DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
AND LOCAL AGENCIES

OPEN-FILE REPORT NO 79-1350
SHEET 1 OF 2

INTRODUCTION

The configuration of the potentiometric surface of the Floridan aquifer and the water table in the surficial aquifer in parts of west-central Florida in the vicinity of well fields used for public supply are shown on sheets 1 and 2. The maps encompass land areas of about 1,200 mi² and include parts of Hillsborough, Pinellas, Pasco, and Sarasota Counties. The maps are prepared semiannually by the U.S. Geological Survey in cooperation with the Southwest Florida Water Management District and local agencies. Water levels generally are lowest in May and highest in September; in contrast, pumpage is highest in May and lowest in September.

The surficial aquifer consists of unconsolidated, fine-grained sediments as much as 80 feet thick. In most areas, the surficial aquifer is underlain by clay that forms a leaky confining layer separating the surficial aquifer from the underlying limestone of the Floridan aquifer. In southern Hillsborough County and Sarasota County, confining beds separate the Floridan aquifer from overlying artesian aquifers. The Floridan aquifer consists of limestone and dolomite beds about 1,000 feet thick.

Sixteen well-field areas were mapped; Brandon, Clearwater, Dunedin, Belleair, Cosme, Cross-Bar Ranch, Cypress Creek, East Lake, Eldridge-Wilde, Morris Bridge, Pasco, Riverview, Section 21, Starkey, Sun City, and Verna. The well fields supply water to the urban and suburban areas of Brandon, Clearwater, St. Petersburg, Sarasota, and Tampa, and Pinellas and southern Hillsborough Counties.

SUMMARY OF CONDITIONS

In May 1979, water levels in most observation wells in the surficial aquifer and the Floridan aquifer were higher than those measured in September 1978 and much higher than the average May levels.

Seasonal and year-to-year fluctuations of water levels in the surficial and Floridan aquifers, and their relations at each well field are shown by hydrographs.

The May 1979 potentiometric surface of the Floridan aquifer at all well fields was generally much higher than May 1978. Increases ranged from zero at Sun City well field to about 8 feet at Eldridge-Wilde well field, and averaged about 4 feet. The water table in the surficial aquifer was 1 to 2 feet higher. Water levels in both aquifers were about 2 to 3 feet higher in May than in September 1978 in most well fields, the exceptions being Cypress Creek, Riverview, Sun City, and Verna well fields.

Rainfall in the area was below the 1941-70 normal in October and November 1978 and in February, March, and April 1979, and greater than normal in December 1978 and in January and May 1979 (table 2). There was heavy rainfall one week prior to measurement of water levels.

On May 15, 1979, the total pumpage from the producing wells was 127.9 Mgal, 4.2 Mgal more than that recorded on September 26, 1978, and 38.2 Mgal less than that recorded on May 16, 1978 (table 1). Most well fields pumped less water on May 15 than the previous May, excluding Cypress Creek and East Lake well fields where pumpage was greater.

SELECTED REFERENCES

Hutchinson, C. B., and Mills, L. R., 1976, Water table in the surficial aquifer and potentiometric surface of the Floridan aquifer in selected well fields, west-central Florida, May 1976: U.S. Geological Survey Open-File Report 77-257.

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Wolansky, R. M., Mills, L. R., and Woodham, W. M., 1978, Water table in the surficial aquifer and potentiometric surface of the Floridan aquifer in selected well fields, west-central Florida, May 1978: U.S. Geological Survey Open-File Report 78-939.

______ 1978, Water table in the surficial aquifer and potentiometric surface of the Floridan aquifer in selected well fields, west-central Florida, September 1978: U.S. Geological Survey Open-File Report 78-1045.

Wolansky, R. M., Mills, L. R., Woodham, W. M., and Laughlin, C. P., 1979, Potentiometric surface of the Floridan aquifer, Southwest Florida Water Management District and adjacent areas, May 1979: U.S. Geological Survey Open-File Report 79-1255

Table 1.--Pumpage and water-level data at sixteen well fields in west-central Florida

