MISSISSIPPI
STATE GEOLOGICAL SURVEY

WILLIAM CLIFFORD MORSE, Ph.D.

Director

BULLETIN 83

FRESH WATER STRATA OF MISSISSIPPI AS REVEALED BY ELECTRICAL LOG STUDIES

By

RICHARD RANDALL PRIDDY, Ph.D.

UNIVERSITY, MISSISSIPPI

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COMMISSION

STAFF

LETTER OF TRANSMITTAL

Office of the Mississippi Geological Survey
University, Mississippi
July 15, 1955

To His Excellency,
Governor Hugh Lawson White, Chairman, and
Members of the Geological Commission

Herewith is a paper, "Fresh-Water Strata of Mississippi as Revealed by Electrical Log Studies," by Richard Randall Priddy, Ph.D., Professor of Geology, Millsaps College, Jackson, Mississippi.

While others of the Fact-Finding Committee of the Mississippi Water Resources Policy Commission were busily engaged in following assignments on how to approach the subject and follow through with the assignment, Dr. Priddy was busy completing his study, previously begun, of more than 500 electrical logs, selected from more than 3,500 electrical logs of oil tests.

Dr. Priddy states the purpose of electrical logs: "to determine the degree of porosity-permeability of all beds, in order to distinguish between porous and permeable sands on the one hand and non-porous and impervious shales, silty sands, tight marls, or dense limestones or shales on the other."

"The over-all purpose of the investigation was to provide aid to people planning to drill for drinking water, water for industrial use, or water for agricultural use."

A number of those persons fortunate enough to have had an opportunity to read the manuscript have pronounced the discussion of the problems classic in a number of places.

The results of this study, privately undertaken and carried through to completion, were offered to the Mississippi State Geological Survey, practically without cost to the State.

Very sincerely yours,

William Clifford Morse
Director and State Geologist

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FRESH-WATER STRATA OF MISSISSIPPI AS REVEALED BY ELECTRICAL LOG STUDIES

RICHARD RANDALL PRIDDY, Ph.D.

INTRODUCTION

The probable geographic (lateral) distribution of the subsurface fresh-water-bearing sands of Mississippi (Map 1) and their stratigraphic (vertical) distribution (Table I and cross-sections) were determined by a study of nearly 500 electric logs of oil tests, selected from more than 3,500 logs. Such sands are termed "aquifers"—that is, sands which are porous enough to contain water and permeable enough to give it up by permitting the water to pass between the grains. Most of the data—distribution of wells, and number and stratigraphic position of the aquifers they show (Maps 2 and 3, and list)—were obtained from 158 logs. Most of the logs examined are in the files of the Mississippi Oil and Gas Commission, Woolfolk Building, Jackson, and the files of the Millsaps College Geology Department. A few were studied in the exploration offices of several oil companies in Jackson.

The over-all purpose of the investigation was to provide aid to people planning to drill for drinking water, water for industrial use, or water for agricultural use. Before actual drilling is undertaken, however, sources of information other than electrical logs should be consulted if available. Of greater importance are the records of nearby water wells which may show the number and thicknesses of the fresh-water sands likely to be encountered; the output of the producing sands; analyses of the waters they yield; and the topographic relationship of these wells to the proposed test. Since data on existing water wells are frequently lost or never recorded, an electrical log study of nearby oil tests may furnish the only reliable information for water well drilling.

The need for careful selection of electrical logs for a study of aquifers is explained in the next few pages. A first consideration is the availability of the logs; a second is an explanation of how they are recorded; and a third is an explanation of how they show fresh-water sands.

AVAILABILITY OF ELECTRICAL LOGS

The availability of electrical logs for identifying fresh-water sands is peculiarly limited by the very purpose of drilling the oil tests. Oil tests are drilled for oil; hence they are located to evaluate prospective oil structures; and they are drilled to considerable depths in search of oil bearing sands, not shallow, fresh-water sands. Consequently oil tests are unevenly distributed, depending on the number and location of the prospects. As many as 350 tests may be drilled in one Mississippi county where production is had from one or several structures, and none in another county where oil prospects are lacking. Also, the tests may be clustered in one or several parts of a county, and missing in other parts, thus providing abundant information in one place and none in another (Map 2). Counties in the south two-thirds of Mississippi show at least two tests each, whereas some north Mississippi counties have but one each, and a few, none.

