

MEMORANDUM

Water wells in Linn district, Hidalgo County, Texas

By

G. H. Cronack

U. S. GEOLOGICAL SURVEY
GROUND WATER DIVISION

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AUSTIN, TEXAS

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Prepared in cooperation between the Geological Survey, U. S. Department
of the Interior, and the Texas State Board of Water Engineers

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49-62

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INTRODUCTION

Investigations of the geology and ground-water resources of Hidalgo County were made in the summers of 1933 and 1939 by Dr. J. T. Lonsdale, former head of the Department of Geology of the Texas A and M College. The results are given in two mimeographed well reports, dated September 1938 and May 1941.

The writer spent parts of May, June, and July, 1945, obtaining supplementary information on wells in the county, chiefly in the areas where ground water is being used or its use is contemplated for irrigation.

This memorandum is a resume of data obtained by Dr. Lonsdale and the writer in the Linn district in the north-central part of the county. Attached are records of 19 shallow and 4 deep wells, chemical analyses of water from 11 of the wells, and the log of 1 deep well (no. 1-A) in an area just north of the irrigated district.

Shallow irrigation wells

Two of the shallow irrigation wells in the Linn area, nos. 54-A and 59-A (see sketch map), reported to have been drilled about 1930, are still in operation; 10 additional irrigation wells were completed between 1937

and 1940. Thus far in 1945 at least seven wells have been drilled and it is reported that several others will be put down in the near future. The wells range in depth from 78 to 128 feet and reach the water-bearing sand at depths ranging from about 40 to about 70 feet. In the three wells for which drillers' records are available, nos. 5-A, 54-A, and 57-A, the sands are respectively 58, 50, and 44 feet in thickness. The static water levels in the wells range from 27 to 55 feet below the land surface, depending upon the topography. The yield of the wells is reported to range from 300 to 500 gallons a minute. No discharge measurements were made, however, either by Lonsdale or by the writer. According to the report of the owner of well 54-A, the pump breaks suction when the pumping rate is increased to 500 gallons a minute. The areas irrigated by water from the individual wells are said to range from 30 to 50 acres in extent and the total amount of land under irrigation is relatively small. Irrigated crops consist of citrus fruit, flowers, and some truck crops. It is said that no noticeable decline in water levels has occurred as a result of the pumping, and that report is borne out by a comparison of the measurements made by Lonsdale in 1939 with those made by the writer in 1945.

The extent of the territory in which shallow-well irrigation is being carried out is contemplated is shown on the attached map. Whether the shallow sands occur outside this territory is not known, but it is reported that they were not encountered in a test well put down for a school supply about half a mile east-northeast from Linn. Lack of domestic and stock wells east, south, and west of the present irrigated areas makes it impossible to determine whether the shallow sands extend outside this territory.

Deep wells

Records of the four deep wells of the area, nos. 1-A, 2-A, 3-A, and 49-A, including chemical analyses, are given in the following tables. A log of well 1-a is also attached. Electrical logs for wells 3-A and 49-A, are available in the Austin office of the U. S. Geological Survey. Measurements by Lonsdale and the writer show approximate natural flow of the wells, in gallons a minute, as follows: 1-A, 3; 2-A, 25; 3-A, 300; and 49-A, 25.

Records of wells in Linn district, Hidalgo County, Texas

Well	Owner	Date com- plet- ed	Depth of well (ft.)	Water level below land surface (ft.)	level Date of measurement	Yield (g.p.m.)	Method of lift	Use of water	Remarks
1-A	Guerra Bros.	1944	1,020	d/+19	---	3	Flows	S	Temperature 89 ¹ / ₂ ° F. See log.
2-A	W. M. Doughty	1939	910	+	May 11, 1945	25	Flows	S	Temperature 91 ¹ / ₂ ° F.
3-A	J. P. Cruise	1945	1,404	+	do.	300	Flows	S	To be used for irrigation. Electric log available. Temperature 92 ¹ / ₂ ° F.
4-A	Clay Everhart	1945	88	d/32	May 12, 1945	400	T, Tr	Irr	Casing: 45 feet of 12-inch. Pump set at 80 feet. Temperature 79° F.
5-A	T. B. Bailey	1945	128	55.1	do.	---	T	Irr	Casing: 20 feet of 10-inch. Water reported in sand from 70 to 128 feet. Pump set at 108 feet.
49-A	M. L. McRide	1945	1,710	+	June 13, 1945	25	Flows	Irr	Pump to be installed. Electric log available. Temperature 96° F.
50-A	Rio Grande Floral Co.	1940	78	27.7	June 20, 1945	300	T, G	Irr	Owner reports greater yield when pump speed increased. Temperature 78 ¹ / ₂ ° F.
54-A	Joe V. Hobson	1930	90	d/30	June 21, 1945	300	T, G	Irr	Water sand reported from 40 to 90 feet. Pump set at 80 feet. Owner reports pump breaks suction at yield of 500 gallons a minute. Temperature 79° F.
55-A	Southern Floral Co.	1945	76	29.3	do.	---	T, G	Irr	
56-A	Juan Medina	1945	80	26.9	do.	---	---	---	To be used for irrigation. Owner waiting for pump.
57-A	Reynaldo Vela	1945	92	42.7	do.	---	---	---	Sand reported from 48 to 92 feet. To be used for irrigation when pump is installed.
58-A	O. J. Blane	1931	80	---	---	300	T, G	Irr	Temperature 79° F.
59-A	A. K. Polis	---	80	31.5	June 21, 1945	---	T, G	Irr	Dug and drilled.