Well field	Operating agency	Number of supply wells	Number of wells pumped on 5-15-79	Pumpage on date water level measured (Mgal) 5-16-78	9-26-78	5-15-79	Potentiometric surface above or below (-) NGVD of 1929 (ft) Floridan well no.	5-16-78	9-26-78	5-15-79	Water table above NGVD of 1929 (ft) Surficial well no.	5-16-78	9-26-78	5-15-79	Height of water table above or below (-) potentiometric surface (ft) 5-16-78	9-26-78	5-15-79
Cross Bar Ranch (A)1/	West Coast Regional Authority			0	0	0	N-1	49.5	50.5	48.2	N-1s	48.5	48.5	46.3	-1.0	-2.0	-1.9
Cypress Creek (B)	West Coast Regional Authority	10	10	27.1	19.1	31.4	E-107	51.0	60.8	55.2	E-107	67.0	68.8	68.8	16.0	8.0	13.6
Starkey (C)	Pasco County	4	3	3.0	1.9	2.5	10	28.0	29.7	30.0	20	28.0	29.6	30.0	0	-0.1	0
Pasco (D)	St. Petersburg	8	3	11.9	15.5	.9.4	E-105	45.6	40.2	47.3	E-105	57.4	56.8	58.7	11.8	16.6	11.4
Eldridge-Wilde (E)	Pinellas County	58	26	44.8	27.7	23.9	11	6.7	13.1	15.1	11	16.1	18.4	19.4	9.4	5.3	4.3
Clearwater, Dunedin, Belleair (F)	Clearwater, Dunedin, Belleair	51	34	14.4	10.9	13.9	665	8.5	9.2	9.4	34	50.5	52.0	51.9	42.1	42.8	42.5
East Lake (G)	Pinellas County	8	3	0	0	1.5	9	14.3	14.7	15.2	9	14.4	14.8	15.3	0.1	0.1	0.1
Cosme (H)	St. Petersburg	23	5	14.2	11.6	10.1	11	28.5	31.9	34.3	10	46.2	46.0	47.1	17.7	14.1	12.8
Section 21 (I)	St. Petersburg	6	2	9.3	10.5	7.2	21-13	39.4	35.5	41.1	21-13	49.2	48.9	51.1	9.8	13.4	10.0
Morris Bridge (J)	Tampa	20	7	20.0	10.1	12.5	3A	23.2	26.9	30.3	3A	33.5	34.5	35.9	10.3	7.6	5.6
Brandon (K)	Hillsborough County	25	10	7.7	5.3	5.5	T-1	15.3	15.7	16.5	E-1	15.4	--	17.0	2.0	--	1.7
Riverview (L)	Hillsborough County	7	3	3.3	2.4	1.8	3	-1.0	7.5	5.5	3	55.0	56.8	57.9	56.0	49.3	52.4
Sun City (M)	Hillsborough County	8	1	1.8	1.0	.9	7	-0.8	14.2	-0.8	907	65.6	67.4	67.5	66.4	53.2	68.3
Verna (N)	Sarasota	39	20	8.6	7.5	7.3	10-08	-1.1	18.4	5.0	11-04A	58.3	61.7	60.5	59.4	43.3	55.5
TOTAL				166.1	123.7	127.9											

1/ Well-field identification letter.

Table 2.--Monthly rainfall, October 1978-May 1979, and monthly normal rainfall, 1941-70, at selected stations in west-central Florida, in inches

Station	Agency	October 1978	October Normal5/	November 1978	November Normal	December 1978	December Normal	January 1979	January Normal	February 1979	February Normal	March 1979	March Normal	April 1979	April Normal	May 1979	May Normal
Valrico	USDA1/	1.3		0.1		5.5		8.3		5.0		4.9		0.6		13.3	
Cosme	St. Petersburg	2.39	3.15	0	2.42	4.98	1.91	6.38	2.30	2.56	2.79	2.90	4.17	0.86	2.20	10.88	2.68
Cypress Creek C-3	USGS2/	0.70		0		5.35		6.31		2.81		3.09		0.84		14.60	
East Lake	Pinellas County	1.05		0.16		6.24		8.08		3.05		3.50		1.36		16.16	
Eldridge-Wilde	SWFWMD3/	0.80		0		4.70		6.90		3.11		2.85		0.66		13.84	
Morris Bridge	SWFWMD	0.58		0		4.37		6.15		5.78		3.18		0.78		12.76	
Pasco	SWFWMD	1.00		0		3.90		6.00		2.84		2.86		0.55		16.05	
Dunedin	USDA	5.8		0.1		4.5		8.4		2.7		3.4		1.6		12.6	
Riverview	Hillsborough County	0.85		0.10		5.00		5.92		2.20		3.13		2.50		7.70	
Ruskin near Sun City	NOAA4/	3.53	2.54	0.24	1.79	4.80	2.19	7.03	2.33	2.67	2.86	2.60	3.89	0.66	2.10	6.50	1.41
St. Leo near San Antonio	NOAA	0.22	2.93	0	1.87	4.54	2.36	5.88	2.55	2.33	3.14	3.63	4.53	1.23	3.10	16.73	3.79
Section 21	SWFWMD	0.82		0		4.20		6.30		3.68		2.79		0.65		15.17	[illegible]
Starkey	SWFWMD	2.73		0		5.05		6.17		2.55		2.90		0.92		11.60	
Verna	Sarasota	1.32		0.65		2.54		8.24		1.66		0.10		1.34		6.59	
AVERAGE OF STATIONS		1.3	2.87	0.1	2.03	5.5	2.15	8.3	2.39	5.0	2.93	4.9	4.20	0.6	2.47	12.5	2.63

1/ U.S. Department of Agriculture, Forest Service.
2/ U.S. Geological Survey.
3/ Southwest Florida Water Management District.
4/ National Oceanic and Atmospheric Administration.
5/ 1941-1970.

EXPLANATION

Generalized boundary of well-field area

—70—
POTENTIOMETRIC CONTOUR
Shows altitude of potentiometric surface. Contour interval 2,5 and 10 feet. Hachures indicate depressions. Datum is National Geodetic Vertical Datum of 1929.

