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DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Federal Center, Denver, Colorado 80225

LOG OF HYDROLOGIC TEST WELL 2, TATUM DOME AREA,
LAMAR COUNTY, MISSISSIPPI

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LOG OF HYDROLOGIC TEST WELL 2, TATUM DOME AREA,
LAMAR COUNTY, MISSISSIPPI

By

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Hydrologic Test Well 2, the second multiple-test well, is at Atomic Energy Commission coordinates at 5,566 N. and 5,680 E., approximately 800 feet east and 500 feet north of the southwest corner of sec. 14, T. 2 N., R. 16 W., Lamar County, Miss. It is about 0.6 miles southwest of the Tatum salt dome, and on the opposite side of the dome from Hydrologic Test Well 1 (fig. 1), at an altitude of 295 feet above sea level. The well was drilled by the Layne Central Co.

The purpose of Hydrologic Test Well 2 was to determine the following: (1) the depth, altitude, thickness, and areal extent of the water-bearing strata and their stratigraphic sequence; (2) the hydrologic characteristics, such as storage and transmissibility coefficients, of the aquifers and their relationship to the geologic conditions; (3) the hydrostatic head and the head fluctuations that occur in the observation wells completed in the hydrologic test well; (4) the chemical and radiochemical character of the water in the aquifers; (5) the ion-exchange capacity of the different strata as determined from selected cores; and (6) the effects of large

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fig 1

Figure 1.--Location of Hydrologic Test Well 2 .

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detonations on aquifers. The purpose and objectives of the hydrologic tests are a part of the Atomic Energy Commission's Public Safety program.

Hydrologic Test Well 2 was drilled to a depth of 2,622 feet with rotary equipment. Gamma ray-neutron, electric, micro, and sonic logs were obtained. Three rotary cores and 97 side-wall cores were taken at selected places. The rotary coring points were determined by examination of cuttings during the process of drilling, whereas the side-wall core locations were picked from the electric log and micro-log at the completion of drilling operations.

The geologic units penetrated in the test well from the surface to the bottom are: the terrace deposits, composed predominantly of iron-stained sand and clay with minor amounts of gravel and silt; Pascagoula and Hattiesburg Formations undifferentiated, composed of greenish-gray to light-gray silty clay and fine to coarse sand; Catahoula Sandstone, composed of sands and greenish-gray to light-gray clays and minor amounts of carbonaceous material in the upper part and calcareous sand and soft limestone in the lower part; Chickasawhay(?) Limestone composed of gray clays and fine to medium calcareous sand; Vicksburg Group, composed of greenish-gray calcareous clay in the upper part, gray medium to coarse sand in the middle, and white finely crystalline limestone in the lower part; Red Bluff Clay, white to greenish-gray very calcareous clay; Yazoo Clay, greenish-gray soft calcareous clay; Moodys Branch Limestone, white finely crystalline glauconitic limestone; Cockfield Formation, chocolate-brown carbonaceous clay with thin beds of glauconitic sand; Cook

Mountain Limestone consisting of white finely crystalline limestone and dark-gray clay; and Sparta Sand and Zilpha Clay, composed of light-green and gray siltstone.

Two strings of casing were installed from the surface as follows: 16-inch OD blank steel casing to 326 feet, cemented back to land surface; and 9 5/8-inch OD blank steel casing to 2,425 feet, cemented back to the 16-inch casing. Each fresh-water aquifer was tested by: (1) gun-perforating the casing; (2) developing the aquifer by air-jetting followed by pumping with a turbine pump; and (3) making recovery and drawdown tests. After the tests were completed, aquifers 7 and 2 were plugged by squeezing cement into the perforations. Observation wells were completed in aquifers 3, 4, and 5, with packers set between aquifers 4 and 5 and between aquifers 3 and 4.

Development and testing of the saline aquifer (number 5) were postponed until later, but provision for later testing was made by installing sections of slotted casing, 3 1/2 inches in diameter, opposite the aquifer.

The depth, thickness, general characteristics, and stratigraphic sequence of the aquifers are shown in figure 2. Detailed descriptions of the drill cuttings, side-wall cores, and rotary cores are shown in tables 1 and 2.

