples from these wells are carried in the records, although future sampling may not be possible. Figure 1 shows the location of the resampled wells and an arbitrary boundary line between water of good quality, containing less than 1,000 parts per million (ppm), and saline water, containing more than 1,000 ppm of dissolved solids (Garza, 1962, p. 38).

The U. S. Public Health Service (1962, p. 2152-2155) has established standards for maximum concentrations of certain constituents in drinking water. These standards are commonly used in evaluating water for use as a public supply. The standards should not be exceeded when other more suitable supplies are available. The standards for some of the constituents given in table 1 are as follows: Chloride (Cl) should not exceed 250 ppm. Sulfate (SO_4) should not exceed 250 ppm. Dissolved solids should not exceed 500 ppm.

REFERENCES

Garza, Sergio, 1962, Recharge, discharge, and changes in ground-water storage in the Edwards and associated limestones, San Antonio area, Texas. A progress report on studies, 1955-59: Texas Board Water Engineers Bull. 6201.

U. S. Public Health Service, 1962, Drinking water standards: Federal Register, March 6, p. 2152-2155.

Table 1.-Chemical analyses of water from observation wells 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)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
<u>Kinney County</u>											
M-5	--Cupples	-	Jan. 14, 1960	254	111	14	-	296	636	7.3	-
			Mar. 15, 1961	248	108	12	-	294	618	7.2	77
M-10	Wardlaw Bros.	750	Feb. 2, 1960	244	206	14	-	384	756	7.9	79
			Sept. 20, 1960	238	200	12	-	382	753	7.1	83
			Mar. 30, 1961	238	204	12	-	382	761	7.1	-
			Sept. 20, 1961	236	198	12	-	388	768	7.0	82
			Mar. 13, 1962	240	198	14	-	378	752	7.0	-
			Sept. 20, 1962	234	194	11	-	390	760	7.0	83
M-12	do	1,200	Sept. 20, 1960	202	1,570	13	-	1,720	2,530	6.8	86
			Mar. 30, 1961	202	1,560	14	-	1,710	2,510	6.8	88
			Sept. 20, 1961	152	1,600	16	-	1,760	2,320	7.0	90
			Mar. 13, 1962	166	1,640	14	-	1,740	2,470	6.7	89
			Sept. 20, 1962	180	1,530	12	-	1,780	2,520	6.6	88

Table 1 .-Chemical analyses of water from observation wells in the San Antonio area--Continued
Kinney County

Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
M-14	F. Beidler	618	Jan. 21, 1960	282	77	14	-	268	609	7.8	-
			Sept. 14, 1960	264	95	13	-	272	624	8.1	-
			Mar. 14, 1961	262	96	14	-	270	615	7.2	79
			Sept. 19, 1961	252	108	12	-	276	615	7.2	81
			Mar. 13, 1962	264	95	12	-	272	643	7.4	80
			Sept. 21, 1962	266	91	12	-	278	615	7.9	-
N-5	Wardlaw Bros.	756	Jan. 14, 1960	259	100	16	-	265	630	7.7	82
			Sept. 14, 1960	256	94	12	-	260	615	7.5	84
			Mar. 15, 1961	260	95	16	-	260	632	7.4	84
			Sept. 20, 1961	264	102	22	-	268	667	7.5	85
			Mar. 13, 1962	264	95	16	-	264	628	7.3	82
			Sept. 21, 1962	264	92	16	-	268	622	7.6	84
T-2	do	1,700	Mar. 30, 1961	240	1,680	13	-	1,830	2,690	6.8	-
			Sept. 20, 1962	236	1,620	11	-	1,880	2,690	6.9	88
U-15	W. Richards	1,408	Aug. 28, 1959	170	1,740	10	2,610	1,950	2,590	6.6	93
			Sept. 14, 1960	198	1,680	9.0	-	1,830	2,650	6.6	93
			Mar. 15, 1961	192	1,720	10	-	1,850	2,640	6.7	95
			Sept. 20, 1961	182	1,700	8.5	-	1,880	2,640	6.5	94

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Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Kinney County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
U-15	W. Richards	1,408	Mar. 13, 1962	212	1,680	10	-	1,860	2,610	6.8	91
			Sept. 20, 1962	152	1,660	9.5	-	1,900	2,460	6.8	94
V-7	Las Moras Springs	-	June 16, 1959	230	7.0	9.2	236	207	417	6.8	74
			Sept. 14, 1960	229	7.4	12	-	201	408	7.3	-
			Mar. 15, 1961	244	10	13	-	210	433	7.2	74
			Aug. 8, 1961	212	6.8	9.5	237	200	410	6.8	75
			Oct. 3, 1962	252	5.4	11	-	218	431	7.3	70
V-28	L. Langston	1,320	Mar. 16, 1960	196	1,580	9.8	-	1,730	2,500	7.0	90
			Sept. 14, 1960	198	1,500	8.5	-	1,710	2,480	6.5	91
			Mar. 15, 1961	208	1,550	10	-	1,700	2,450	6.8	94
			Aug. 7, 1961	212	1,490	12	2,290	1,680	2,500	6.7	90
			May. 24, 1962	227	988	22	-	1,220	1,900	7.0	-
			Sept. 21, 1962	232	952	24	-	1,190	1,890	6.7	87
V-29	R. Dodd	930	Sept. 16, 1959	208	580	14	1,020	760	1,290	7.2	84
			Sept. 14, 1960	210	564	12	-	735	1,260	7.4	86
			Mar. 15, 1961	224	548	9.0	-	725	1,250	7.0	85
			Sept. 20, 1961	192	546	9.2	-	715	1,220	7.0	87
			Mar. 13, 1962	210	550	9.5	-	710	1,240	7.1	86
			Sept. 21, 1962	214	524	9.0	-	730	1,240	6.9	87

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Kinney County

Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
W-17	B. F. Orr	435	Mar. 13, 1962	412	20	118	585	168	1,020	7.1	76
			Sept. 21, 1962	430	1.6	115	-	260	1,180	6.8	77
X-5	A. Harrison (G. Crystall)	514	Aug. 28, 1959	258	1,260	29	2,020	1,430	2,200	6.7	81
			Sept. 20, 1960	252	1,230	30	-	1,430	2,210	6.8	81
			May 22, 1961	258	1,220	28	-	1,420	2,150	6.7	86
			Sept. 19, 1961	226	1,230	27	-	1,420	2,190	6.6	82
			Mar. 12, 1962	256	1,240	31	-	1,420	2,180	7.0	79
			Sept. 20, 1962	256	1,200	28	-	1,480	2,240	7.4	82
Y-5	R. Harris	300	Jan. 21, 1960	372	23	58	-	325	772	6.9	75
			Sept. 19, 1960	372	20	50	-	320	735	6.9	77
			Mar. 30, 1961	426	29	60	-	282	867	7.0	75
			Aug. 8, 1961	364	20	49	463	318	736	6.6	79
			Mar. 12, 1962	374	20	49	-	316	733	7.0	-
			Sept. 20, 1962	354	26	50	-	292	729	7.5	77
Y-14	C. Harrison	200	Jan. 21, 1960	350	49	16	-	346	713	6.9	74
			Sept. 20, 1960	366	23	10	-	344	678	7.1	74
			Mar. 30, 1961	354	37	11	-	348	702	6.8	75
			Aug. 7, 1961	362	9.6	7.5	386	328	661	6.6	-

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Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Kinney County

Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
Y-14	C. Harrison	200	Mar. 12, 1962	376	21	14	-	336	678	6.8	-
			Sept. 20, 1962	376	10	6.2	-	336	711	7.3	-
Y-15	A. Schubach	300	Jan. 21, 1960	447	118	67	-	500	1,060	6.9	76
			Sept. 20, 1960	456	136	75	-	514	1,110	7.0	-
			Mar. 15, 1961	446	141	70	-	520	1,120	6.8	-
Y-16	do	285	Aug. 7, 1961	450	134	74	752	517	1,110	6.5	78
			Mar. 12, 1962	468	133	71	-	515	1,110	6.8	-
			Sept. 20, 1962	464	119	65	-	516	1,080	7.1	-
Y-17	do	370	Jan. 21, 1960	414	58	70	-	380	911	7.2	74
			Sept. 19, 1960	418	42	67	-	320	876	7.3	78
			Aug. 7, 1961	456	22	70	512	344	918	7.1	78
			Sept. 12, 1962	442	43	67	-	360	939	7.1	77