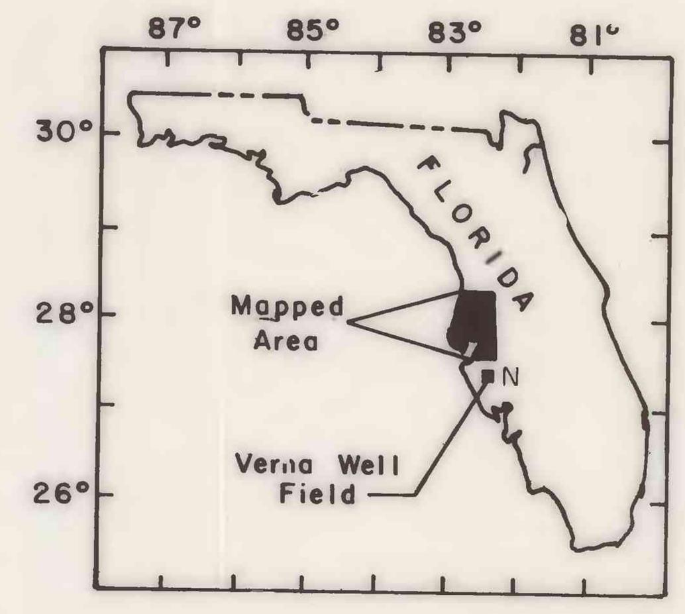
33 ◎ Idle
ECHO ◉ Pumping
MUNICIPAL SUPPLY WELLS and well number or name.

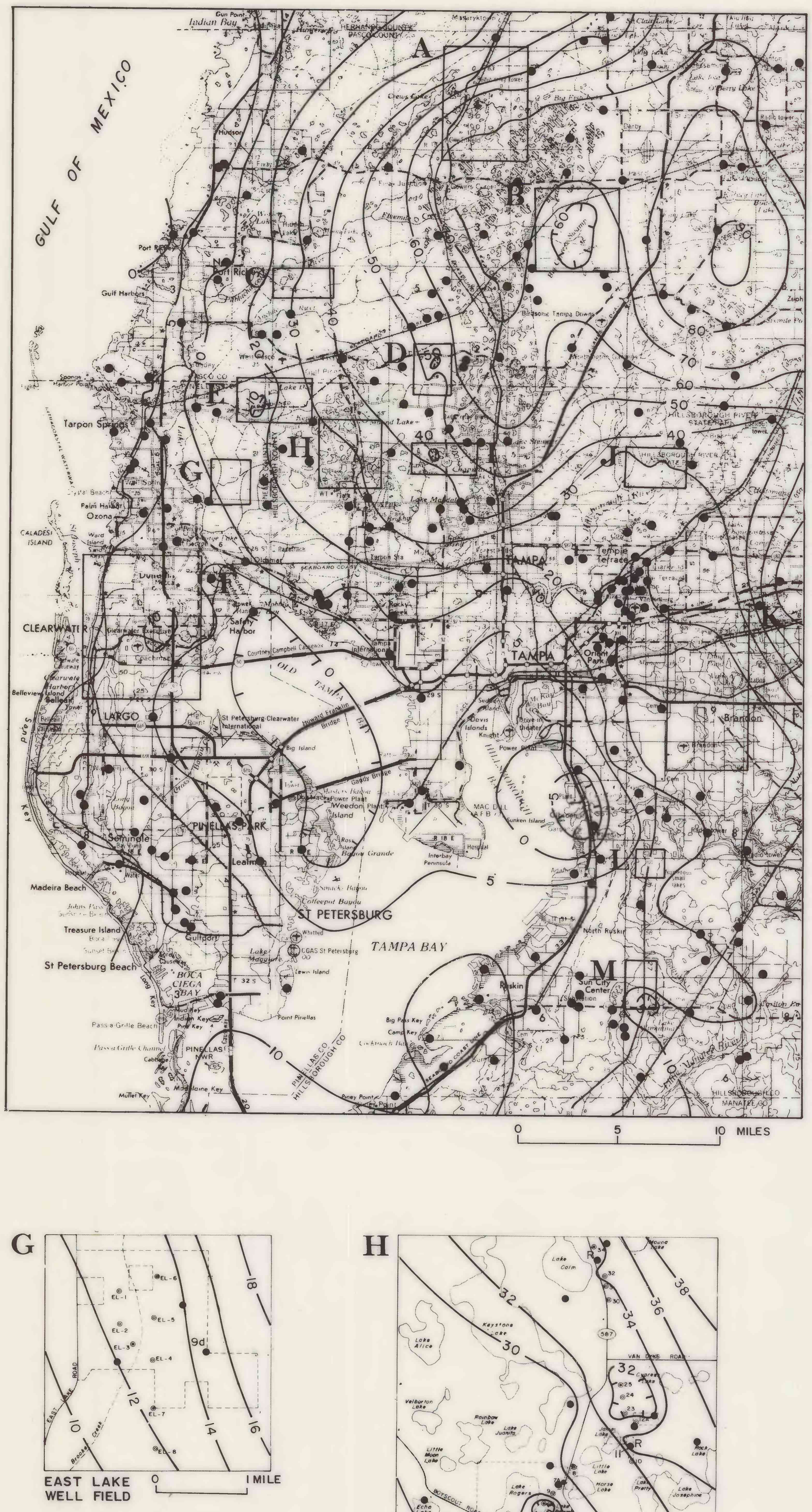
E-107 ●
OBSERVATION WELL
Well number indicates hydrograph shown on well-field figures.