The attitude and areal extent of the aquifers were determined by relating the information obtained from Hydrologic Test Well 2 to information from other test holes, wells, and seismic data available in the Tatum dome area. The aquifers at Test Well 2 dip

west-southwestward toward the lower part of the syncline which rims the Tatum salt dome. The regional dip of the sedimentary rocks is toward the south-southwest.

Pumping and recovery tests were made on each of four fresh-water aquifers beginning with aquifer 4, the lowermost aquifer. The data obtained from aquifer 4 indicate that the transmissibility is 5,600 gpd/ft (gallons per day per foot). There is some question as to the reliability of this figure because the cement used to set the casing may have plugged many of the openings in the limestone. Such a condition would considerably reduce the transmissibility value.

Aquifer 3 contains two predominant rock types. The lower part is limestone or sandy limestone and the upper is sand. Gun-perforating opposite aquifer 3 was limited to the sand section; however, the sand was too fine to be contained behind the perforations and aquifer 3 could not be developed properly. Consequently, the results of the pumping test on aquifer 3 were unreliable.

Aquifer 2 is composed of sand ranging in size from very fine to very coarse with fine gravel and thin clay beds. Gun-perforating in this aquifer was limited to an interval containing coarse sand and fine gravel. The results obtained from pumping this interval and using two observation wells (300 feet and 900 feet from the pumped well) are as follows: transmissibility coefficient 166,000 gpd/ft and storage coefficient 3.0×10^{-4} . No difficulty was encountered during the testing, and the results are considered to be reliable.

Aquifer 1 is composed of fine to coarse sand with several clay beds. The sand could not be contained behind the perforations during the pumping test, and the data obtained are unreliable so far as storage and transmissibility characteristics are concerned.

The hydrologic characteristics of all the aquifers are being determined by the study of side-wall cores.

Samples of water were taken from each of the tested aquifers and analysed by the Geological Survey in Baton Rouge, La. Chemical analyses of these samples are given in table 3, but radiochemical analyses will not be available until later.

The static water level for each of the aquifers in Hydrologic Test Well 2 are as follows, in feet below land surface (altitude, 295 feet).

Aquifer	Perforated zones	Date	Water level
1	670-700 & 800-820	6-7-61	135.6
2	920-1,000	5-29-61	130.3
3	1,270-1,400	8-25-61	135.1
4	1,820-1,960	6-30-61	101.7
5	2,428-2,602	6-30-61	84.9

Table 1.--Lithologic log of Hydrologic Test Well 2 (SWC, side-wall core; datum is rotary table, elevation 302.4 feet)

	Thickness (feet)	Depth (feet)
Terrace deposits		
Clay, gray, reddish-brown, and tan, sandy----	40	40
Pascagoula and Hattiesburg Formationsundifferentiated (Top at 40 feet, interpreted from electric log)		
Clay, greenish-gray, silty, medium hard-----	186	226
Clay, greenish-gray, silty; and thin beds of fine sand-----	26	252
Clay, light-greenish-gray-----	42	294
Sand, gray, fine to very fine; and sandy clay-----	22	316
Sand, gray, fine to coarse; and some lignite fragments-----	101	417
Sand, grayish-green, fine subangular, loose; contains muscovite and dark-green glauconite-----		SWC-341
Sand, gray, very coarse to medium, rounded to subrounded, loose; approximately 20 percent black chert and rounded gravel-----		SWC-380
Sand, gray, very coarse to medium, rounded to subrounded, loose; trace of chert gravel---		SWC-407
Clay, greenish-gray, silty; contains minor amounts of very fine sand-----	93	510
Silt, light-green, soft, slightly calcareous, contains muscovite; trace of light-gray clay, and very fine quartz grains-----		SWC-450
Sand, light-gray, very fine, rounded, silty, slightly calcareous-----		SWC-461