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
Uvalde County											
G-6-2	F. Kirchgraber	1,100	Jan. 13, 1960	445	22	36	-	378	805	7.1	73
			Sept. 19, 1960	442	21	34	-	372	797	7.2	-
			Mar. 15, 1961	442	20	34	-	370	795	6.8	-
			Aug. 15, 1961	424	23	32	479	382	770	6.7	-
			Apr. 26, 1962	-	20	23	-	-	-	-	-
			Aug. 22, 1962	430	22	42	-	386	836	6.6	-
H-4-34	J. Rosenow	593	Jan. 21, 1960	405	15	29	-	352	749	7.0	74
			Sept. 20, 1960	400	13	20	-	340	705	7.1	79
			Mar. 30, 1961	392	14	18	-	340	706	6.7	69
			Aug. 8, 1961	394	13	20	450	336	705	6.7	77
			Feb. 20, 1962	396	14	20	-	344	711	6.9	76
			Aug. 21, 1962	386	14	22	-	344	712	6.7	-
H-4-57	Knowlton Dairy	980	Feb. 1, 1960	312	26	90	-	362	809	7.9	74
			Sept. 13, 1960	318	30	102	-	390	868	7.1	74
			Sept. 19, 1961	326	38	112	521	413	915	6.6	76
			Mar. 12, 1962	314	40	115	-	412	925	6.7	74
			Aug. 9, 1962	320	45	109	-	410	941	7.1	76

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Uvalde County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
H-4-64	F. Turner	842	Aug. 18, 1937	522	220	118	-	435	-	-	-
			Jan. 21, 1960	520	186	108	-	375	1,330	7.5	73
			Sept. 14, 1960	388	204	109	-	334	1,280	7.6	-
			Mar. 15, 1961	548	122	105	-	360	1,330	7.2	-
			Aug. 8, 1961	558	162	111	868	368	1,330	7.0	-
			Apr. 3, 1962	552	118	106	-	370	1,320	7.2	79
			Aug. 21, 1962	540	135	105	-	376	1,350	7.4	79
H-4-95	S. G. Nelson	1,113	Mar. 23, 1957	358	254	66	783	410	1,210	7.5	80
			Feb. 2, 1960	244	230	22	-	396	825	8.1	76
			Sept. 20, 1960	258	224	21	-	402	832	7.1	77
			Mar. 30, 1961	250	230	20	-	410	844	7.1	-
			Sept. 20, 1961	242	192	18	-	372	773	7.1	82
			Apr. 3, 1962	240	232	19	-	408	821	6.9	78
			Aug. 22, 1962	236	204	19	-	390	803	7.0	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Uvalde County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
H-5-1	City of Uvalde	287	Nov. 2, 1945	277	19	24	319	224	570	7.0	-
			June 16, 1959	315	48	64	462	370	795	6.9	75
			Sept. 20, 1960	274	18	30	-	256	546	7.2	74
			Mar. 16, 1961	270	18	28	-	256	553	6.9	76
			Sept. 19, 1961	276	22	32	-	276	575	7.1	-
H-5-72	B. Turner	350	Apr. 22, 1957	356	192	49	662	440	1,010	7.6	75
			Dec. 18, 1959	348	214	54	-	458	1,030	7.5	74
			Sept. 22, 1960	426	115	14	-	420	962	7.5	-
			Mar. 14, 1961	416	184	12	-	484	1,090	6.8	75
			Sept. 20, 1961	420	128	18	557	425	954	6.9	90
			Mar. 22, 1962	404	147	46	-	442	992	6.7	-
			Aug. 23, 1962	436	198	45	-	504	1,090	7.1	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio--Continued

Uvalde County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
H-5-163	U.S. Fish and Wild Life	600	Aug. 27, 1959	301	114	262	852	630	1,470	6.6	73
			Dec. 18, 1959	314	122	380	-	794	1,860	7.4	72
			Sept. 13, 1960	308	106	232	-	565	1,380	7.0	72
			Mar. 15, 1961	306	83	212	-	555	1,310	6.7	73
			Sept. 19, 1961	292	120	192	-	520	1,260	6.9	74
			Feb. 20, 1962	306	91	202	-	532	1,270	6.9	75
			Aug. 9, 1962	284	106	152	-	460	1,130	6.9	76
			Aug. 21, 1962	288	106	147	-	460	1,110	6.9	74
H-5-240	W. R. Painter	562	Dec. 21, 1959	264	553	110	-	756	1,610	7.1	-
			Sept. 14, 1960	260	494	110	-	720	1,530	7.7	-
			Mar. 15, 1961	258	528	112	-	740	1,580	7.2	-
			Mar. 25, 1962	240	291	78	-	508	1,090	7.1	-
			Aug. 22, 1962	264	452	103	-	705	1,480	6.8	-
H-5-272	J. Hunter	480	Mar. 16, 1961	316	44	88	-	376	845	7.0	77
			May 3, 1961	312	46	83	476	376	826	6.9	75
			Mar. 22, 1962	310	46	80	-	366	817	6.6	74

Table 1.--Chemical analyses of water from observation wells in the San Antonio area--Continued

Uvalde County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
H-6-25	B. Turner	1,410	Apr. 19, 1956	305	907	430	2,240	874	3,240	7.5	93
			Dec. 10, 1959	332	910	440	-	870	3,220	7.5	-
			May 17, 1960	330	928	430	-	865	3,230	7.0	91
			May 3, 1961	352	876	425	2,200	858	3,190	6.9	92
			Feb. 22, 1962	328	898	435	-	860	3,150	6.6	-
			Sept. 11, 1962	342	856	428	-	880	3,240	6.8	-
H-6-74	C.S. Hunter	1,075	Sept. 6, 1957	250	204	82	642	352	983	7.6	-
			Dec. 17, 1959	254	204	80	-	350	991	7.9	83
			Sept. 22, 1960	236	197	81	-	344	1,010	7.4	-
			Mar. 30, 1961	248	194	79	-	354	985	7.2	78
			Sept. 21, 1961	248	190	80	-	354	988	6.9	-
			Feb. 22, 1962	246	192	79	-	354	985	7.3	-
			Aug. 23, 1962	244	190	81	-	356	1,000	6.8	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Uvalde County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
H-6-82	F. Kincaid	1,524	Nov. 5, 1957	886	-	560	-	38	2,960	7.9	-
			Feb. 2, 1960	220	326	152	-	506	1,340	7.7	78
			Mar. 16, 1961	170	294	141	-	450	1,230	7.1	-
			Aug. 9, 1961	234	324	147	886	526	1,370	7.0	85
			Aug. 9, 1962	226	320	167	-	540	1,400	7.1	83
H-8-69	J. R. Farr	602	Apr. 4, 1956	238	321	273	1,100	564	1,760	7.4	88
			Dec. 22, 1959	248	317	275	-	552	1,750	7.3	89
			Mar. 15, 1961	238	318	265	-	560	1,750	6.9	90
			June 13, 1961	240	310	270	-	550	1,740	6.8	88
			Apr. 26, 1962	-	318	272	-	-	-	-	-
			Aug. 21, 1962	240	316	270	-	570	1,790	6.9	80
I-4-48	H. L. Pepper	1,230	Mar. 8, 1958	254	15	15	270	229	464	7.8	74
			Aug. 27, 1959	255	14	15	265	230	455	7.2	74
			Oct. 6, 1960	205	15	18	-	188	406	7.6	-
			Mar. 23, 1961	252	15	17	-	228	473	7.0	-
			Feb. 22, 1962	256	15	16	-	232	467	7.6	77
			Aug. 9, 1962	256	12	18	-	228	477	7.3	76

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Uvalde County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
I-7-15	T. M. Woodley	2,575	Sept.22, 1960	232	119	33	-	312	684	7.5	93
			Mar. 14, 1961	230	121	36	-	314	681	7.2	97
			May 3, 1961	228	122	33	414	320	671	7.1	98
			Sept.21, 1961	222	118	32	-	304	647	7.3	-
			Mar. 23, 1962	222	117	30	-	306	657	6.8	99
			Aug. 9, 1962	224	115	29	-	310	667	7.0	100

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
<u>Medina County</u>											
I-5-55	G. E. Farley	2,000	Sept.18, 1959	236	17	19	255	214	444	7.5	75
			Sept.12, 1960	169	17	24	-	145	354	7.8	74
			Mar. 14, 1961	236	16	18	-	200	431	7.4	-
			Sept.18, 1961	226	16	16	-	202	421	7.4	76
I-5-74	E. Hood	2,260	Dec. 10, 1959	254	16	12	-	226	456	7.1	75
			Sept.12, 1960	242	14	12	-	214	436	7.7	75
			Mar. 13, 1961	260	14	14	-	224	462	7.2	75
			Aug. 2, 1961	250	13	14	277	224	459	6.9	75
			Mar. 30, 1962	254	13	15	-	224	460	7.2	75
			Oct. 3, 1962	266	13	15	-	232	458	7.1	74
J-4-143	H. Kelso	2,765	Aug. 26, 1959	209	37	14	249	205	421	6.9	94
			Dec. 10, 1959	236	34	23	-	218	491	6.9	94
			Sept.19, 1960	227	31	18	-	214	471	6.8	96
			Mar. 13, 1961	230	52	18	-	232	496	7.2	92