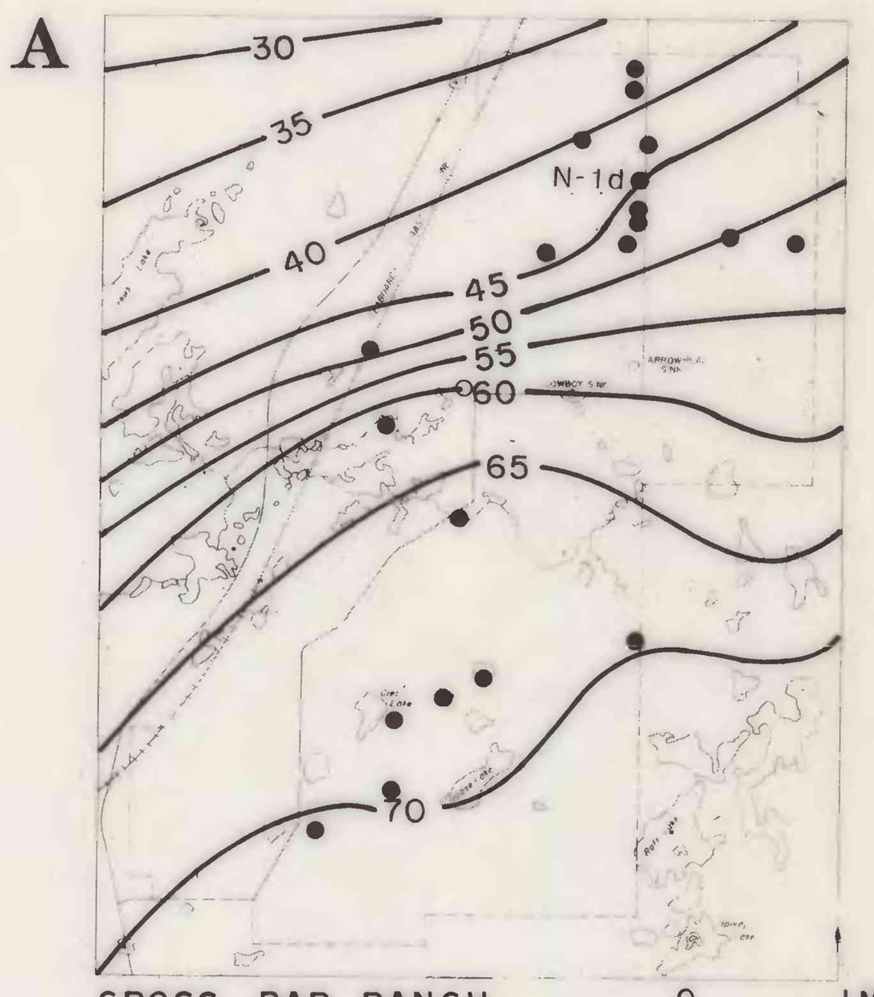
R = Water-level recorder

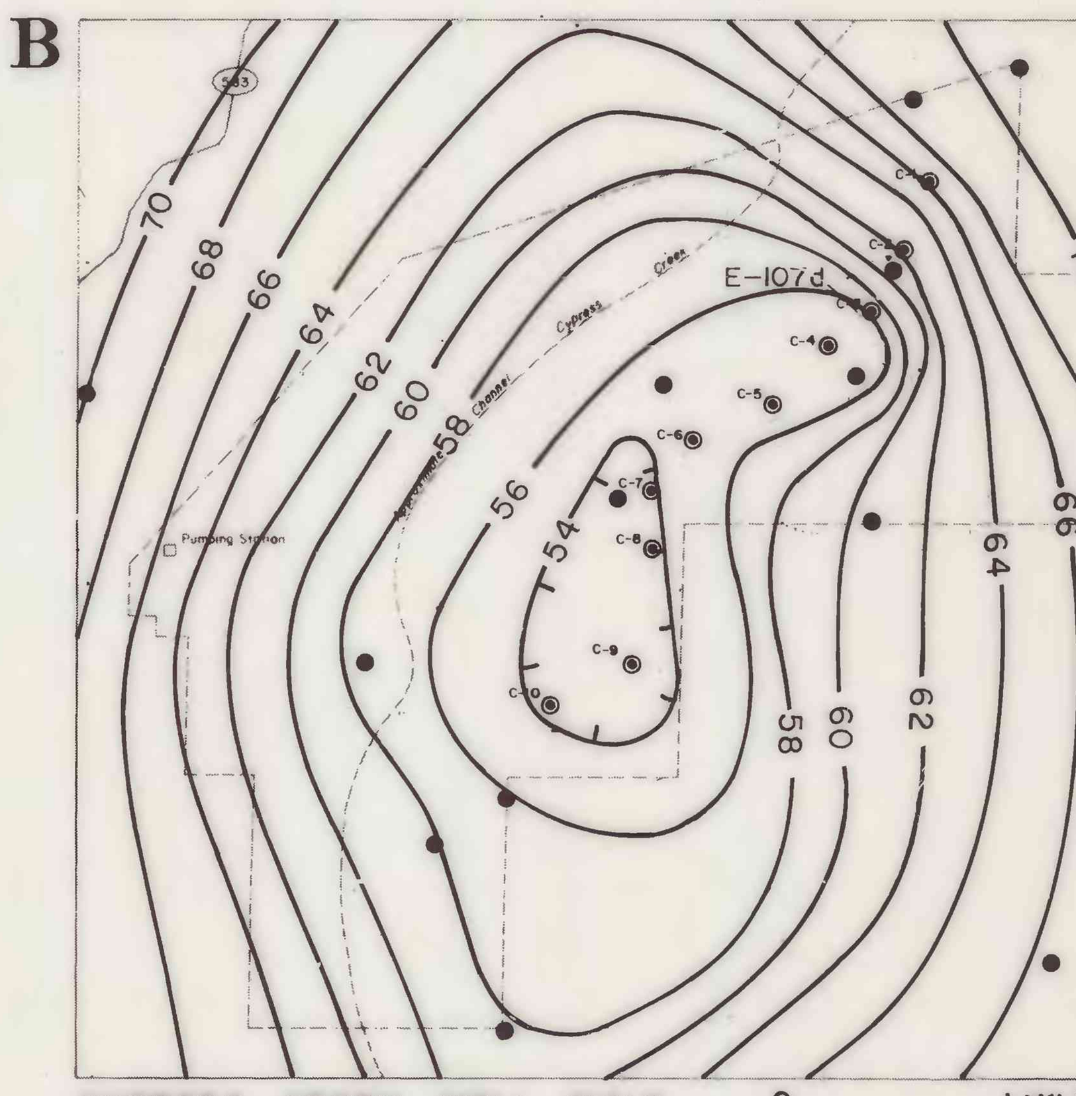
K Letter refers to hydrograph and corresponding well-field identification letter.