Table 1.--Lithologic log of Hydrologic Test Well 2--Continued

	Thickness (feet)	Depth (feet)
Pascagoula and Hattiesburg Formations--Continued		
Clay, light-grayish-green, soft, slightly calcareous-----		SWC-490
Clay, greenish-gray, sandy-----	35	545
Sand, light-gray, very fine, silty, subrounded loose, calcareous; contains black shale----		SWC-530
Sand, light-gray, fine to very fine; and greenish-gray, silty clay-----	110	655
Sand, light-gray, very fine, subangular; contains light-green, brownish-orange, and pink, soft, calcareous clay-----		SWC-549
Sand, light-gray, very fine, subangular; contains light-green, brownish-orange, and pink, soft, calcareous clay-----		SWC-559
Clay, pale-greenish-gray; with streaks of clayey sand-----		SWC-567
Sand, light-tan to dark-gray, fine, subangular; contains sandy clay and pale blue-green clay-----		SWC-582
Sand, light-gray, very fine, silty, subangular; with streaks of gray-green clay---		SWC-621
Sand, light-gray, very fine, silty, subangular; contains streaks of gray-green clay-----		SWC-648
Sand, light-gray, fine-----	20	675
Sand, light-gray, fine to coarse-----	30	705
Sand, light-gray, medium to coarse-----		SWC-694
Clay, greenish-gray, silty; with some fine sand-----	35	740

Table 1.--Lithologic log of Hydrologic Test Well 2--Continued

	Thickness (feet)	Depth (feet)
Pascagoula and Hattiesburg Formations--Continued		
Clay, light-grayish-green-----		SWC-711
Silt, bluish-green, clayey-----		SWC-724
Silt, light-green, slightly calcareous-----	35	775
Silt, light-gray; with grayish-green clay streaks-----		SWC-756
Clay, greenish-gray, silty-----		SWC-771
Clay, greenish-gray-----	10	785
Sand, light-gray, fine to medium-----	50	835
Sand, white, fine, angular-----		SWC-797
Sand, light-gray, fine, angular-----		SWC-812
Clay, grayish-green and dark-gray-----	35	870
Clay, reddish-brown, hard-----		SWC-842
Clay, dark-gray, waxy luster, soft-----		SWC-863
Sand, light-gray, very fine; and light-gray clay-----	30	900
Sand, light-gray, fine, angular, slightly calcareous-----		SWC-888
Sand, light-gray, fine to very coarse with some fine gravel, rounded to subangular, loose; contains black, hard shale-----	120	1,020
Sand, gray, fine to medium, angular-----		SWC-903
Sand, tan, coarse, angular to round-----		SWC-921
Sand, white, fine to coarse, angular to round, loose-----		SWC-940

Table 1.--Lithologic log of Hydrologic Test Well 2--Continued

	Thickness (feet)	Depth (feet)
Pascagoula and Hattiesburg Formations--Continued		
Sand, tan, medium, subangular to round, loose-----		SWC-978
Sand, tan, medium subangular to round, loose-----		SWC-1,008
Clay, light-green, soft, slightly calcareous--	30	1,050
Clay, greenish-gray, silty-----		SWC-1,034
Clay, light-green, soft, slightly calcareous; contains light-gray, very coarse grained, subangular quartz-----	20	1,070
Clay, greenish-gray, silty-----		SWC-1,052
Clay, light-grayish-green-----		SWC-1,066
Clay, light-greenish-gray, calcareous; with light-gray, very coarse sand (sand probably cavings)-----	40	1,110
Clay, light-greenish-gray-----		SWC-1,082
Clay, dark-greenish-gray; with streaks of very fine sand-----		SWC-1,095
Sand, gray, fine, subangular to subrounded, loose-----	20	1,130
Sand, light-gray, fine-----		SWC-1,129
Sand, gray, fine to coarse, subangular to subrounded, loose; grains of black chert are common-----	80	1,210
Sand, gray, fine to coarse-----		SWC-1,162
Sand, gray, coarse-----		SWC-1,185
Sand, gray, medium to coarse, subangular to round-----		SWC-1,205