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
Atascosa County											
3	C. W. Mask	2,507	Mar. 6, 1957	214	683	300	1,600	974	2,300	7.4	91
			Aug. 26, 1959	240	-	50	-	318	727	7.1	90
			Dec. 7, 1959	238	118	54	-	314	723	7.2	91
			Mar. 7, 1961	236	87	46	-	286	680	7.3	-
			Apr. 5, 1961	242	99	45	-	292	685	7.8	92
			Sept. 17, 1962	232	147	68	-	356	826	7.1	93
4	Gidley-Bush	2,656	Dec. 1, 1959	124	1,400	590	-	1,650	3,790	7.0	93
			Mar. 6, 1961	74	1,270	580	-	1,590	3,680	7.2	-
			Oct. 10, 1961	139	1,370	600	2,940	1,740	3,870	6.7	-
			Mar. 29, 1962	118	1,280	540	-	1,620	3,610	6.6	107
			Sept. 25, 1962	240	1,080	500	-	1,510	3,440	6.9	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Atascosa County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
5	City of Lytle	2,379	Nov. 1, 1955	232	182	49	584	265	858	7.7	-
			July 22, 1957	226	183	22	486	380	757	7.4	97
			Feb. 4, 1959	224	186	31	-	380	779	7.6	73
			Sept. 8, 1959	218	-	34	-	382	767	7.1	-
			Dec. 1, 1959	218	194	34	-	380	780	7.1	-
			Sept. 19, 1960	218	190	36	-	380	786	7.4	99
			Mar. 6, 1961	218	190	34	-	378	795	7.1	-
			Sept. 12, 1961	206	188	38	-	372	772	7.5	-
			Oct. 10, 1961	98	188	120	-	400	889	6.1	99
			Mar. 19, 1962	218	187	42	-	382	789	7.1	91
			Aug. 20, 1962	220	185	38	-	390	812	6.9	102

Table 1.- Chemical analyses of water from observation wells in the San Antonio area Continued

Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
Bexar County											
155	Southern Henke Ice Co.	1,300	Mar. 17, 1952	245	61	26	349	262	572	7.7	-
			Dec. 8, 1959	246	52	24	-	254	531	7.1	82
			Mar. 3, 1961	244	53	25	-	254	545	7.8	-
			Sept. 12, 1961	244	54	24	-	258	545	7.5	-
			Mar. 8, 1962	242	55	26	-	258	546	7.9	83
			Oct. 5, 1962	246	52	26	-	260	555	7.0	83
175	City of San Antonio (Morrill School	1,900	Dec. 16, 1957	a/126	1.0	4,210	7,030	152	12,800	8.6	-
			Feb. 13, 1959	328	1,680	820	3,880	2,030	4,990	7.3	81
			Sept. 5, 1959	317	1,660	790	3,820	2,010	4,780	7.0	82
			Dec. 1, 1959	315	1,600	780	-	2,000	4,680	7.5	78
			Oct. 9, 1960	316	1,670	790	-	2,130	4,880	7.2	86
			Mar. 6, 1961	304	1,660	800	-	2,160	4,860	7.3	90
			Oct. 16, 1961	312	1,700	800	-	2,160	4,900	7.0	89
			Mar. 19, 1962	308	1,700	830	-	2,180	4,940	6.9	89
278	City of San Antonio	1,108	Mar. 9, 1961	238	24	16	-	222	464	7.3	76
			Apr. 14, 1961	236	24	13	-	220	466	7.3	-
			Aug. 23, 1962	236	23	17	-	226	470	6.8	82

a/ Includes the equivalent of 17 ppm of carbonate (CO₃)

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County												
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F	
284	City of San Antonio	1,582	May 1, 1956	240	30	16	274	230	482	7.6	80	
			Dec. 8, 1959	246	30	17	-	228	475	7.3	82	
			Sept.22, 1960	244	26	18	-	222	459	7.8	82	
			Mar. 3, 1961	240	26	17	-	224	472	7.6	83	
			Sept.12, 1961	238	26	14	-	224	460	7.5	82	
			Mar. 8, 1962	236	28	16	-	226	466	7.7	82	
			Sept. 5, 1962	244	26	16	-	228	474	7.2	82	
296	do	1,318	Mar. 23, 1962	236	25	17	-	226	457	6.9	80	
F-249	H. Hoffrichter	804	Dec. 8, 1959	244	277	332	-	502	1,820	7.3	76	
			Sept.28, 1960	232	264	325	-	480	1,820	7.5	76	
			Mar. 8, 1961	206	258	312	-	450	1,760	7.3	76	
			May 2, 1961	254	278	315	1,100	514	1,850	7.1	78	
			Sept.15, 1961	252	270	322	-	520	1,850	7.2	77	
			Mar. 6, 1962	240	256	320	-	495	1,810	7.2	76	
			Sept.18, 1962	222	246	312	-	480	1,740	6.7	78	

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
G-7	Converse Water Co.	684	July 31, 1958	203	-	28	-	215	482	7.7	81
			Sept. 3, 1959	236	-	26	-	240	524	7.2	81
			Sept. 27, 1960	242	38	25	-	242	521	7.3	80
			Mar. 7, 1961	240	36	24	-	238	510	7.5	82
			Sept. 15, 1961	-	38	24	-	-	-	-	81
			Feb. 19, 1962	239	38	24	-	239	502	7.1	81
			Aug. 23, 1962	-	-	-	-	-	527	-	82
G-8	F. Sonntag	652	Sept. 12, 1942	286	841	442	-	-	-	-	-
			Apr. 11, 1950	244	422	390	1,410	680	2,370	7.1	-
			Dec. 7, 1956	456	-	4,360	-	1,240	13,200	7.7	-
			Aug. 13, 1957	324	360	2,500	-	945	8,340	7.6	76
			July 30, 1958	246	-	490	-	755	2,630	7.5	80
			Feb. 13, 1959	258	400	390	-	650	2,260	7.6	80
			Sept. 3, 1959	258	-	430	-	700	2,360	7.4	79
			Dec. 2, 1959	256	410	392	-	650	2,220	7.2	78
			Sept. 27, 1960	248	424	420	-	675	2,300	7.4	75
			Mar. 7, 1961	250	326	325	-	575	1,970	7.6	79
			Sept. 13, 1961	248	400	395	-	650	2,240	7.4	77

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
G-33	A. H. Scott	750	Dec. 6, 1956	282	-	840	-	755	3,690	8.0	-
			Jan. 9, 1958	285	-	830	-	640	3,600	7.3	-
			July 31, 1958	262	-	820	-	735	3,620	7.7	-
			Feb. 13, 1959	279	414	780	2,060	672	3,500	7.2	73
			Sept. 3, 1959	286	-	810	-	715	3,500	7.4	-
			Dec. 2, 1959	286	464	810	-	720	3,580	6.9	-
			Aug. 28, 1960	286	416	780	-	685	3,450	7.4	76
			Mar. 7, 1961	286	420	800	-	700	3,520	7.2	-
			Sept. 15, 1961	284	436	780	-	715	3,530	7.4	-
			Mar. 6, 1962	278	442	810	-	720	3,510	6.7	-
			Sept. 17, 1962	280	436	810	-	730	3,570	6.6	-
G-63	Kneupper Water Co.	576	Dec. 6, 1956	242	47	34	323	248	551	7.7	77
			July 31, 1958	229	-	38	-	243	558	7.9	79
			Feb. 11, 1959	246	42	36	-	240	558	7.9	75
			Sept. 28, 1960	-	41	40	-	-	526	-	80
			Mar. 8, 1961	242	40	39	-	244	577	7.3	78
			Sept. 15, 1961	242	42	40	-	244	568	7.4	80
			Mar. 6, 1962	240	40	42	-	242	562	7.0	80

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Picar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
G-64	C. W. Ivey	638	Dec. 8, 1959	244	46	28	-	244	527	7.3	81
			Sept. 28, 1960	-	42	26	-	-	495	-	80
			Mar. 8, 1961	242	41	26	-	242	532	7.1	79
			May 2, 1961	246	41	26	306	252	524	7.3	81
			Sept. 15, 1961	-	40	25	-	-	-	-	80
			Sept. 17, 1962	240	39	26	-	238	508	7.0	78
I 125	R. Aelvoet	1,376	Oct. 12, 1955	235	36	20	294	246	485	7.5	81
			July 22, 1957	242	34	20	300	238	502	7.2	77
			Feb. 13, 1959	248	34	18	-	240	493	8.0	81
			Aug. 31, 1959	236	-	18	-	234	488	7.2	82
			Nov. 30, 1959	240	34	18	-	232	486	7.2	81
			Mar. 3, 1961	240	31	18	-	228	483	7.6	84
			May 3, 1962	244	33	18	-	236	481	7.4	79
			Aug. 20, 1962	238	31	18	-	234	486	6.9	81
I 195	T. Barrett	1,285	Nov. 30, 1959	240	32	18	-	234	479	7.5	77
			Sept. 23, 1960	242	30	17	-	226	477	7.7	82
			Mar. 3, 1961	238	30	18	-	226	474	7.7	84