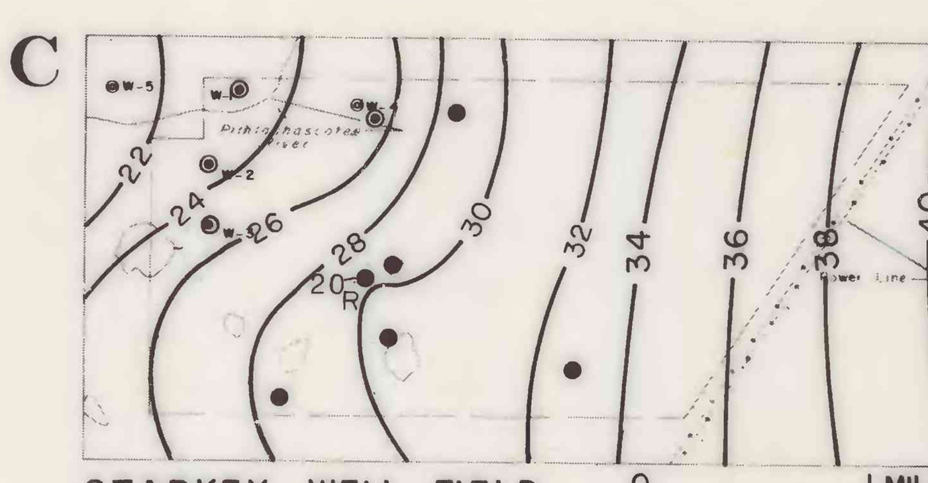
POTENTIOMETRIC SURFACE OF THE FLORIDAN AQUIFER






