



GEOLOGIC, HYDROLOGIC AND CHEMICAL DATA FROM TEST WELLS IN THE DICKSON AREA, TENNESSEE
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Seventeen test wells were drilled at 12 sites in south central Dickson County as part of a cooperative study of the ground-water resources of the area by the City of Dickson, the Tennessee Division of Water Resources and the U.S. Geological Survey. Most of the sites were selected on the basis of carefully developed concepts of ground-water occurrence.

These wells range from 20 to 400 feet deep and average 276 feet deep. The yields range from 0 to 300 gal/min and average 69 gal/min, with 6 wells yielding more than 100 gal/min (Table 1). The water-bearing zones in rock that yield more than 50 gal/min are all between 100 and 200 feet below land surface (Table 1). Raw water samples were tested for some physical and chemical properties (Table 2). Hydrogen sulfide gas was detected in wells Dk-5 and Dk-8. Large concentrations of iron were present in several of the wells. The iron seems to be related to the muddy water blown from the unfinished well. Capacity tests were conducted on those wells which yield more than 100 gal/min. The specific capacities of these wells range from 1.36 to 8.11 and average 3.46 gal/min for each foot that the water level was lowered during pumping (Table 3). These tests were used to select sites Dk-10, Dk-14 and Dk-17 for aquifer tests.

An interpretive report is being prepared which describes the results of the geologic and hydrologic studies, including ground-water occurrence, test drilling and aquifer tests.

Table 2.--Physical and chemical properties of raw water samples. Measurements are in milligrams/liter unless otherwise specified.

Well number	Field Office	Depth of well at time of sampling (ft)	Time from start of test (min)	Specific conductance (microhos/cm @ 25°C)	Alkalinity as CaCO ₃	Hardness as CaCO ₃	Iron (Fe)	Manganese (Mn)	pH units	Turbidity (NTU)
Dk-1	Di:F-60	400	---	850	---	550	---	---	---	---
Dk-2	Di:F-61	300	---	360	---	205	---	---	---	---
Dk-5	Di:K-8	111-112	---	400	---	---	---	---	---	---
		113-136	---	425	---	---	---	---	---	---
		210	---	450	---	---	---	---	---	---
		250	---	355	---	---	---	---	---	---
		265	---	560	---	---	---	---	---	---
		270-271	---	775	---	---	---	---	---	---
		300	---	1475	---	---	---	---	---	---
Dk-8	Di:F-66	205-206	---	800	---	---	---	---	---	
Dk-9	Di:F-67	315	---	280	146	108	0.45	0	7.8	7.0
		330	---	275	---	---	---	---	---	---
		340	9	320	---	---	---	---	---	---
		340	20	119	110	3.18	0	8.1	120	
Dk-10	Di:F-68	280	13	320	151	72	0.27	0	8.2	34
Dk-11	Di:G-86	380	---	247	98	3.18	0	8.3	125	
Dk-12	Di:F-69	160	---	177	178	0.911	1.012	0	8.2	58
Dk-13	Di:F-70	320	---	136	112	0.061	0.412	0	8.3	25
Dk-14	Di:F-71	156	---	220	---	---	---	---	---	---
		180	---	200	---	---	---	---	---	---
		270	---	320	---	---	---	---	---	---
		280	45	340	92	76	0.13	0	8.3	8.5
		300	---	---	---	---	---	---	---	---
Dk-15	Di:F-72	250	---	300	---	---	---	---	---	---
		260	---	300	---	---	---	---	---	---
		290	---	320	---	---	---	---	---	---
		300	30	340	---	---	---	---	---	---
		300	60	360	---	---	---	---	---	---
		300	98	300	---	---	---	---	---	---
		---	---	---	---	---	---	---	---	---
Dk-17	Di:F-74	116	---	270	---	---	---	---	---	---
		132-140	---	400	---	---	---	---	---	---
		145	---	355	---	---	---	---	---	---
		180-181	---	300	---	---	---	---	---	---
		190	---	300	---	---	---	---	---	---
		200	---	290	---	---	---	---	---	---
		240	---	300	---	---	---	---	---	---
		250	---	300	---	---	---	---	---	---
		260	---	305	---	---	---	---	---	---
		275	---	300	---	---	---	---	---	---

1Measured on a settled sample.
2Measured on an unsettled sample.