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Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
I-195	T. Barrett	1,285	May 23, 1961	238	30	18	292	221	483	7.0	82
			Sept. 12, 1961	240	30	16	-	232	482	7.3	83
			Feb. 19, 1962	239	31	18	-	233	484	7.1	81
I-205	E. Persyn	1,672	Sept. 21, 1960	224	410	206	-	652	1,660	6.9	90
			Mar. 3, 1961	242	176	82	-	390	924	7.5	85
			Apr. 13, 1961	236	397	192	1,060	610	1,610	7.0	89
			Sept. 14, 1961	250	166	80	-	390	920	7.3	84
			Mar. 19, 1962	244	168	82	-	390	903	7.1	84
			Aug. 20, 1962	218	396	196	-	650	1,630	6.7	91
I-206	Patio Foods, Inc.	1,400	Sept. 23, 1960	230	41	18	-	228	493	7.4	83
			Mar. 3, 1961	216	38	19	-	216	461	7.6	84
			Aug. 8, 1961	242	39	20	303	238	496	6.8	83
			Mar. 7, 1962	234	39	18	-	232	485	7.6	80
			Sept. 5, 1962	248	39	18	-	240	501	7.1	83
J-40	E. Ackerman	900	Dec. 7, 1956	217	-	183	-	437	1,350	8.0	-
			Aug. 8, 1957	-	271	190	-	484	1,400	-	79
			Jan. 9, 1958	236	-	167	-	385	1,270	7.5	76

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Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
J-40	E. Ackerman	900	July 31, 1958	231	-	183	-	470	1,410	7.7	79
			Feb. 16, 1959	202	214	158	774	375	1,220	7.3	73
			Sept. 2, 1959	248	-	175	-	460	1,340	7.4	76
			Dec. 4, 1959	248	250	170	-	444	1,320	7.0	76
			Sept. 28, 1960	240	248	175	-	450	1,350	7.4	77
			Mar. 7, 1961	244	226	158	-	435	1,290	7.4	78
			Sept. 15, 1961	-	246	180	-	-	-	-	-
			Mar. 6, 1962	244	242	172	-	446	1,330	7.0	-
			Sept. 21, 1962	250	250	180	-	478	1,410	7.4	-
J-50	San Antonio Hot Wells	1,878	Jan. 3, 1958	283	-	920	-	2,430	5,540	7.3	100
			Dec. 2, 1959	250	2,060	920	-	2,500	5,480	6.9	102
			Sept. 2, 1960	278	1,910	900	-	2,440	5,460	7.0	102
			Mar. 6, 1961	278	1,980	900	-	2,440	5,470	7.1	102
			Aug. 1, 1961	286	1,930	900	4,320	2,410	5,460	6.9	102
			Mar. 7, 1962	234	1,960	900	-	2,260	5,420	7.4	101
			May 3, 1962	246	1,980	900	-	2,500	5,400	6.9	104

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
J-64	T. D. Pfeil	670	Dec. 7, 1956	242	-	21	-	232	506	7.5	80
			Aug. 8, 1957	244	-	19	-	231	470	7.8	79
			Dec. 17, 1957	-	24	16	-	214	431	-	79
			July 30, 1958	238	-	17	-	229	462	7.9	80
			Feb. 13, 1959	239	24	13	282	225	478	7.2	72
J-66	F. Ward	900	Apr. 13, 1950	242	130	205	719	323	1,300	7.6	-
			Aug. 8, 1957	248	-	202	-	328	1,250	7.9	75
			Jan. 9, 1958	255	-	158	-	280	1,080	7.4	-
			July 31, 1958	228	-	126	-	304	969	7.8	79
			Feb. 11, 1959	240	103	130	-	290	959	7.9	71
			Sept. 3, 1959	198	-	131	-	262	861	7.2	75
			Dec. 8, 1959	246	106	114	-	300	903	7.2	76
			Sept. 28, 1960	248	115	130	-	325	973	7.5	75
			Mar. 7, 1961	250	111	130	-	316	1,010	7.5	76
			Sept. 27, 1961	186	122	142	-	280	962	7.1	-
			Mar. 9, 1962	248	112	128	-	308	979	7.2	74
			Aug. 23, 1962	252	119	143	-	328	1,060	7.3	77
			Sept. 18, 1962	250	102	145	-	318	1,010	7.1	78

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
J-67	F. J. Graf	900	Apr. 13, 1950	172	1,830	1,590	5,200	2,220	7,590	7.5	-
			Dec. 7, 1956	94	-	1,610	-	2,010	7,070	7.1	-
			July 31, 1958	345	-	1,600	-	2,360	7,540	7.2	79
			Feb. 17, 1959	116	1,750	1,500	4,930	1,830	6,890	7.1	74
			Dec. 8, 1959	22	1,660	1,550	-	1,810	6,720	6.1	-
J-75	V. E. Berry	1,045	Dec. 6, 1956	203	-	720	-	1,630	4,260	8.0	-
			Dec. 17, 1957	-	1,130	620	-	1,520	3,940	-	-
			July 30, 1958	216	-	590	-	1,510	3,720	7.5	82
			Feb. 13, 1959	271	1,050	545	2,530	1,430	3,590	7.4	83
			Sept. 2, 1959	256	-	550	-	1,420	3,500	6.9	82
			Dec. 2, 1959	245	1,130	560	-	1,410	3,530	7.2	82
			Sept. 27, 1960	268	1,040	555	-	1,410	3,560	7.0	82
			Mar. 7, 1961	272	996	540	-	1,370	3,490	7.1	83
			Aug. 1, 1961	278	1,030	540	2,510	1,400	3,480	7.1	82
J-78	V. E. Berry	840	Mar. 7, 1962	242	1,070	540	-	1,400	3,500	7.4	81
			Dec. 2, 1959	240	31	18	-	238	482	7.1	80
			Mar. 7, 1961	242	29	18	-	224	475	7.6	81
			Aug. 3, 1961	240	30	19	303	231	489	7.2	81
			Mar. 8, 1962	236	29	18	-	230	471	7.7	81
			Aug. 23, 1962	240	27	18	-	232	476	7.1	85

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
J-79	C. Lozano	1,047	Dec. 5, 1956	242	40	24	298	238	506	7.5	79
			Aug. 13, 1957	243	-	29	-	252	546	7.8	80
			Jan. 9, 1958	214	-	24	-	188	453	7.8	80
			July 31, 1958	238	-	24	-	240	510	7.7	81
J-87	City of San Antonio	1,185	Apr. 11, 1956	241	29	17	275	230	480	7.5	81
			Dec. 6, 1956	213	-	23	-	211	487	8.1	81
			Aug. 8, 1957	234	-	20	-	223	466	7.9	80
			July 30, 1958	226	-	18	-	218	453	7.9	81
			Dec. 17, 1958	235	-	19	-	204	462	8.2	81
			Feb. 5, 1959	244	28	17	-	222	468	8.2	74
			Sept. 2, 1959	240	-	15	-	224	464	7.2	81
			Dec. 2, 1959	242	27	16	-	230	468	7.5	80
			Sept. 27, 1960	242	25	16	-	222	471	7.4	80
			May 2, 1961	242	26	17	-	224	467	7.5	81
			Aug. 24, 1961	-	26	16	-	-	-	-	81
			Mar. 8, 1962	240	26	16	-	224	462	7.8	81
			Aug. 22, 1962	238	25	18	-	228	469	7.2	82

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
J-90	Holt Machinery	2,179	Oct. 3, 1956	291	1,950	990	4,510	2,560	5,780	7.2	107
			Feb. 18, 1959	239	1,990	950	-	2,440	5,580	7.6	107
			Aug. 31, 1959	274	-	940	-	2,460	5,440	7.1	106
			Dec. 2, 1959	278	2,050	940	-	2,520	5,550	7.3	108
			Sept. 22, 1960	276	1,900	930	-	2,450	5,520	6.8	108
			Mar. 6, 1961	250	1,960	920	-	2,540	5,540	7.0	110
			Sept. 14, 1961	224	1,930	930	-	2,460	5,500	6.9	98
			Mar. 23, 1962	290	1,940	940	-	2,440	5,440	7.3	97
			Sept. 5, 1962	280	1,860	940	-	2,430	5,620	6.7	110
J-91	A. L. Wilson	800	Feb. 17, 1959	250	162	87	-	340	945	7.4	82
			Sept. 3, 1959	238	-	78	-	324	861	7.3	82
			Dec. 4, 1959	242	162	82	-	334	894	6.9	80
			Sept. 28, 1960	210	134	74	-	305	823	7.4	81
			Mar. 8, 1961	240	129	64	-	310	802	7.4	82
			Aug. 1, 1961	242	133	68	542	308	814	7.2	83
			Mar. 8, 1962	238	131	64	-	308	803	7.7	83
			Sept. 18, 1962	232	127	64	-	304	780	6.8	83