CROSS BAR RANCH WELL FIELD 0 1 MILE


CYPRESS CREEK WELL FIELD 0 1 MILE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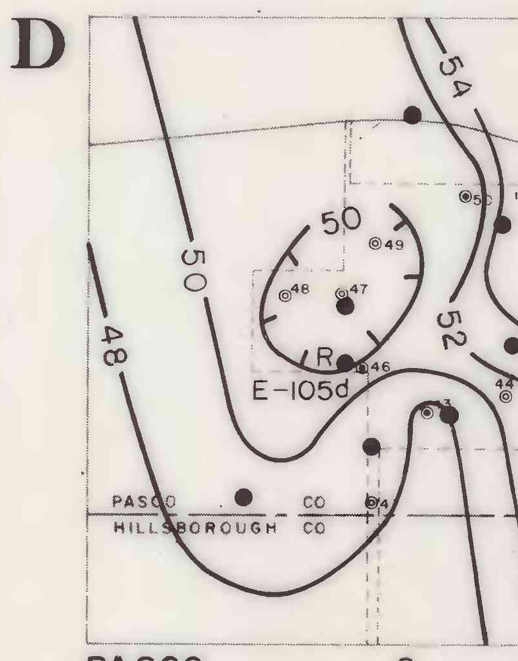
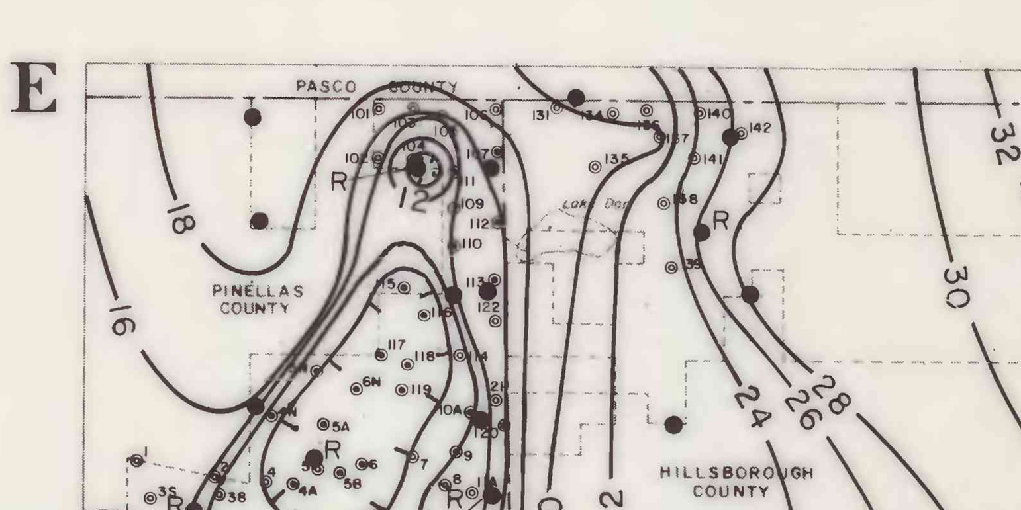
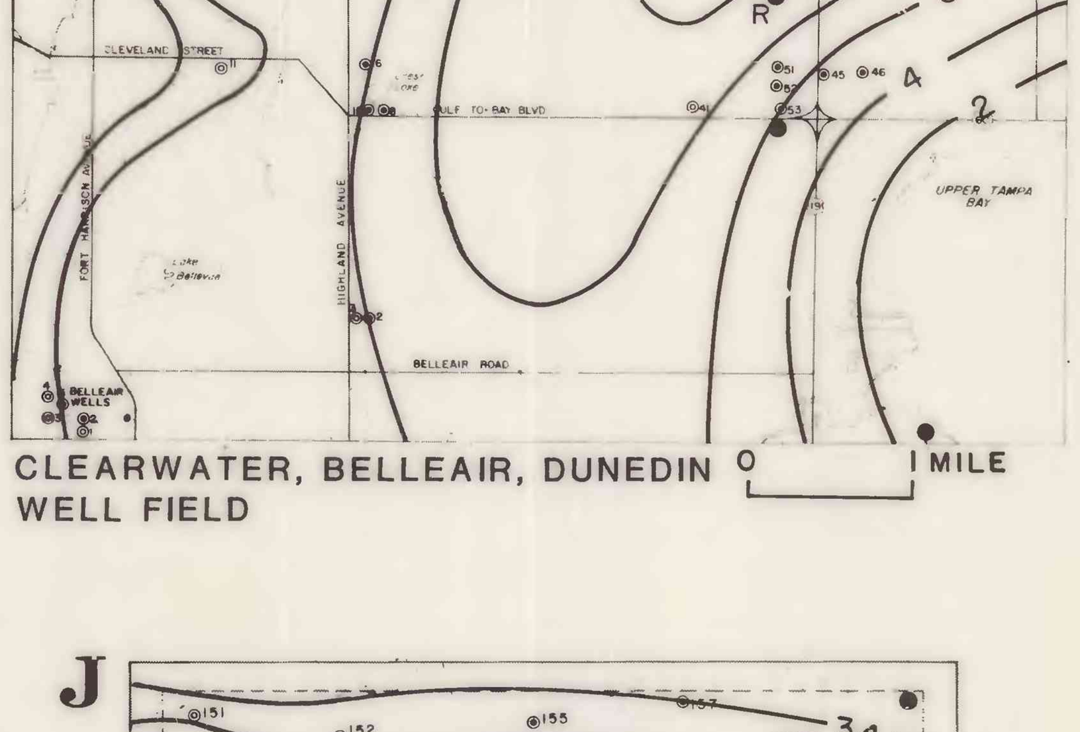
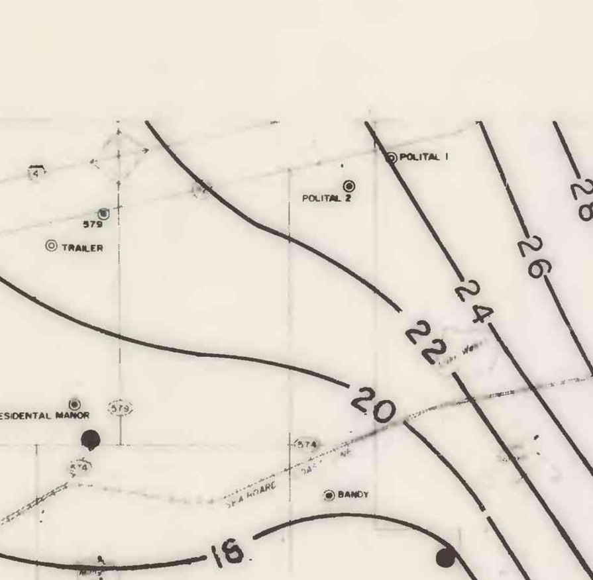
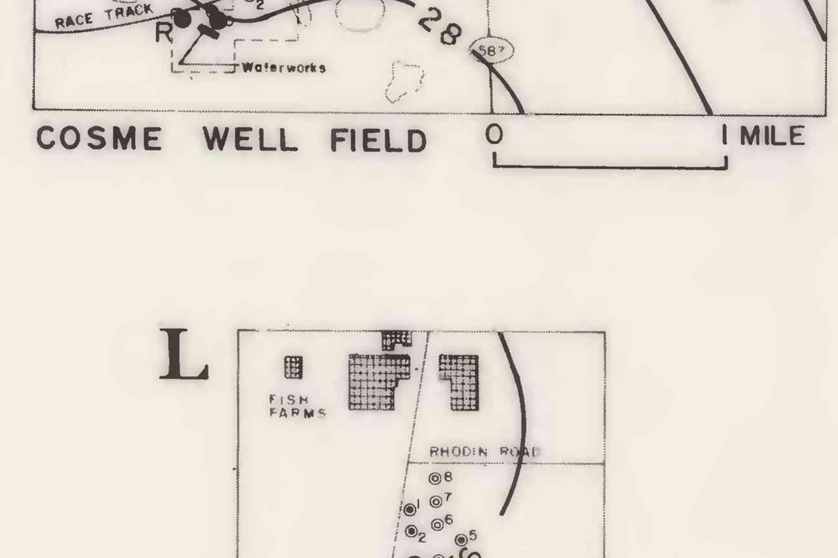