Fresh-water information from electrical logs may also be lacking in areas where there are several oil tests or it may be scarce even in an oil field. This condition exists because electrical logs were intended to measure the porosity-permeability of potential oil sands, not fresh-water sands. Inasmuch as oil is very rarely found anywhere in association with fresh water, and not at all as yet in Mississippi, the electrical survey's primary objective is to test the lower strata which contain salt water, and which may be oil bearing. Most commercial oil in Mississippi has thus far been found at depths exceeding 4500 feet, in salt-water strata, at least 2000 feet below the lowermost fresh-water beds.

Furthermore, electrical log data on fresh-water sands may be lacking even in places where there are many wells, because electrical logs of one or two tests will usually suffice to fix the fresh water-salt water level in a field, or even in a whole county. Of greatest value to this investigation, therefore, are the electrical records of the first several tests in a field or of rank wildcats which are drilled far from production. In such wells, logs are run to insure a knowledge of even the shallowest sands. Some records may start at less than 100 feet, from the base of the 16-inch steel conductor pipe which is placed in the earliest stage of drilling to prevent caving of the upper, poorly consolidated, weathered strata. In any event, no data are available on the fresh-water content of the cased off beds, because ordinary electric logging will not record through casing. Usually the purpose of the first electric log run is to find a resistant bed for setting a second string of steel casing, usually of 10-inch or 12-inch diameter-casing which when cemented in place, prevents the inflow of waters which might cause caving and a lowering of the viscosity of the drilling mud. Because of a great variation in depth to the first resistant bed, the availability of fresh-water data is at great variance. In a few instances the first electric log run shows data for fresh-water beds from 30 to 2000 feet in depth, but in most oil tests no data are available above depths of 600 or even 1200 feet.

From the conditions and circumstances just noted, it is evident that fresh-water data gleaned from electrical logs may not be at hand when they are wanted, either because of a small number of oil tests, their uneven distribution, or inadequate records of the shallower, upper beds. But when available, the electrical logs of these upper sands give a surprising range of information, as will be shown in an account of the recording of electrical logs and the recognition of fresh-water sands in them.

RECORDING OF ELECTRICAL LOGS

An electrical log is a chart showing depths in feet recorded vertically and the reactions of an electrical current recorded horizontally. In a drill hole the thick drilling mud serves as an electrolyte which conducts the current. But the mud varies in its conductivity as its composition is changed by the beds drilled. Most changes are caused by loss or accession of waters as the mud penetrates some strata or as water actually leaves other strata and dilutes the mud. By comparing the electrical log record with drill cuttings of the same test it is possible to see how zones of shale, marl, sand, limestone, chalk, or lignite alter the mud or regulate the penetration of the current. This, then, is the manner in which the electrical log reveals the different strata encountered in drilling.

Briefly, the equipment for making an electrical log consists of a cable which is lowered into the open drill hole and through which a current of known force is sent. To complete the circuit the other end of the cable is grounded at the surface. The cable contains the wiring leading to several electrodes near the cable's lower end. As the electrodes are raised or lowered in the hole the current passes through them and through the electrolyte into the adjacent strata. The distance the current penetrates these strata is dependent on the porosity-permeability of the beds. Usually the greater the penetration, the better the aquifer, because greater penetration means greater porosity-permeability of strata. This means that such a bed has room for water and a greater ease of fluid flow, enabling the bed to replace quickly the water which has been pumped out.

RECOGNITION OF FRESH-WATER SANDS

In order to recognize such fresh-water sands the degree of penetration of the electrical current must be accurately measured. This, then, is the purpose of the electrical log—to determine the degree of porosity-permeability of all beds, in order to distinguish between porous and permeable sands on the one hand and non-porous and impervious shales, silty sands, tight marls, or dense limestones or chalks on the other.

On the electrical log the porosity-permeability is shown as four curves superimposed on a graph divided into vertical intervals of 10 feet, 50 or 100 feet to the inch, to show depth below the surface (Plate I).

The vertical intervals are recorded as a center column in the graph. To the left of the column is one curve and to the right are three curves.

The curve on the left side is called the first curve. It is also called the self-potential or S-P curve. It records the natural ground potential in millivolts and is a measure of the porosity of the beds penetrated. High porosity, as pointed out, is the first requirement of an aquifer (and also of an oil bearing sand).