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar-bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
J-92	A. Y. Allison	884	Mar. 7, 1961	240	408	370	-	625	2,210	7.3	-
			Aug. 1, 1961	246	404	382	1,380	623	2,230	7.4	-
			Sept. 17, 1962	232	388	370	-	635	2,160	6.8	-
J-93	A. Brucks	775	Dec. 18, 1957	244	46	31	324	249	543	7.8	76
			July 31, 1958	244	-	32	-	254	546	8.1	79
			Feb. 13, 1959	204	44	30	-	208	487	8.0	75
			Sept. 3, 1959	182	-	35	-	202	481	7.2	75
			Dec. 4, 1959	216	45	35	-	222	509	7.3	74
			Sept. 27, 1960	240	42	27	-	240	532	7.2	78
			Mar. 8, 1961	244	42	28	-	244	540	7.2	76
			Sept. 16, 1961	244	42	26	-	242	518	7.7	76
			Mar. 6, 1962	244	40	27	-	238	524	7.1	76
			Sept. 18, 1962	240	37	27	-	236	501	7.0	77
J-94	Community Water Supply	1,200	Apr. 14, 1961	236	44	20	308	241	526	7.0	83
			Sept. 16, 1961	240	39	20	-	238	502	7.6	-
			Mar. 8, 1962	238	41	23	-	240	512	7.6	81

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
K-2	R. Schirmer	854	Mar.. 9, 1956	257	2,010	1,800	5,890	2,490	8,190	6.8	86
			Jan. 6, 1958	12	-	1,770	-	2,000	7,650	6.1	48
			July 30, 1958	285	-	1,720	-	2,320	7,850	7.4	86
			Feb. 13, 1959	322	1,880	1,700	-	2,280	7,810	7.3	-
			Sept. 4, 1959	268	-	1,720	-	2,320	7,600	7.0	85
			Dec. 4, 1959	288	2,020	1,750	-	2,340	7,810	7.1	87
			Oct. 5, 1960	304	1,900	1,740	-	3,300	7,860	6.9	88
			Mar. 8, 1961	306	1,820	1,700	-	2,260	7,810	7.0	87
			Sept. 15, 1961	270	1,900	1,700	-	2,340	7,790	7.1	88
			Mar. 9, 1962	330	1,810	1,640	-	2,500	7,460	7.5	-
			Sept. 17, 1962	300	1,840	1,720	-	2,340	7,750	6.4	89
M-13	A. A. Seeligson	1,800	Mar. 14, 1949	235	119	54	488	258	759	-	-
			Jan. 3, 1958	243	-	37	-	264	630	7.5	-
			Feb. 13, 1959	242	92	38	-	290	648	7.9	92
			Aug. 31, 1959	236	-	39	-	290	645	7.1	92
			Dec. 1, 1959	238	107	44	-	302	691	7.3	92
			Sept. 21, 1960	240	98	45	-	294	672	6.9	92

(Continued on next page)

Table 1.- Chemical analyses of water from observation wells in the San Antonio area Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
M-13	A. A. Seeligson	1,800	Mar. 6, 1961	238	112	51	-	312	733	7.2	92
			Sept. 14, 1961	-	88	39	-	-	-	-	92
			Mar. 19, 1962	234	94	42	-	294	672	6.7	91
			Sept. 4, 1962	240	80	36	-	280	636	7.2	92
M-39	Constanzo Bros.	1,949	Mar. 16, 1951	232	335	220	1,000	668	1,620	7.1	92
			Jan. 10, 1958	232	-	95	-	375	1,010	7.4	94
			Feb. 15, 1959	226	222	104	-	424	1,050	8.2	93
			Aug. 31, 1959	232	-	104	-	440	1,040	7.1	92
			Sept. 21, 1960	224	216	100	-	424	1,020	7.0	95
			Mar. 6, 1961	222	227	102	-	430	1,060	7.0	95
			Sept. 14, 1961	246	190	95	-	415	985	7.4	88
			Mar. 23, 1962	220	228	102	-	434	1,040	6.6	95
			Sept. 4, 1962	252	190	95	-	425	1,030	7.3	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
M-44	R. Aelevoet	2,226	Oct. 12, 1955	276	1,750	770	3,870	2,180	4,820	7.4	103
			July 22, 1957	264	1,740	750	-	2,180	4,860	7.5	102
			Jan. 2, 1958	260	-	770	-	2,070	4,860	7.7	-
			Feb. 13, 1959	248	1,700	780	-	2,360	4,840	7.4	-
			Sept. 8, 1959	264	-	770	-	2,150	4,660	6.7	102
			Nov. 30, 1959	233	1,800	770	-	2,200	4,780	6.8	105
			Sept. 21, 1960	251	1,660	770	-	2,160	4,750	7.1	106
			Mar. 7, 1961	262	1,690	770	-	2,180	4,810	6.9	105
			Oct. 10, 1961	255	1,660	750	-	2,150	4,750	6.7	106
			Mar. 29, 1962	184	1,820	800	-	2,170	4,880	6.6	-
			Sept. 4, 1962	262	1,610	770	-	2,130	4,860	6.9	105
M-45	A. H. Grothues	2,300	June 7, 1955	237	168	75	580	380	910	7.3	93
			July 22, 1957	230	194	88	-	412	976	-	93
			July 29, 1958	224	-	93	-	412	985	7.8	97
			Feb. 4, 1959	b/80	56	66	-	132	451	8.4	86
			Aug. 31, 1959	230	-	82	-	384	913	7.0	96
			Nov. 30, 1959	242	131	60	-	328	781	7.2	89

b/ Includes the equivalent of 2 ppm carbonate (CO₃) (Continued on next page)

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar-bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
M-45	A. H. Grothues	2,300	Sept. 19, 1960	228	211	98	-	416	1,020	7.3	-
			Mar. 6, 1961	230	125	54	-	320	759	7.5	96
			Sept. 12, 1961	192	214	92	-	390	968	6.7	94
			Feb. 19, 1962	174	117	62	-	264	684	7.4	94
			Aug. 20, 1962	186	340	89	-	522	1,180	6.7	96
M-46	K. L. Haggard	2,055	Dec. 1, 1959	299	662	450	-	900	2,740	6.9	96
			Sept. 22, 1960	308	478	355	-	745	2,320	7.4	-
			Mar. 7, 1961	300	582	412	-	895	2,700	7.0	96
			Apr. 5, 1961	466	588	285	-	855	2,120	7.2	100
			Aug. 1, 1961	240	544	260	1,370	827	2,030	7.2	99
			Mar. 29, 1962	222	572	262	-	815	2,030	7.0	96
M-47	K. L. Haggard	1,950	Apr. 5, 1961	238	432	200	-	675	1,680	7.1	95
			Aug. 1, 1961	230	298	132	818	524	1,280	6.9	95
			Mar. 29, 1962	228	404	162	-	625	1,500	7.2	94
			Sept. 4, 1962	216	324	146	-	560	1,380	7.0	95

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
M-48	A. Ballard	2,190	Oct. 12, 1955	227	238	108	739	447	1,080	7.3	95
			Jan. 3, 1958	243	-	52	-	304	747	7.7	-
			July 29, 1958	204	-	71	-	336	820	7.3	92
			Feb. 13, 1959	224	159	71	-	350	858	7.9	95
			Aug. 31, 1959	230	-	94	-	420	1,000	7.1	96
			Dec. 1, 1959	224	239	104	-	450	1,070	7.6	95
			Sept. 21, 1960	218	266	124	-	484	1,180	6.8	97
			Mar. 7, 1961	240	293	145	-	545	1,340	7.5	-
			Apr. 5, 1961	216	324	143	-	532	1,330	7.3	96
			Sept. 12, 1961	218	307	141	-	535	1,290	6.7	97
			Mar. 23, 1962	232	320	150	-	554	1,340	6.8	96
N-4	O. R. Mitchell	1,909	Aug. 20, 1962	218	326	152	-	565	1,380	6.8	97
			Jan. 2, 1958	245	-	18	-	216	473	7.8	79
			July 29, 1958	248	-	18	-	235	472	7.7	80
			Nov. 30, 1959	244	25	16	-	230	469	7.2	80
			Mar. 6, 1961	242	23	16	-	222	465	7.5	-
			Oct. 10, 1961	242	23	16	-	226	454	7.2	-