PASCO WELL FIELD 0 1 MILE


ELDRIDGE-WILDE WELL FIELD 0 1 MILE


CLEARWATER, BELLEAIR, DUNEDIN WELL FIELD 0 1 MILE


EAST LAKE WELL FIELD 0 1 MILE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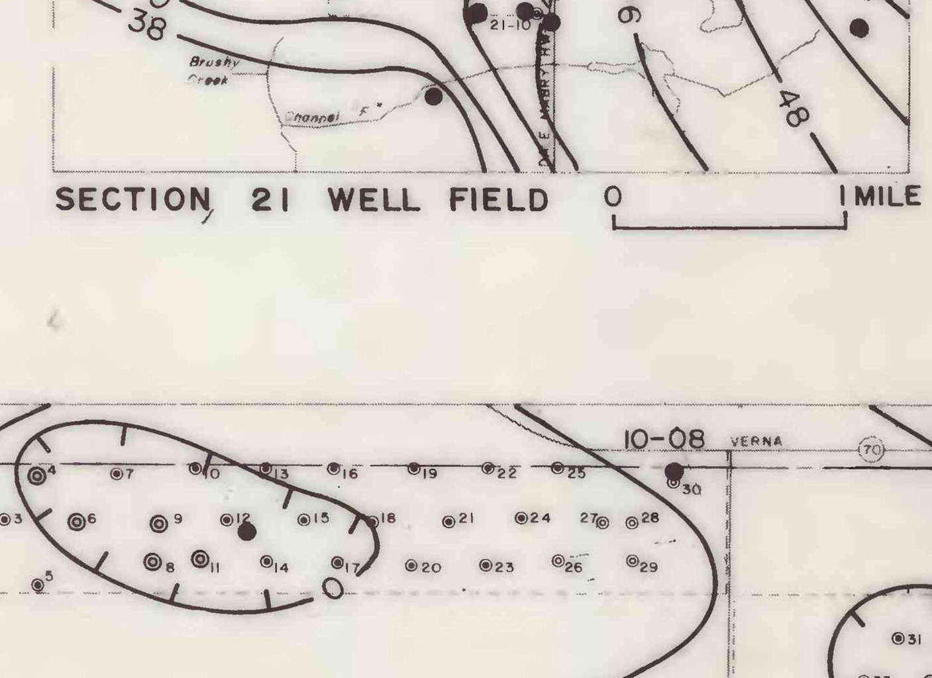
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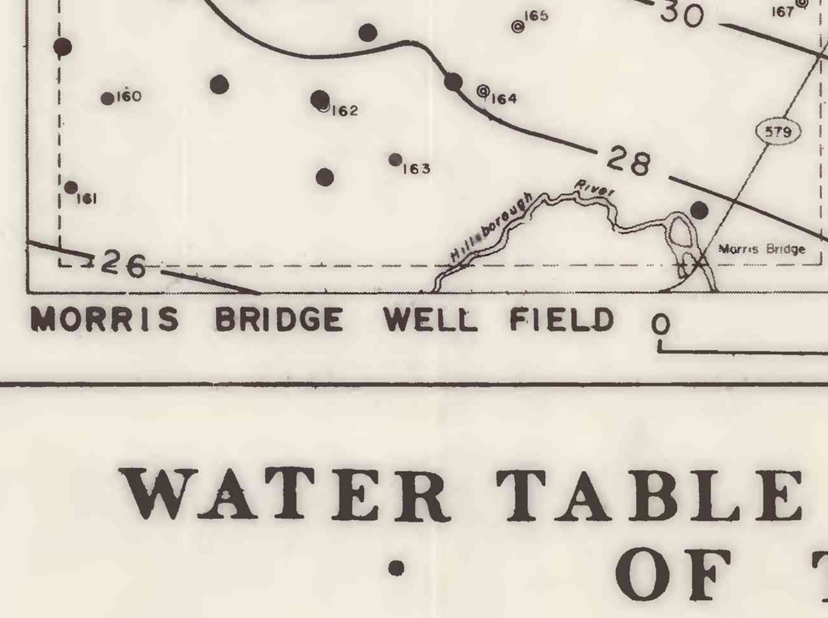
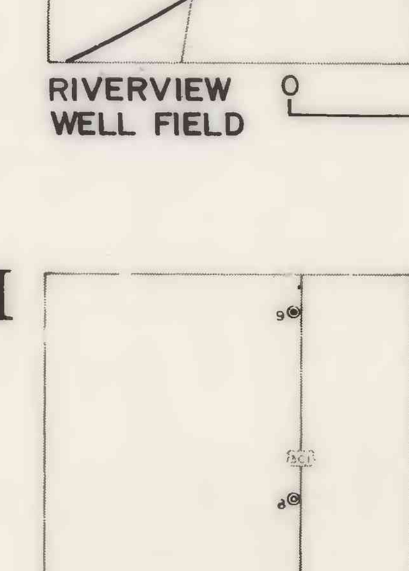