The curves on the right are called resistivity curves. They are recorded separately, each one by a different electrode, and measure the relative extent of the current's penetration into adjacent strata, recorded as resistance in ohms. Hence they determine the permeability of the beds. High permeability, as pointed out, is the second requirement of any aquifer (or oil bearing sand).

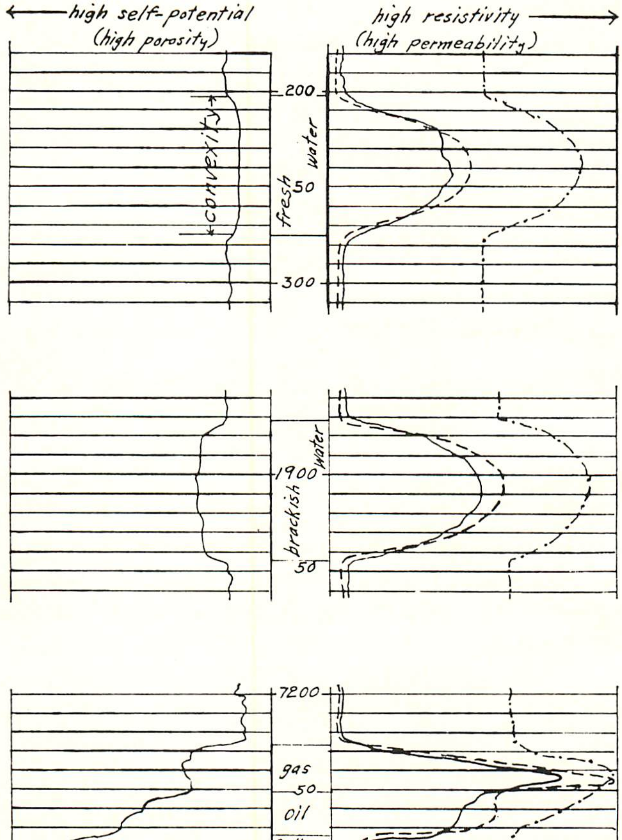

Plate I.—Hypothetical electrical log to show aquifers

The first resistivity curve, a solid line, on the right, is called the second curve or normal resistivity curve. It indicates that the current penetrates adjacent strata a maximum of three feet to about the limit of drilling mud invasion. The dashed curve on the right, called the third curve, penetrates strata up to 6 feet, 3 feet beyond the limit of mud invasion and into undisturbed fresh-water or salt-water beds. The dashed-dotted resistivity curve, the fourth curve, penetrates adjacent strata up to 10 feet, 7 feet beyond the limit of invasion and farthest into undisturbed fresh-water or salt-water beds.

The actual interpretation of electrical log data is highly involved and its discussion is not appropriate here. However the three examples (Plate I) suffice to show how the four curves identify porous-permeable sands between shale beds of low porosity-permeability.

In the hypothetical log (Plate I) the first example is a fresh-water sand from 202 feet to 276 feet (74 feet in thickness) lying between shales. The shales, according to the curves, have low self-potential values and low resistivity values, indicating low porosity and low permeability. In contrast, the sand has an even lower self-potential but a high resistivity as shown by the three curves on the right. The low self-potential is due to the fact that pure water (or nearly pure water such as fresh water) is a non-conductor of electricity and, as such, has lowered the efficiency of the drilling mud as an electrolyte. The low self-potential for a thick fresh-water sand usually shows as a cupped-in curve, convex to the right. This unusual shape is the first clue sought in determining an aquifer. In the first example the degree of convexity indicates a high fresh-water content.

The second example (Plate I) is another sand between two shales. It is recognized as a brackish-water sand by the failure of the self-potential curve to cup in and by its depth, 1871-1944 feet. The brackish water is probably a remnant of the original salt water content which has been diluted by fresh water entering at the outcrop, or it may have been a fresh-water sand which has been made brackish by the entrance of migrating salt water. Note that the first curve has a greater value than that for a fresh-water sand, having moved to the left a little farther than the curve for the enclosing shales. The slight bulge to the left is interpreted as an increase in electrical conductivity due to the sand's brackish water content, since it is known that the saltier the water the better the electrolyte. In contrast, there is little or no increase in electrical resistivity of the brackish-water stratum in the second example over the resistivity in the first example, which showed fresh water. The shapes of these second, third, and fourth curves indicate that the permeability of sands in both examples is about the same.