Records of wells in Linn district, Hidalgo County, Texas -- Continued

Well	Owner	Date completed	Depth of well (ft.)	Water level		Yield (g.p.m.)	Method of lift	Use of water	Remarks
				Below land surface (ft.)	Date of measurement				
60-A	A. K. Polis	--	78	--	--	300	T,G	Irr	Temperature 78° F.
61-A	do.	1945	80	29.6	June 21, 1945	--	--	--	Casing: 10 feet of 10-inch. To be used for irrigation when pump is installed.
62-A	do.	1945	80	--	--	--	T,G	Irr	
72-A	Fred Mischler	--	90±	d/30	1945	400	T,G	Irr	
73-A	-- Campbell	--	90±	d/30	1945	--	T,G	Irr	
573	J. E. Garrett	1938	88	d/51	Sept. 1, 1939	400	T,G	Irr	
574	Ivan A. White	1938	85	34.0	June 21, 1945	400	T,G	Irr	Redrilled in 1938. Irrigated 10 acres of orchard and 20 acres of field crops in 1939.
575	O. Mayhew	1938	78	d/32	Sept. 2, 1939	400	T,G	Irr	Do.
577	Southern Floral Co.	1937	88	d/30.5	do.	500	T,G	Irr	

a/ Plus (+) indicates water level is above land surface.

b/ Pump or lift: T, turbine; G, gasoline engine.

c/ Irr, irrigation; S, stock.

d/ Water level reported by owner or driller.

Driller's log

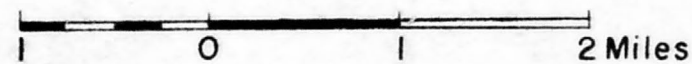
	Thickness (feet)	Depth (feet)
<u>Well 1-A</u>		
Soil	18	18
Caliche	52	70
Sand	20	90
Clay	90	180
Sand	20	200
Clay and rock	60	260
Clay and sand	48	308
Clay	107	415
Sand	61	476
Clay	18	494
Sand	51	545
Clay	38	583
Sand	15	598
Clay	54	652
Sand	26	678
Clay and rock	38	716
Clay and sand	14	730
Clay	10	740
Sand	20	760
Clay	37	797
Rock	3	800
Sand	30	830
Clay	35	865
Sand	45	910
Clay	18	928
Sand	17	945
Clay	45	990
Water sand	30	1020
TOTAL DEPTH		1020

Analyses of water from wells in the vicinity of Linn, Hidalgo County, Texas.

Well	Owner	Depth of well (ft.)	Date of collection	Dissolved solids	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and potassium (Na + K) (calc.)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Total hardness as CaCO ₃ (calc.)
1-A	Guerra Bros.	1,020	May 5, 1945	2,020	55	14	623	123	928	338	1.8	190
2-A	W. M. Doughty	910	May 11, 1945	1,290	12	5.7	474	252	206	468	1.8	54
3-A	J. P. Cruise	1,504	do.	1,260	9.8	4.4	466	305	226	402	1.5	42
4-A	Clay Everhart	88	May 12, 1945	1,290	71	50	352	330	127	528	1.9	382
49-A	H. L. McBride	1,710	June 16, 1945	1,420	37	8.7	460	258	518	268	0.8	128
50-A	Rio Grande Floral Co.	90	do.	814	58	33	199	204	94	299	31	280
54-A	Joe V. Hobson	70	June 21, 1945	938	74	41	211	201	145	330	38	353
55-A	Southern Floral Co.	90	do.	1,340	66	49	372	364	155	495	21	306
58-A	O. J. Blaue	80	do.	953	67	36	241	248	104	360	23	315
60-A	A. K. Polis	80	do.	1,020	61	44	259	192	102	438	19	333
577	Southern Floral Co.	88	Spet. 1, 1939	-	56	32	264	381	109	292	9.8	271

WELLS IN LINN DISTRICT, HIDALGO COUNTY, TEXAS

SCALE



S.P. R.R.

Linn

San Manuel

U.S. - 281

STATE - 186

SAL DEL REY

49-A

1-A

2-A

3-A

4-A

5-A

60-A

577

59-A

62-A

61-A

55-A

54-A

73-A

575

50-A

56-A

58-A

574

573

57-A

72-A

- EXPLANATION
- Flowing well
 - Well pumped for irrigation