MORRIS BRIDGE WELL FIELD 0 1 MILE


BRANDON WELL FIELD 0 1 MILE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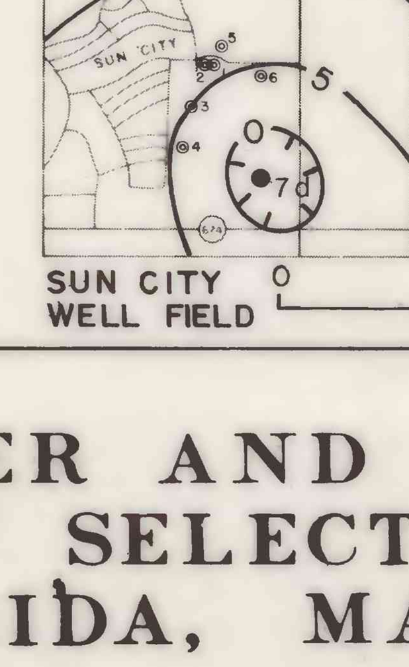
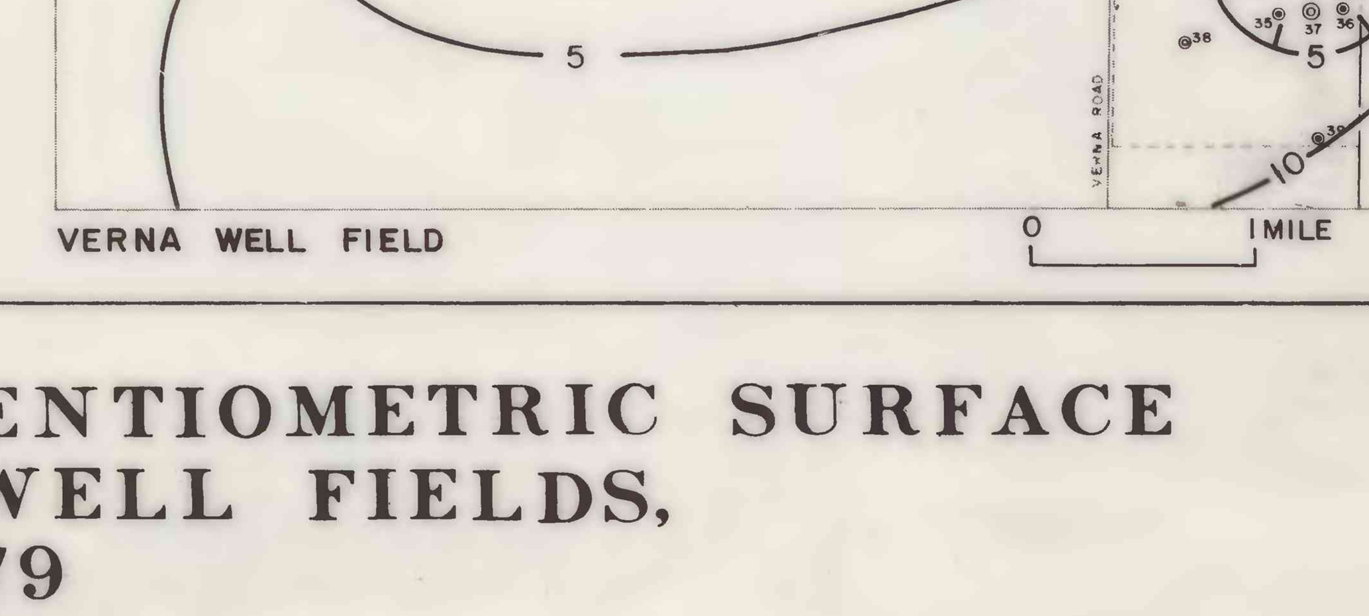

SUN CITY WELL FIELD 0 1 MILE


VERNA WELL FIELD 0 1 MILE

WATER TABLE IN THE SURFICIAL AQUIFER AND POTENTIOMETRIC SURFACE OF THE FLORIDAN AQUIFER IN SELECTED WELL FIELDS, WEST-CENTRAL FLORIDA, MAY 1979

By
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