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Table 1.- Chemical analyses of water from observation wells in the San Antonio area-- Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
N-4	O. R. Mitchell	1,909	Mar. 19, 1962	240	23	17	-	224	455	7.1	80
			Sept. 4, 1962	248	23	15	-	224	470	7.1	84
N-5	do	1,771	Dec. 1, 1959	241	30	16	-	232	477	7.2	81
			Mar. 3, 1961	242	28	17	-	226	475	7.6	83
			Apr. 13, 1961	240	29	20	278	232	479	7.0	81
			Sept. 25, 1961	242	29	15	-	230	477	7.1	82
			Mar. 7, 1962	232	28	17	-	218	456	7.7	82
			May 3, 1962	242	29	17	-	230	477	7.6	82
			Sept. 4, 1962	244	28	17	-	232	479	7.1	82
N-6	C. Verstuyft	1,532	Dec. 1, 1959	240	29	16	-	228	471	7.3	81
			Sept. 21, 1960	242	28	14	-	230	468	7.8	82
			Mar. 3, 1961	244	27	17	-	226	474	7.5	-
			Apr. 13, 1961	242	29	18	278	234	479	7.2	81
			Sept. 12, 1961	244	28	16	-	228	481	7.1	82
			Mar. 7, 1962	232	28	17	-	220	457	7.8	82
			May 3, 1962	230	29	18	-	218	452	7.5	82
			Aug. 20, 1962	242	28	18	-	234	480	7.1	82

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
N-7	Paul Persyn	1,830	Nov. 30, 1959	281	44	39	-	216	618	7.1	83
			Sept. 21, 1960	280	44	38	-	208	616	7.8	84
			Mar. 6, 1961	280	41	37	-	212	610	7.5	85
			Apr. 13, 1961	280	41	39	359	222	614	7.2	83
			Sept. 12, 1961	-	40	38	-	-	-	-	85
			Mar. 7, 1962	272	40	38	-	218	600	7.7	84
			Sept. 4, 1962	292	39	40	-	212	635	7.2	84
N-28	E. M. Baker Deepened in 1956 to 1,742	1,330	July 28, 1950	178	1,220	570	2,740	1,660	3,640	6.9	-
			Apr. 5, 1961	232	712	308	-	990	2,390	7.1	103
			Apr. 14, 1961	240	700	310	1,660	998	2,380	7.0	103
			Sept. 14, 1961	240	612	268	-	900	2,130	7.0	98
			Mar. 7, 1962	220	676	292	-	955	2,270	7.6	96
			Sept. 4, 1962	244	664	315	-	950	2,340	6.9	103
N-118	J. Donoho and L. Knowlton	1,856	Jan. 18, 1957	209	158	69	520	343	803	7.7	92
			Jan. 2, 1958	222	-	57	-	312	755	7.7	92
			July 29, 1958	190	-	44	-	267	624	7.5	94
			Feb. 18, 1959	234	102	40	-	288	656	8.2	93

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Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
N-118	J. Donoho and L. Knowlton	1,856	Aug. 31, 1959	234	-	42	-	302	670	7.1	92
			Sept. 21, 1960	236	114	50	-	310	710	7.2	93
			Mar. 6, 1961	236	118	54	-	324	753	7.2	93
			Oct. 12, 1961	246	102	48	-	312	702	7.1	-
			Mar. 23, 1962	236	108	50	-	310	701	6.9	93
			Sept. 17, 1962	236	103	47	-	306	686	6.9	92
N-119	F. Vargas	1,660	Feb. 9, 1956	275	1,100	620	2,720	1,560	3,850	7.3	84
			Jan. 2, 1958	247	-	455	-	1,120	3,010	7.6	82
			July 29, 1958	191	-	508	-	1,360	3,280	7.5	82
			Feb. 4, 1959	232	971	488	-	1,280	3,170	7.5	86
			Aug. 26, 1959	244	-	462	-	1,260	3,040	7.3	86
			Nov. 30, 1959	249	970	480	-	1,260	3,070	7.1	85
			Sept. 19, 1960	241	894	460	-	1,240	3,050	6.7	87
			Mar. 3, 1961	236	924	470	-	1,260	3,050	7.0	88
			Sept. 12, 1961	196	932	455	-	1,270	3,060	6.8	88
			Mar. 7, 1962	-	-	-	-	-	3,000	-	87
			May 3, 1962	232	872	440	-	1,210	2,890	6.8	84
			Aug. 20, 1962	246	882	460	-	1,270	3,100	6.8	75

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Bexar County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
N-120	Kreuger Farm	1,781	Dec. 1, 1959	240	29	18	-	224	477	7.1	80
			Sept. 22, 1960	240	30	19	-	224	466	7.4	80
			Mar. 7, 1961	242	26	18	-	228	473	7.6	82
			Aug. 1, 1961	244	28	17	288	227	478	7.0	81
			Sept. 17, 1962	240	28	18	-	228	464	7.1	82
N-121	E. M. Baker	2,274	Mar. 6, 1957	194	663	305	1,560	922	2,300	7.4	101
			Jan. 2, 1958	262	-	445	-	1,210	3,040	7.3	101
			July 29, 1958	218	-	468	-	1,280	3,160	7.4	101
			Feb. 13, 1959	268	1,010	520	-	1,370	3,370	7.4	102
			Aug. 26, 1959	246	-	502	-	1,340	3,210	7.2	100
			Nov. 30, 1959	283	1,040	535	-	1,350	3,370	7.1	100
			Sept. 21, 1960	308	1,020	570	-	1,410	3,590	7.1	100
			Sept. 4, 1962	240	744	400	-	1,080	2,720	6.8	103

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
<u>Guadalupe County</u>											
D-18	C. L. Worth	370	Aug. 7, 1958	243	89	57	422	300	717	7.4	78
			Sept. 9, 1959	242	-	60	-	290	691	7.3	75
			Dec. 2, 1959	247	90	59	-	298	717	7.5	74
			Sept. 27, 1960	-	87	56	-	-	-	-	75
			Mar. 8, 1961	-	82	55	-	286	706	7.1	73
			Sept. 13, 1961	240	86	55	-	294	704	7.5	75
			Mar. 6, 1962	240	86	59	-	290	703	7.0	75
D-30	H. Jansing	545	Sept. 9, 1959	950	220	1,470	3,370	1,360	5,600	6.6	76
			Dec. 2, 1959	1,160	46	1,880	-	1,720	6,620	6.9	74
			Sept. 27, 1960	-	12	1,860	-	-	-	-	74
			Mar. 8, 1961	1,180	69	1,800	-	1,730	6,700	6.7	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Guadalupe County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
D-56	City of Cibolo	506	Sept. 9, 1959	258	698	670	2,250	967	3,350	6.8	78
			Dec. 8, 1959	266	722	680	-	980	3,450	6.8	79
			Oct. 7, 1960	258	672	650	-	940	3,360	7.3	80
			Mar. 8, 1961	252	384	350	-	625	2,130	7.1	77
			Sept. 13, 1961	254	676	648	-	965	3,360	7.0	79
			Mar. 9, 1962	260	698	680	-	980	3,460	7.2	79
D-67	W. Kramer	565	Dec. 2, 1959	307	354	319	-	602	1,940	7.2	74
			Mar. 8, 1961	258	372	345	-	645	2,130	7.6	-
			Aug. 7, 1961	254	356	335	1,240	616	2,040	7.2	-
			Mar. 6, 1962	256	390	365	-	660	2,150	7.3	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
<u>Comal County</u>											
F-75	U. S. Gypsum	209	Nov. 24, 1959	279	22	12	-	252	516	6.9	-
			Sept. 29, 1960	256	20	9.0	-	232	471	7.3	-
			Mar. 1, 1961	288	20	14	-	256	523	7.4	73
			Aug. 2, 1961	278	20	14	315	256	523	6.9	74
			Mar. 22, 1962	284	21	12	-	258	521	7.1	74
			Oct. 3, 1962	290	20	13	-	262	520	7.1	75
G-50	City of New	-	June 24, 1957	271	24	16	294	260	497	7.8	74
	Braunfels		Aug. 8, 1957	271	22	13	287	254	502	7.4	74
	(Comal Springs)		Oct. 4, 1957	276	22	14	302	254	498	7.6	72
			Jan. 14, 1958	276	22	14	298	253	493	8.0	68
			Apr. 9, 1958	274	21	14	302	254	501	7.1	74
			July 16, 1958	271	22	14	290	257	505	7.0	75
			Jan. 16, 1959	280	22	13	296	241	508	7.4	74

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Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Comal County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
G-50	City of New Braunfels (Comal Springs)	-	June 18, 1959	276	23	12	286	251	502	6.9	-
			Nov. 23, 1959	277	27	14	-	253	517	6.8	74
			Sept. 29, 1960	-	22	9.0	-	-	-	-	75
			Mar. 2, 1961	282	22	14	-	252	518	7.5	74
			Aug. 9, 1961	280	22	16	-	254	508	7.1	72
			Mar. 7, 1962	276	22	14	-	248	502	7.4	75
			Sept. 27, 1962	284	21	14	-	256	509	7.3	75
G-67	W. Sippel	502	Jan. 22, 1944	249	58	54	360	276	-	-	-
			Nov. 24, 1959	249	53	60	-	231	645	7.4	72
			Sept. 29, 1960	240	53	56	-	242	644	7.4	73
			Mar. 3, 1961	260	53	53	-	254	653	7.6	71
			Sept. 15, 1961	254	55	56	378	257	656	7.0	74
			Mar. 7, 1962	254	56	54	-	252	652	7.8	74
			Sept. 27, 1962	260	56	54	-	264	665	7.4	76