Table 1.--Lithologic log of Hydrologic Test Well 2--Continued

	Thickness (feet)	Depth (feet)
Catahoula Sandstone		
(Top at 1,232 feet, interpreted from electric log)		
Clay, light-greenish-gray, soft, calcareous---	40	1,250
Clay, greenish-gray, very calcareous-----		SWC-1,226
Clay, greenish-gray, very calcareous-----		SWC-1,235
Clay, light-greenish-gray, soft, calcareous contains soft, carbonaceous shale-----	20	1,270
Clay, light-bluish-gray, silty-----		SWC-1,251
Sand, white very fine, angular to subangular; with calcareous inclusions-----		SWC-1,267
Clay, gray, soft, calcareous; contains gray, fine to coarse, subangular to subrounded quartz-----	40	1,310
Clay, gray, sandy-----		SWC-1,289
Sand, gray, fine, very clayey-----		SWC-1,302
Sand, gray, coarse, subangular to subrounded, loose-----	20	1,330
Sand, white, very fine to medium, angular to subrounded, with clay streaks-----		SWC-1,321
Sand, light-gray, fine to coarse, subangular to subrounded, loose-----	95	1,425
Sand, light-gray, very fine, clayey-----		SWC-1,338
Sand, white, very fine to fine, slightly clayey-----		SWC-1,365
Sand, gray, fine to medium, very clayey-----		SWC-1,385
Sand, gray, fine to medium, very clayey-----		SWC-1,397

Table 1.--Lithologic log of Hydrologic Test Well 2--Continued

	Thickness (feet)	Depth (feet)
Catahoula Sandstone--Continued		
Clay, dark-gray-----		SWC-1,406
Clay, grayish-green, soft-----		SWC-1,416
Sand, light-gray, fine to coarse, subangular to subrounded, loose; and particles of lignite-----	45	1,470
Limestone, tannish-white, finely crystalline, soft; contains pyrite, black chert, and fossils (gastropods and pelecypods)-----	4	1,474
Limestone, tannish-white, to light-gray, finely crystalline, soft; and gray, coarse to medium, subangular, calcareous sand-----	36	1,510
Limestone, gray, clayey, soft-----		SWC-1,481
Limestone, white, finely crystalline, moder- ately hard-----	120	1,630
Clay, light-gray, calcareous-----		SWC-1,511
Limestone, white, finely crystalline, soft---		SWC-1,543
Limestone, light-gray, clayey, soft-----		SWC-1,577
Limestone, gray, clayey, soft-----		SWC-1,602
Limestone, white, finely crystalline-----		SWC-1,617
Limestone, white, finely crystalline, mod- erately hard, contains black shale particles; 40 percent light-gray, fine to coarse, rounded sand-----	10	1,640

Table 1.--Lithologic log of Hydrologic Test Well 2--Continued

	Thickness (feet)	Depth (feet)
Chickasawhay(?) Limestone		
(Top at 1,640 feet, interpreted from electric log)		
Clay, gray, soft; 25 percent light-gray, fine to coarse, subrounded sand-----	80	1,720
Sand, light-gray, very fine, clayey micaceous-----		SWC-1,655
Sand, gray, fine, angular to subangular-----		SWC-1,689
Clay, light-green soft, slightly calcareous--		SWC-1,709
Byram Formation		
(Top at 1,745 feet, interpreted from electric log)		
Sand, tan, clayey, very fine to fine, angular to subangular-----	40	1,760
Sand, light-green, very fine, subangular, soft; contains small, black particles-----		SWC-1,730
Sand, gray-green, fine, subangular, soft-----		SWC-1,743
Sand, gray, fine, angular to subangular-----	40	1,800
Sand, light-gray, fine, subangular, calcareous-----		SWC-1,772
Clay, dark-olive-green, calcareous; and pyritic-----	20	1,820
Clay, light-greenish-gray, soft, calcareous; contains finely crystalline pyrite-----		SWC-1,806
Sand, grayish-green, fine, angular to subangular, calcareous-----	60	1,880