Table 1.--Test well data and water occurrence

Well number	Field Office	Latitude	Longitude	Date Completed	Altitude (ft)	Total depth (ft)	Regolith thickness (ft)	Depth cased (ft)	Water bearing zones		Final yield by top of blowing casing (gal/min)	Water level below casing (ft)	Finish	Remarks
									Depth (ft)	Yield (gal/min)				
Dk-1	Di:F-60	36°04'24"	87°23'36"	Nov. 14, 1978	780	400	31	32	56-59 155	0.5-1 12	3	---	Open	In the final yield the hole was losing air to an adjacent well.
Dk-2	Di:F-61	36°05'20"	87°24'35"	Nov. 17, 1978	810	300	100	101	107-109	11	11	---	Open	
Dk-3	Di:F-62	36°05'28"	87°24'30"	Nov. 21, 1978	810	180	45	91	unknown		2	---	Destroyed	
Dk-4	Di:F-63	36°05'04"	87°22'43"	June 23, 1980	710	222	31	40.5	70	0.5	0.5	---	Destroyed	
Dk-5	Di:K-8*	36°07'40"	87°25'59"	June 26, 1980	850	400	100	104.8	111-112	20	110	41.20	Open	There was a sulfur smell after the zone at 270-271 feet was encountered.
									113-136	50				
									178-179	30				
									270-271	40				
Dk-6	Di:F-64	36°06'09"	87°24'12"	June 26, 1980	800	21	18	20	None		0	---	Destroyed	This well was destroyed when the hole became slanted.
Dk-7	Di:F-65	36°06'12"	87°24'23"	June 27, 1980	800	240	9	20	None		0	---	Destroyed	
Dk-8	Di:F-66	36°06'14"	87°24'19"	June 28, 1980	795	206	16	20	160 180 205-206	1 3 30	30	16.30	Open	The zone at 205-206 feet produced sulfur water.
Dk-9	Di:F-67*	36°03'42"	87°25'28"	July 2, 1980	815	340	331	317	323-331	175	175	64.70	Open	
Dk-10	Di:F-68*	36°04'30"	87°24'43"	July 7, 1980	820	280	82	127	100-110 123-131	5-10 100	100	36.60	Open	
Dk-11	Di:G-86	36°02'08"	87°21'11"	July 9, 1980	850	400	62	70	295 370	1-2 2	5	59.75	Open	
Dk-12	Di:F-69	36°03'59"	87°23'56"	July 9, 1980	710	160	4	5	25 34 116	4 4 4	13	6.45	Destroyed	
Dk-13	Di:F-70	36°04'08"	87°24'54"	July 11, 1980	855	320	75	162	124 225 245-250	15 10 5	15	59.50	Open	It is located about 250 feet from Dk-14.
Dk-14	Di:F-71*	36°04'11"	87°25'00"	July 14, 1980	845	280	100	126	100-105 139-143	12-15 150	225	61.50	Open	
Dk-15	Di:F-72*	36°02'51"	87°26'00"	July 28, 1980	760	300	300	260	200-260	300*	300	42.26	Open	
Dk-16	Di:F-73	36°03'49"	87°24'56"	July 29, 1980	815	350	84	114	92	3	12	55.48	Open	It is located about 700 feet from Dk-17.
									102-105	2				
									140	2				
									300	8				
Dk-17	Di:F-74*	36°03'48"	87°24'47"	Aug. 1, 1980	820	300	90	144	89-100 113-116 130-140 178-181	5 65 100 145	135	60.1	Open	The upper 3 zones were cased off due to air bubbling up around the casing.

* This well has undergone a capacity test.

Table 3.--Capacity test data.

Well number	Field Office	Static water level measuring point (ft)	Water level below measuring point when pumping stopped (ft)	Draw-down (ft)	Average yield during test (gal/min)	Specific capacity test (gal/min/ft)	Length of test (hr)
Dk-5	Di:K-8	49.50	96.85	47.35	110	2.32	2.0
Dk-9	Di:F-67	73.10	201.80	128.7	175	1.36	1.5
Dk-10	Di:F-68	48.45	102.50	54.05	100	1.05	2.0
Dk-14	Di:F-71	63.07	90.81	27.74	225	8.11	1.5
Dk-15	Di:F-72	51.64	139.53	87.90	300	3.41	2.0
Dk-17	Di:F-74	70.77	107.21	36.44	135	3.70	2.0



EXPLANATION

- Well location and field number
- Overburden (Regolith)
- Fine-grained rock
- Coarse-grained rock
- Interbedded fine and coarse
- Solution opening

THIS SCALE SHOWS DEPTH BELOW LAND SURFACE (±) IN FEET

THIS NUMBER SHOWS TOTAL DEPTH OF WELL

1 MILE

Sane from U. S. Geological Survey quadrangles Burn, 1953
Dickson, 1953
Inter. revisions as of 1966
Vanleer, 1958