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
<u>Comal County</u>											
G-83	C. Hernandez	345	Nov. 24, 1959	332	312	142	-	546	1,600	7.0	73
			Mar. 3, 1961	354	191	75	-	445	1,200	6.7	-
			Aug. 8, 1961	372	494	320	1,510	759	2,300	6.7	72
			Mar. 13, 1962	340	644	510	-	965	2,970	7.0	-
G-84	H. C. Nelson	272	Nov. 23, 1959	368	200	167	-	520	1,370	7.1	72
			Sept. 29, 1960	-	192	155	-	-	1,300	-	75
			Mar. 2, 1961	346	186	157	-	500	1,310	7.7	-
			Aug. 1, 1961	372	195	155	827	524	1,350	6.9	75
			Mar. 3, 1962	356	195	157	-	506	1,340	7.4	-
			Oct. 3, 1962	338	190	156	-	506	1,330	7.2	-
G-85	O. Pape	170	Nov. 23, 1959	295	21	18	-	264	537	6.8	-
			Sept. 29, 1960	-	18	15	-	-	-	-	-
			Mar. 2, 1961	300	18	16	-	264	542	7.3	-
			Aug. 1, 1961	296	18	16	329	268	530	6.9	75
			Mar. 7, 1962	296	19	16	-	266	533	6.8	-
			Oct. 3, 1962	300	19	14	-	268	532	7.1	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Comal County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
G-86	H. Soechting	168	Nov. 23, 1959	296	23	18	-	268	544	6.9	-
			Mar. 2, 1961	312	21	16	-	280	572	7.2	71
			Aug. 8, 1961	312	21	19	344	284	571	6.9	74
			Mar. 7, 1962	296	26	18	-	272	543	7.4	-
			Oct. 3, 1962	302	23	17	-	274	550	7.0	-
G-87	R. Soechting	160	Nov. 23, 1959	294	29	21	-	267	561	6.8	-
			Sept. 29, 1960	292	29	16	-	260	541	7.8	74
			Mar. 7, 1962	300	21	18	-	270	546	7.1	-
			Oct. 3, 1962	302	20	17	-	272	547	7.1	-
G-88	K.L. Karger	255	Dec. 7, 1959	410	600	710	-	1,090	3,550	7.1	-
			Sept. 29, 1960	238	718	700	-	945	3,540	7.1	-
			Mar. 2, 1961	276	696	690	-	1,080	3,560	7.4	-
			Aug. 1, 1961	262	704	700	2,290	1,110	3,560	6.9	-
			Mar. 7, 1962	268	698	700	-	1,070	3,530	7.2	-
			Oct. 3, 1962	200	676	680	-	1,040	3,470	7.0	-
G-89	R. Hobson	160	Nov. 23, 1959	292	18	18	-	264	535	6.9	74
			Sept. 29, 1960	284	17	12	-	252	507	7.6	75
			Mar. 2, 1961	292	16	13	-	260	529	7.5	72
			Aug. 3, 1961	298	16	14	320	270	531	6.9	75

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Comal County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
H-2	E. Kanz	450	Nov. 24, 1959	190	620	535	-	812	2,840	6.4	-
			Mar. 3, 1961	236	484	590	-	930	3,120	7.4	72
			Sept. 15, 1961	340	428	550	-	845	2,910	6.8	74
			Mar. 7, 1962	286	422	530	-	835	2,850	6.9	74
			Oct. 3, 1962	292	448	560	-	830	3,000	7.2	74
H-6	A. W. Feick	700	Oct. 26, 1936	293	47	86	425	292	-	-	-
			Nov. 24, 1959	276	32	55	-	246	630	7.0	72
			Sept. 29, 1960	256	52	56	-	256	670	7.7	78
			Mar. 2, 1961	280	38	56	-	270	691	7.7	72
			Sept. 13, 1961	258	48	52	-	254	640	7.4	75
			Mar. 7, 1962	262	48	51	-	256	646	7.5	75
			Oct. 3, 1962	286	45	50	-	266	665	7.2	78
H-7	R. Welsch	372	Dec. 4, 1936	281	43	22	314	226	-	-	-
			Nov. 24, 1959	288	37	20	-	258	556	7.0	72
			Sept. 29, 1960	290	31	20	-	238	552	7.1	-
			Mar. 1, 1961	290	61	26	-	286	638	7.4	-

(Continued on next page)

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Comal County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
H-7	R. Welsch	372	Sept. 15, 1961	290	35	14	-	258	552	7.3	-
			Mar. 7, 1962	284	34	20	-	260	559	6.8	-
			Oct. 3, 1962	290	30	18	-	262	553	7.2	73
H-20	W. Schaeffer	300	Dec. 3, 1936	195	32	28	233	198	-	-	-
			Nov. 24, 1959	270	24	16	-	220	485	7.3	73
			Sept. 28, 1960	262	25	22	-	232	516	7.5	90
			Mar. 1, 1961	284	17	25	-	244	533	7.5	72
			Sept. 27, 1961	280	14	21	-	240	516	7.2	-
			Feb. 21, 1962	288	20	24	-	256	539	7.4	74
			Oct. 3, 1962	286	22	25	-	256	548	7.3	74
H-23	O. Penshorn	423	Dec. 3, 1936	79	971	425	2,080	1,190	-	-	-
			Dec. 7, 1959	295	1,970	775	-	2,580	5,680	7.0	-
			Sept. 29, 1960	300	1,920	705	-	2,540	5,570	7.0	-
			Mar. 1, 1961	292	1,850	700	-	2,540	5,560	7.2	-
			Sept. 13, 1961	294	1,890	680	-	2,520	5,500	7.0	-
			Mar. 7, 1962	302	1,880	670	-	2,420	5,300	6.5	-
			Sept. 27, 1962	316	1,910	630	-	2,520	5,410	6.9	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Comal County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
H-43	H. Friesenhahn	400	Oct. 24, 1936	232	31	48	305	284	-	-	-
			Dec. 1, 1959	369	27	51	-	410	903	6.6	-
			Sept. 28, 1960	362	25	44	-	340	843	7.1	-
			Mar. 1, 1961	350	23	72	-	465	1,070	6.7	71
			Sept. 15, 1961	350	26	55	-	415	926	6.7	-
			Mar. 7, 1962	364	26	43	-	386	830	6.5	72
			Sept. 27, 1962	376	28	40	-	390	844	6.9	74
H-49	E. Feick	515	Nov. 24, 1959	426	528	610	-	898	2,930	7.1	-
			Sept. 29, 1960	396	488	610	-	900	3,190	7.2	-
			Mar. 1, 1961	372	496	600	-	860	3,130	7.3	71
			Aug. 8, 1961	420	476	610	1,970	876	3,170	7.3	76
			Mar. 8, 1962	420	492	620	-	910	3,190	7.1	-
			Sept. 27, 1962	400	482	640	-	915	3,190	7.3	75
H-50	H. Jones	290	Mar. 3, 1961	540	704	1,680	-	1,260	6,430	7.0	73
			Sept. 15, 1961	440	672	1,650	-	1,250	6,380	6.5	73
			Mar. 8, 1962	480	708	1,680	-	1,330	6,430	7.2	73
			Sept. 27, 1962	-	-	-	-	-	6,470	-	75

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Comal County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
H-51	Buchner Dairy	530	Nov. 24, 1959	400	645	650	-	924	3,310	7.3	-
			Sept. 29, 1960	306	544	650	-	900	3,160	6.9	76
			Mar. 2, 1961	336	624	650	-	915	3,340	7.0	-
			Mar. 8, 1962	220	354	670	-	620	2,930	7.3	74
			Sept. 27, 1962	480	476	650	-	925	3,300	7.6	75
H-52	P. Hansmann	380	Sept. 28, 1960	260	42	32	-	254	557	7.8	-
			Mar. 3, 1961	252	45	28	-	252	564	7.5	-
			Aug. 1, 1961	264	36	30	330	252	555	7.1	76
			Mar. 7, 1962	256	45	30	-	252	555	6.9	-
			Sept. 27, 1962	228	23	28	-	212	485	7.5	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
<u>Hays County</u>											
E-70	H.K. Wilbern	450	Aug. 26, 1952	301	324	208	1,040	439	1,740	7.5	-
			Nov. 25, 1959	312	387	254	-	464	1,890	7.4	-
			Oct. 10, 1960	-	354	230	-	-	1,780	-	-
			Mar. 2, 1961	308	332	218	-	435	1,740	7.9	-
			Aug. 3, 1961	308	336	225	1,090	426	1,770	7.0	-
			Mar. 15, 1962	308	384	250	-	480	1,910	7.2	72
E-76	City of Buda	390	Nov. 25, 1959	342	32	10	-	296	581	7.6	-
			Oct. 10, 1960	316	26	12	-	286	559	7.1	73
			Mar. 2, 1961	320	25	11	-	286	544	8.0	-
			Aug. 4, 1961	310	25	12	340	285	558	6.9	73
			Mar. 13, 1962	320	27	12	-	290	662	7.3	72
			Oct. 5, 1962	324	26	10	-	296	566	7.0	-
E-79	C.M. Breeding	490	Nov. 25, 1959	274	988	420	-	1,160	3,220	7.0	-
			Oct. 10, 1960	285	372	222	-	530	1,810	7.1	-
			Mar. 2, 1961	252	1,490	580	-	1,780	4,410	7.4	72
			Apr. 4, 1961	274	834	352	-	1,020	2,900	7.1	73
			Aug. 3, 1961	272	796	560	2,320	978	3,430	7.1	73
			Mar. 7, 1962	276	608	398	-	780	2,640	7.4	-
			Oct. 5, 1962	276	1,040	530	-	1,270	3,680	7.0	73