Table 1.--Lithologic log of Hydrologic Test Well 2--Continued

	Thickness (feet)	Depth (feet)
Byram Formation--Continued		
Sand, light-gray, fine to very coarse, sub- angular, calcareous; contains dark-green glauconite and black shale-----		SWC-1,824
Sand, light-gray, fine to medium, subangular, slightly calcareous; contains black chert grains-----		SWC-1,856
Sand, gray, fine to medium, subangular, cal- careous; contains dark-greenish-gray glauconite and black shale-----		SWC-1,878
Glendon Limestone Member of Byram Formation and Marianna Limestone undifferentiated (Top at 1,880 feet, interpreted from electric log)		
Limestone, light-gray, finely crystalline, fossiliferous-----	53	1,933
Limestone, white, finely crystalline, soft---		SWC-1,904
Limestone, white to brownish-white, finely crystalline; contains pyrite and few fossil fragments-----	42	1,975
Limestone, white, finely crystalline, soft---		SWC-1,944
Limestone, white, finely crystalline, soft; contains a few fossil fragments (foraminifera)-----		SWC-1,959
Limestone, white, finely crystalline, moderately hard-----	45	2,020
Limestone, white, finely crystalline, soft; contains a few fossil fragments (foraminifera)-----		SWC-1,996
Limestone, white, finely crystalline, soft---		SWC-2,010

Table 1.--Lithologic log of Hydrologic Test Well 2--Continued

	Thickness (feet)	Depth (feet)
Glendon Limestone Member of Byram Formation--Continued		
Limestone, white, finely crystalline, soft; contains very small limestone particles----		SWC-2,019
Limestone, white, finely crystalline, soft---	12	2,032
Limestone, white, mottled with dark-gray, finely crystalline, soft-----		SWC-2,030
Limestone, white, finely crystalline, soft---	30	2,062
Limestone, white, finely crystalline, mod- erately hard; contains very small, brownish- gray limestone particles-----		SWC-2,051
Limestone, white, finely crystalline, mod- erately hard; contains a few, very coarse, rounded quartz grains and microfossils-----		SWC-2,060
Red Bluff Clay (Top at 2,067 feet, interpreted from electric log)		
Clay, gray, soft, calcareous; with fine to coarse, subangular quartz grains-----	25	2,087
Clay, brown, soft, calcareous-----	20	2,107
Limestone, white, finely crystalline, soft; contains brownish-white limestone particles-----		SWC-2,090
Yazoo Clay (Top at 2,120 feet, interpreted from electric log)		
Clay, gray to greenish-gray, soft, calcareous; contains a few, very coarse, subrounded quartz grains-----	80	2,187
Clay, gray, calcareous, fossiliferous-----		SWC-2,136

Table 1.--Lithologic log of Hydrologic Test Well 2--Continued

	Thickness (feet)	Depth (feet)
Yazoo Clay--Continued		
Clay, light-green, soft, calcareous; contains crystalline pyrite and fossil fragments----		SWC-2,182
Clay, gray, soft, calcareous; with fine to coarse, subangular to subrounded sand-----	30	2,217
Clay, gray to grayish-green, soft-----	20	2,237
Clay, light-grayish-green, soft, calcareous; contains crystalline pyrite-----		SWC-2,225
Clay, light-gray, soft, calcareous-----	13	2,250
Moody's Branch Limestone (Top at 2,258 feet, interpreted from electric log)		
Clay, light-gray, soft, calcareous; contains dark-green glauconite-----	48	2,298
Limestone, white, finely crystalline, soft; contains dark-green glauconite-----		SWC-2,267
Limestone, white, finely crystalline, soft; contains dark-green glauconite and finely crystalline pyrite-----		SWC-2,295
Cockfield Formation (Top at 2,320 feet, interpreted from electric log)		
Clay, greenish-gray, soft, calcareous-----	32	2,330
Clay, dark-grayish-brown, soft, slightly calcareous; contains light-greenish-gray silt and trace of pyrite-----		SWC-2,322
Clay, brownish-gray, soft, calcareous-----	40	2,370
Clay, brownish-gray, soft, slightly calcareous; contains fossil fragments-----		SWC-2,360