There are decided differences in the aspect of all four curves in the third example (Plate I), a much deeper sand between two shales. This sand, from 7227 to 7291 feet, has a three-fold content; gas at the top, oil beneath the gas, and salt water at the bottom. This relationship is, of course, one that petroleum geologists seek. Gas is indicated by a fairly high self-potential curve (first curve) and very high resistivity curves. Oil is shown by an even higher first curve but lower resistivity curves, and the gas-oil level is marked by the sharp decrease in the resistivity at 7251 feet. The salt water is determined by its very high first curve and much lowered second, third, and fourth curves. The oil-water contact at 7274 is the point where the sharp decrease of resistivity curves is halted and where the second and third curves change places.

Thus it can be seen that electrical logs, when available, can be interpreted to show what porous and permeable sands might be expected, their probable thickness, and finally, the nature of their fluid content. However, the electrical record of one well does not tell the depth to the aquifers in other wells, even in adjacent wells, for the depth at which aquifers will be encountered depends on topography and the structure of the immediate area. It is easy to establish the relative elevation of the contemplated test and the oil test which is used for comparison. But to understand the structure of a local area requires an understanding of the structure of a broader area, in this case, the structure of Mississippi.

STRUCTURE

The structure of Mississippi is relatively simple. The state is situated on the eastern limb of the Mississippi Embayment, and the beds of north Mississippi dip westerly toward the axis of the embayment, which coincides roughly with the present course of the Mississippi River. In the central part of the state the strata are gently inclined southwesterly toward the river and also toward the Gulf of Mexico. In southeast Mississippi they dip southerly, toward the Gulf. The rate of dip varies, from only 10 to 15 feet per mile in northeast Mississippi to as much as 40 feet per mile in the southwest part (cross-sections).

This inclination of beds is very important in the present study because it affects the number and depth of aquifers and provides the intake areas by which these aquifers are replenished through rainfall at the surface. The outcrop areas of the seven chief water bearing units are shown on the generalized geological map (Map 1), which should be used in conjunction with the seven downdip cross-sections that show the positions of the fresh-water units.

GEOLOGICAL MAP

The generalized geological map (Map 1), shows the eroded edges of the strata which were laid down in the Mississippi flank of the Embayment. These beds represent most of the geological units listed on the simplified stratigraphic column of Mississippi (Table I), but only the seven fresh water units are identified. In most instances each unit when deposited was less extensive than its predecessor, the whole series forming that type of stratigraphic sequence known as depositional offlap. In Mississippi the units are wedge-shaped, thickest to the southwest nearer the axis of the Embayment and thinner to the northeast. Subsequent to deposition the thin updip portions were beveled by erosion to form the crescentic outcrop pattern of parallel north-south beds in north Mississippi which swings southeasterly in the middle part of the state and nearly west-east in the southeast central counties.

The geological map (Map 1) further shows, by heavy dashed lines, the probable downdip limit of fresh water in each unit, as determined by electrical logs. The limits are conservatively placed; it is possible that potable waters may extend even farther down the dip. In fact, it is known that the Tuscaloosa produces in a recently completed city well at Sturgis in western Oktibbeha County 20 miles southwest of the Tuscaloosa limit, in a region where electrical surveys are few.