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Hays County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
E-80	D.A. Dacy	492	Dec. 7, 1959	300	253	202	-	372	1,530	7.4	-
			Oct. 10, 1960	-	248	200	-	-	1,580	-	-
			Mar. 2, 1961	300	249	212	-	376	1,570	7.9	75
			Aug. 10, 1961	296	241	198	928	354	1,520	7.0	-
			Mar. 16, 1962	296	242	200	-	372	1,530	7.1	-
E-81	W.A. Word	520	Nov. 25, 1959	274	116	16	-	334	642	7.8	72
			Mar. 2, 1961	276	118	14	-	342	674	7.9	74
			Mar. 9, 1962	276	135	14	-	366	702	7.1	73
			Oct. 5, 1962	280	141	14	-	368	708	7.4	72
E-82	Tom Edwards	580	Dec. 7, 1959	226	536	435	-	655	2,570	7.4	65
			Oct. 10, 1960	-	510	382	-	-	2,410	-	-
			Mar. 2, 1961	338	484	127	-	705	1,720	7.6	69
			Apr. 14, 1961	300	342	318	-	408	2,080	7.2	-
			Aug. 2, 1961	336	287	94	976	528	1,330	7.0	73
			Mar. 15, 1962	354	952	218	-	1,020	2,550	7.3	73
			Oct. 5, 1962	272	426	320	-	520	2,150	7.3	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Well	Owner	Hays County							Specific conductance (micromhos at 25°C)	pH	Temperature °F
		Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃			
F-7	R.M. Turner	665	Aug. 26, 1952	282	290	185	999	362	1,610	7.8	-
			Dec. 7, 1959	288	298	196	-	352	1,560	7.3	73
			Oct. 10, 1960	282	288	190	-	354	1,510	7.9	74
			Mar. 2, 1961	266	272	190	-	316	1,500	7.9	72
			Aug. 9, 1961	244	524	485	-	570	2,760	7.3	75
			Mar. 12, 1962	288	296	190	-	360	1,570	7.5	74
			Oct. 5, 1962	288	308	192	-	360	1,610	7.7	-
F-22	A.H. Whitten	502	Apr. 1, 1943	306	350	335	-	-	-	-	-
			Nov. 25, 1959	306	351	322	-	410	2,070	7.6	-
			Oct. 10, 1960	300	340	318	-	410	2,060	7.4	-
			Mar. 2, 1961	296	340	320	-	406	2,060	7.6	75
			Aug. 2, 1961	304	340	325	1,270	400	2,060	7.3	76
			Mar. 14, 1962	300	344	325	-	410	2,060	7.5	-
			Oct. 5, 1962	302	342	316	-	412	2,070	7.4	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Hays County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature of
H-8	City of Kyle	336	Sept. 3, 1953	267	47	14	306	256	542	7.7	-
			Dec. 7, 1959	262	67	16	-	256	569	7.1	-
			Sept. 30, 1960	264	40	11	-	246	513	7.5	-
			Mar. 3, 1961	264	62	16	-	252	568	7.7	-
			Aug. 9, 1961	262	38	15	-	246	500	7.5	75
			Mar. 8, 1962	264	66	16	-	252	573	7.3	-
H-25	Hillview Dairy (Ed Cullen)	600	Aug. 26, 1952	260	513	642	1,960	734	3,300	7.6	-
			Dec. 7, 1959	278	504	685	-	735	3,230	7.3	-
			Mar. 2, 1961	268	500	680	-	720	3,230	7.7	-
			Aug. 8, 1961	256	506	650	-	720	3,180	7.3	-
			Mar. 8, 1962	270	502	640	-	725	3,160	7.4	-
			Sept. 15, 1962	256	528	660	-	740	3,250	7.7	-
H-50	Louis Woods	141	Dec. 7, 1959	304	37	28	-	290	616	7.1	-
			Oct. 10, 1960	268	32	27	-	252	548	7.6	73
			Mar. 3, 1961	316	35	28	-	300	628	7.5	71
			Aug. 2, 1961	312	36	29	392	294	621	7.0	70
			Mar. 14, 1962	296	36	30	-	284	608	6.7	72
			Oct. 5, 1962	306	44	28	-	300	639	6.8	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Hays County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
H-59	W.N. Goforth	-	Oct. 4, 1937	262	27	29	-	299	-	-	-
	(Spring)		Dec. 7, 1959	314	22	18	-	288	574	7.1	69
			Mar. 2, 1961	314	21	18	-	284	572	7.6	68
			Aug. 3, 1961	182	17	21	-	166	366	7.8	86
			Mar. 12, 1962	284	21	20	-	256	526	7.6	71
H-66	A.B. Rogers		Mar. 23, 1955	309	17	16	334	291	556	7.4	-
	Estate		June 18, 1959	307	25	20	327	284	567	7.1	72
	(San Marcos Springs)		Nov. 25, 1959	307	34	20	-	282	579	7.3	72
			Sept. 30, 1960	298	20	18	-	268	545	7.6	72
			Mar. 2, 1961	310	23	22	-	280	585	7.8	72
			Aug. 3, 1961	250	22	22	-	234	503	7.3	72
			Mar. 12, 1962	304	22	21	-	276	570	7.0	71
			Sept. 18, 1962	-	14	20	-	-	503	-	72
H-84	J.B. Netherland	250	Sept. 29, 1937	305	40	36	352	321	-	-	-
			Dec. 7, 1959	318	35	28	-	302	633	7.0	-
			Sept. 30, 1960	318	32	30	-	305	640	7.0	-
			Mar. 3, 1961	324	32	28	-	300	626	7.8	-
			Sept. 13, 1961	-	31	30	-	-	-	-	-
			Mar. 16, 1962	320	34	29	-	304	639	6.8	-
			Sept. 17, 1962	316	35	27	-	304	620	7.6	-

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Hays County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
H-107	City of Kyle	360	Nov. 25, 1959	280	141	14	-	362	703	7.6	77
			Sept. 30, 1960	272	133	16	-	360	702	7.3	78
			July 11, 1962	278	134	14	-	368	700	7.4	-
H-112	do	600	Mar. 2, 1961	273	153	28	-	358	778	7.2	77
			Aug. 2, 1961	274	157	28	490	352	789	7.0	77
H-113	Southwest Texas	255	Sept. 30, 1960	304	35	30	-	290	619	7.1	-
	State Teachers		Mar. 2, 1961	312	33	28	-	292	616	7.7	-
	College		Aug. 2, 1961	302	34	30	378	291	617	7.1	-
			Mar. 12, 1962	306	33	30	-	288	600	7.6	-
			Oct. 4, 1962	310	33	28	-	296	610	7.4	-
H-114	A.A. Hale	500	Oct. 5, 1962	264	260	54	-	440	1,020	7.4	73
K-1	W.N. Yates	360	Sept. 28, 1937	299	205	150	770	-	-	-	-
			Dec. 7, 1959	297	135	233	-	412	1,390	7.1	71
			Mar. 3, 1961	276	247	232	-	525	1,590	7.4	-
			Mar. 16, 1962	358	260	228	-	600	1,660	6.9	-
			Oct. 4, 1962	340	214	228	-	546	1,570	7.1	73

Table 1.- Chemical analyses of water from observation wells in the San Antonio area--Continued

Hays County											
Well	Owner	Depth of well (ft.)	Date of collection	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved solids	Hardness as CaCO ₃	Specific conductance (micromhos at 25°C)	pH	Temperature °F
K-5	E. Jackson	200	Dec. 10, 1959	350	286	242	-	608	1,680	7.1	-
			Oct. 10, 1960	350	270	245	-	595	1,720	7.2	74
			Mar. 3, 1961	324	280	230	-	590	1,680	7.6	-
			Sept. 13, 1961	330	268	238	-	590	1,650	7.2	-
			Mar. 16, 1962	352	272	240	-	620	1,710	7.0	72
			Oct. 4, 1962	364	268	252	-	628	1,730	7.0	-

Note: Large-format version of the original plate is on the following page.