Table 1.--Lithologic log of Hydrologic Test Well 2--Continued

	Thickness (feet)	Depth (feet)
Cockfield Formation--Continued		
Clay, gray to greenish-gray, soft, calcareous	20	2,390
Clay, gray, soft, calcareous-----	20	2,410
Clay, dark-greenish-gray, soft; contains shell fragments, glauconite, and rounded dark-green clay-----		SWC-2,393
Clay, black; contains white calcareous fossils-----		SWC-2,405
Cook Mountain Limestone (Top at 2,414 feet, interpreted from electric log)		
Clay, greenish-gray, soft; and greenish-white to white, finely crystalline, silty limestone-----	20	2,430
Clay, greenish-gray, soft, calcareous; contains black shale and light-brown particles of calcite-----		SWC-2,419
Limestone, gray, coarse (coquina), highly fossiliferous-----	10	2,440
Limestone, white, finely crystalline, soft; contains dark-greenish-gray glauconite-----		SWC-2,435
Clay, white, gray, and dark-gray, soft, calcareous; and calcarenite, white, soft-----	20	2,460
Limestone, gray, coarse-textured, highly fossiliferous; grayish-green, argillaceous limestone, and greenish-black, bentonitic clay-----	162	2,622
Limestone, light-gray, finely crystalline, soft, fossiliferous-----		SWC-2,451
Limestone, white, finely crystalline, soft---		SWC-2,467

Table 1.--Lithologic log of Hydrologic Test Well 2--Continued

	Thickness (feet)	Depth (feet)
Cook Mountain Limestone--Continued		
Limestone, white to tan, finely crystalline, soft; contains dark-green glauconite-----		SWC-2,475
Limestone, white, finely crystalline, soft---		SWC-2,483
Limestone, white, finely crystalline, soft---		SWC-2,497
Limestone, white, finely crystalline, soft; with light-tan, finely crystalline calcite-----		SWC-2,543
Limestone, white to light-brownish-white, finely crystalline, soft; contains larger particles cemented by white, finely crystalline calcite and a few small, circular, calcite-lined openings-----		SWC-2,563
Limestone, white to light-brownish-gray, crystalline, soft-----		SWC-2,585
Clay, greenish-gray, soft, calcareous; contains dark-greenish-gray glauconite, greenish-gray clay spherules, coarse, crystalline, white calcite, finely crystalline pyrite, and fossil fragments-----		SWC-2,607
Clay, dark-brown, soft, calcareous-----		SWC-2,616
Sparta Sand and Zilpha Clay (Top at 2,618 feet, interpreted from electric log)		

Table 2.--Description of rotary cores from Hydrologic Test Well 2

	Thickness (feet)
Cored 1,474 to 1,494; recovered 6.6 feet	
Sand, light-gray, fine to very coarse, subangular to rounded, loose, calcareous; contains pyrite, light-tan, finely crystalline calcite and fossil fragments-----	0.7
Limestone, light-gray, finely crystalline, soft; contains fine to medium subangular quartz grains and fossil fragments-----	1
Limestone, white, finely crystalline, moderately hard; contains black fossil fragments and a few circular calcite-lined openings-----	0.3
Sandstone, gray, fine- to coarse-grained, subangular to rounded, moderately hard, calcareous; contains fragments of black fossils-----	0.6
Sandstone, gray, fine- to very coarse grained, silty, subangular to rounded, moderately hard, calcareous; contains fragments of white fossils----	0.4
Sand, gray, fine to coarse, subangular to subrounded, calcareous; contains fragments of white fossils and silty lenses-----	0.4
Sand, gray, medium to coarse, subangular, calcareous; contains large particles of light-gray calcite and black rounded chert-----	0.4
Limestone, light-gray, finely crystalline, moderately hard; contains fine to very coarse, subangular quartz sand and black fossil fragments-----	0.8
Sand, gray, fine, calcareous; very coarse quartz grains, gray silt, and fossil fragments-----	0.7
Clay, greenish-gray to reddish-gray, soft, calcareous; contains black rounded pebbles, coarse quartz sand and white shell fragments--conglomeratic-----	1.3