MISSISSIPPI STATE GEOLOGICAL SURVEY
WILLIAM CLIFFORD MORSE, DIRECTOR

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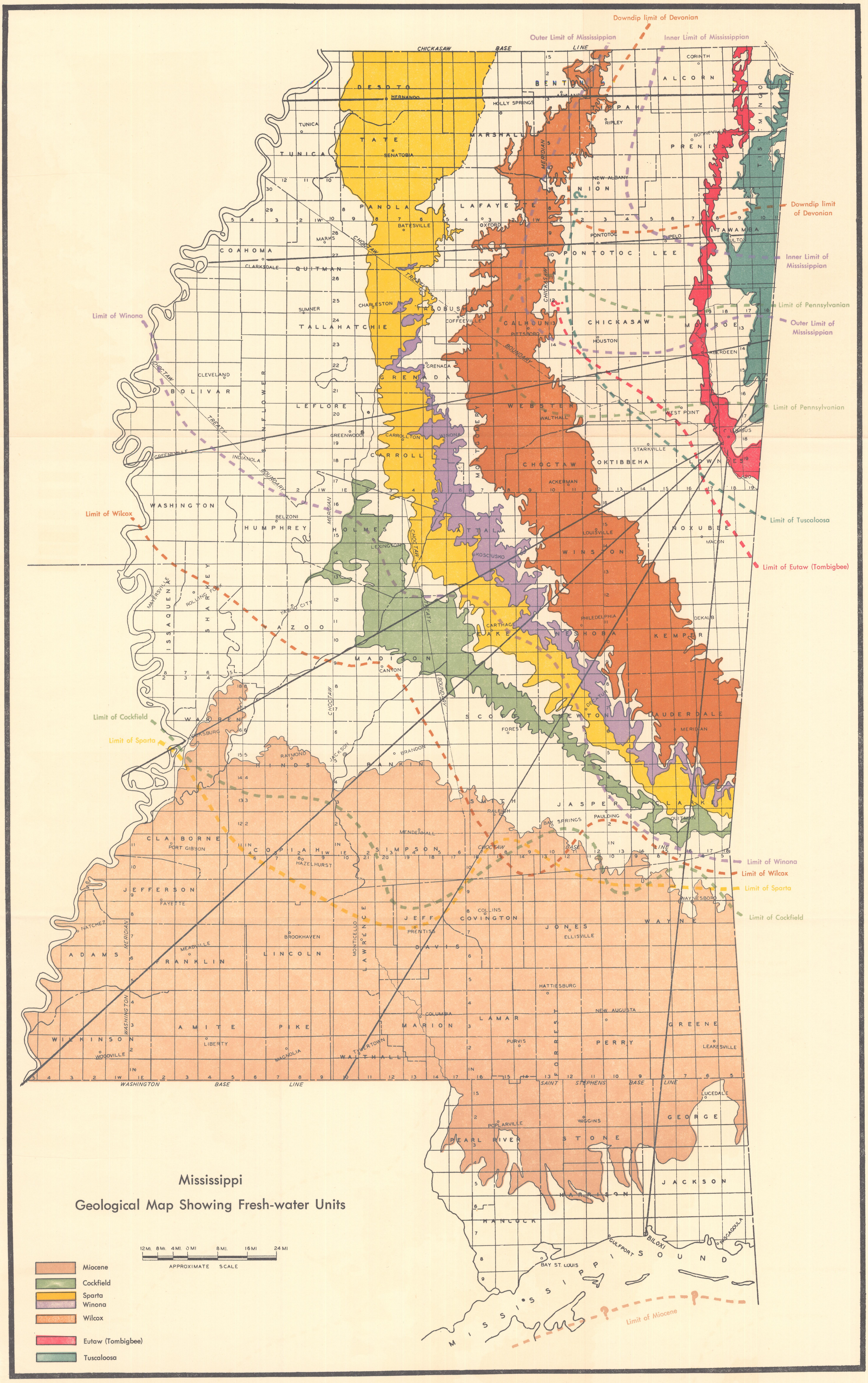
MAP 1



Mississippi
Geological Map Showing Fresh-water Units

The widths and shapes of the producing belts reflect the thicknesses of the fresh water units, the numbers of aquifers the units contain, and the origin of the sands, whether continental or marine. Thus, the producing belts of the Tombigbee (upper Eutaw) and Winona are narrow and irregular, probably because these marine units have not as yet had all their original salt water content flushed out. In contrast, the production belts of the slightly thicker non-marine Tuscaloosa, Sparta, and Cockfield strata are much broader because the sands were only invaded by salt water, not deposited in it. The unusually broad Wilcox and Miocene belts of production are attributed to their wide exposures and the thickness and greater number of their aquifers. However, the narrowness of all pre-Miocene producing belts in Jasper, Wayne, and Clarke Counties is due to both a thinning of all fresh-water units and an increase in dip which has narrowed the intake zone of each unit. The geological map shows also a belt devoid of aquifers west of the Tombigbee (upper Eutaw) and Tuscaloosa outcrops and east of the Wilcox exposure.

The geological map, is, therefore, a guide to the geographical position of the aquifers. Further information on their geographical situation, and, more important, information on the number, thicknesses, and depths to the aquifers is provided by the cross-sections.

CROSS-SECTIONS

The seven cross-sections have been projected along the lines shown on Map 1.

1) West-east through Hernando and Iuka
2) West-east through Clarksdale and Fulton
3) West-east through Greenville and Aberdeen
4) Southwest-northeast through Vicksburg and Columbus
5) Southwest-northeast from southwest corner of Mississippi through Columbus
6) Southwest-northeast from Tylertown through Columbus
7) South-north from Biloxi to Columbus

Electrical log data for drawing all cross-sections except the first are ample, but information for making the first section was derived mostly from water well records or from sample records of oil tests drilled before electrical logs were perfected.

On each cross-section are drawn the same seven fresh water units which are shown on the geological map and indicated by capital letters on Table I, the stratigraphic column. In addition, the three northern sections show the portions of the Devonian, Mississippian, and Pennsylvanian Paleozoic rocks (Table I) which produce some fresh water but which are not exposed and thus are not indicated on the geological map (Map 1). All units which do not contain aquifers are named on the cross-sections but are otherwise undistinguished.

Of necessity, the vertical scale has been greatly exaggerated, in this case, 30 times. Thus the land surface appears to have a great slope and the beds appear to be steeply inclined. Actually the surface slope is only one to three feet per mile, but it is sufficient to have enabled stream erosion to produce a succession of physiographic belts reflecting the relative resistance of the several units dipping at 15 to 40 feet per mile. Thus, the hilly Piney Woods is developed on the sands and clays of the broad Miocene exposure; the rugged Vicksburg Hills on the narrow belt of Oligocene marls and limestones; the broad Jackson Prairie on the weakly resistant Yazoo clay outcrop; the rough North Central Hills on alternate sands and clays of the Wilcox and Claiborne strata; the poorly drained Flatwoods on the Porters creek black shale; the rugged Pontotoc Ridge on the thin Clayton marls, sands, and limestones; the broad but low hills of the Black Prairie on the chalks and marls of the Selma-Ripley; and the rough Tombigbee hills on the alternate shales, sands, and gravels of the Tuscaloosa-Eutaw.

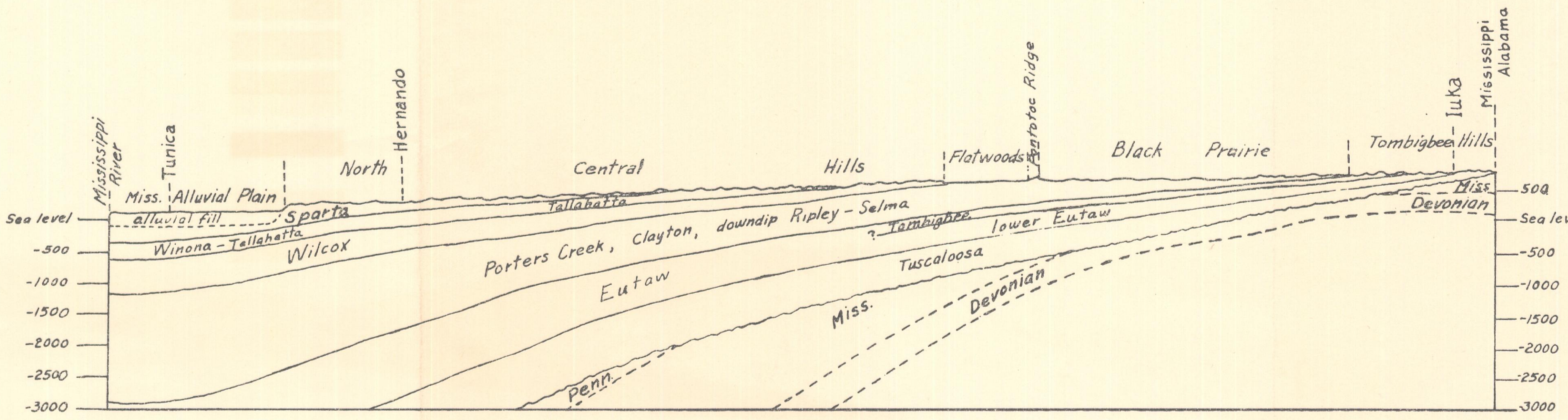
In order to convey an idea of the thicknesses of the fresh water bearing strata, a vertical scale of 500 feet is used. However, such a scale does not permit the showing of individual aquifers. Their probable number in any one locality can be obtained by referring to the figures beneath the oil tests spotted on the master map (Map 3).