Table 2.--Description of rotary cores from Hydrologic Test Well 2--
Continued

	Thickness (feet)
Cored 1,933 to 1,953; recovered 5.7 feet	
Limestone, light-gray, finely crystalline, moderately hard, fossiliferous-----	0.2
Limestone, light-gray, finely crystalline, moderately hard, fossiliferous; with small circular calcite-lined openings-----	0.3
Limestone, gray, finely crystalline, soft, fossiliferous; consists of limestone particles cemented by white, finely crystalline calcite-----	1.4
Limestone, light-gray, crystalline, moderately hard, fossiliferous; and limestone particles cemented by finely crystalline calcite-----	1.9
Limestone, light-gray, crystalline, soft; consists largely of limestone particles cemented by finely crystalline calcite; contains a few very coarse, rounded quartz grains-----	0.9
Limestone, white, soft; consists of limestone particles cemented by white, finely crystalline calcite-----	0.6
Limestone, white to brownish-white, finely crystalline, soft; contains crystalline pyrite and few fossil fragments-----	0.4
Cored 2,440 to 2,460; recovered 9.5 feet	
Calcarenite, white, soft; fine- to medium-grained limestone particles cemented by very finely crystalline calcite; contains fine to medium, subrounded quartz grains and dark-green glauconite-----	2.5
Calcarenite, white, soft; consists of white finely crystalline, rounded limestone particles-----	0.8

Table 2.--Description of rotary cores from Hydrologic Test Well 2--
Continued

	Thickness (feet)
Clay, gray to dark-greenish-gray, soft, calcareous; contains white, finely crystalline calcite-----	1
Clay, white to dark-gray and dark-green, soft-----	0.6
Clay, gray, soft, calcareous; contains white fossil fragments, bornite, chalcopryrite, and very coarse rounded quartz grains-----	0.9
Clay, brownish-gray, soft, calcareous; and white, finely crystalline, soft limestone and dark- greenish-gray glauconite-----	3
Clay, brownish-gray, soft, calcareous; white, finely crystalline, soft limestone, and dark-greenish- gray glauconite; yellowish, soft, calcareous silt; and reddish-chocolate, fine- to coarse-grained, subangular, soft, calcareous sand-----	0.3
Clay, gray and light-green, soft, calcareous; contains a few azurite crystals, finely crystal- line calcite, glauconite, pyrite, and quartz grains-----	0.4

Table 3.--Chemical analyses of water, in parts per million, from
Hydrologic Test Well 2, by U.S. Geological Survey,
Tatum Dome, Miss.

*Aquifer	1	2	3	4	5
Silica (SiO ₂)-----	34	22	12	11	14
Iron (Fe)-----	0.60	1.5	0.52	0.43	1.6
Calcium (Ca)-----	7.5	5.4	4.7	4.5	133
Magnesium (Mg)-----	0.1	1.1	0.8	0.4	87
Sodium (Na)-----	25	7.8	538	557	11,800
Potassium (K)-----	3.1	2.9	10	11	196
Bicarbonate (HCO ₃)--	85	27	592	601	372
Sulfate (SO ₄)-----	0.0	10	1.2	6.6	64
Chloride (Cl)-----	4.6	4.5	503	522	18,600
Fluoride (F)-----	0.0	0.0	3.0	3.0	3.0
Nitrate (NO ₃)-----	0.0	0.0	0.0	0.0	1.0
Dissolved solids---	117	67	1,360	1,480	31,100
Hardness as CaCO ₃					
Total-----	19	18	15	13	688
Non-carbonate----	0	0	0	0	383
Specific conductance					
(micromhos at 25°C)	162	81.4	2,390	2,430	47,800
pH-----	6.7	6.2	8.0	8.1	7.7
Color-----	10	20	60	50	30
Temperature (°F)---	74	77	87	90	91
Date of collection--	6-7-61	5-29-61	5-26-61	5-19-61	6-18-61

*Aquifer

- 1--Pascagoula and Hattiesburg Formations (undifferentiated), interval sampled, 670-700 and 800-820 feet.
- 2--Hattiesburg Formation, interval sampled, 920-1,000 feet.
- 3--Catahoula Sandstone, interval sampled, 1,270-1,400 feet.
- 4--Vicksburg Group, interval sampled, 1,820-1,960 feet.
- 5--Cook Mountain Limestone (Camerina limestone); depth interval from 2,428 to 2,602 feet.

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Section 14, T. 2 N., R. 16 W.
Elevation, 294.9 feet above sea level
Datum, rotary table, elevation 302.4 feet
Lithology from binocular microscopic examination
of cuttings and cores.

Figure 2. — Lithologic and Electrical log of Hydrologic Test Well 2, showing aquifers and cored intervals.

VERTICAL
SCALE
1" = 100'

U.S. Geological Survey
August 1961