The vertical scale of the cross-sections also gives an approximation of the brackish water-fresh-water level, thus furnishing additional information as to how deep it is feasible to drill for water in any locality. This level is indicated as a broken line on six of the cross-sections, electrical log data being insufficient to place it on the first of the seven. The undulations of this line

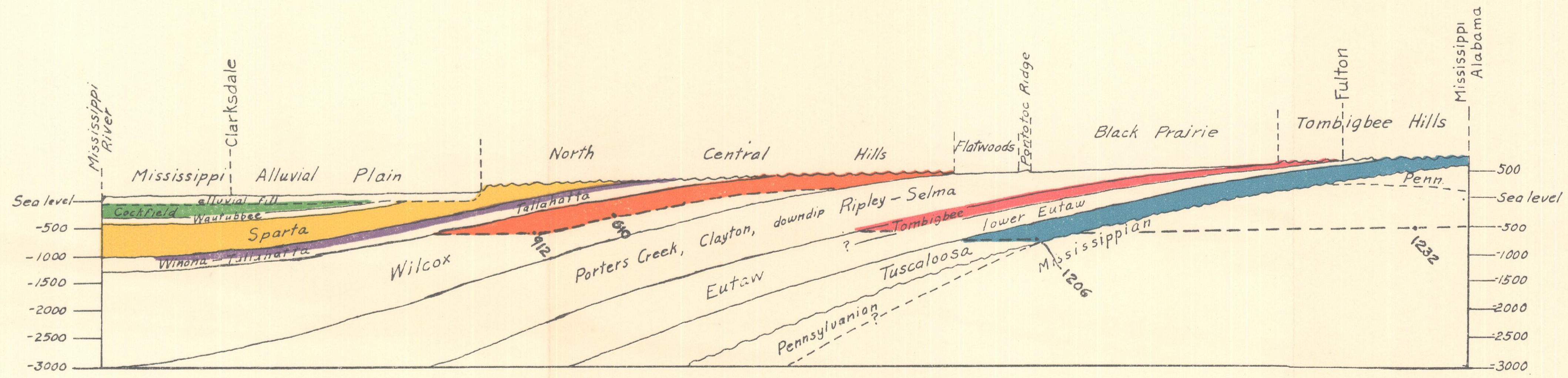
- Miocene
- Cockfield
- Sparta
- Winona
- Wilcox
- Eutaw (Tombigbee)
- Tuscaloosa

12 MI. 8 MI. 4 MI. 0 MI. 8 MI. 16 MI. 24 MI.
APPROXIMATE SCALE

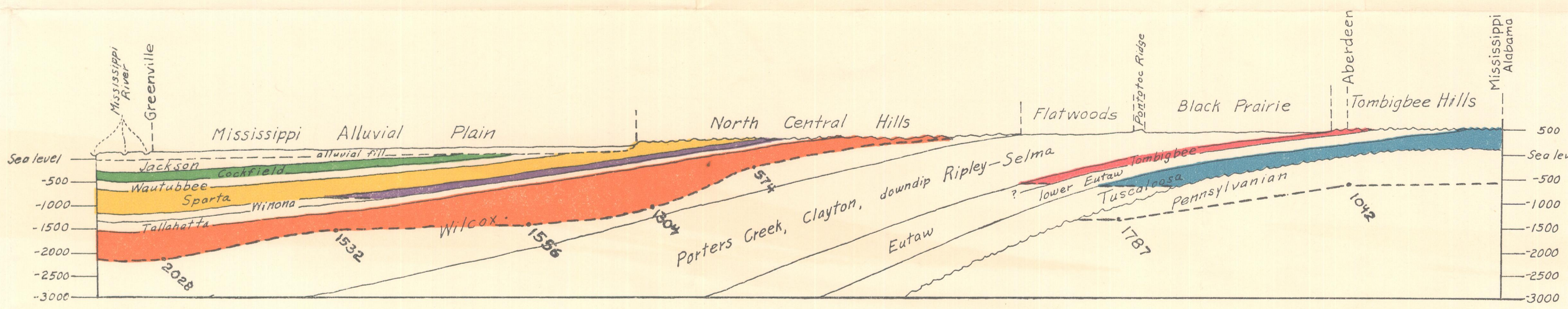
brackish water contact
•2003 depth to brackish water



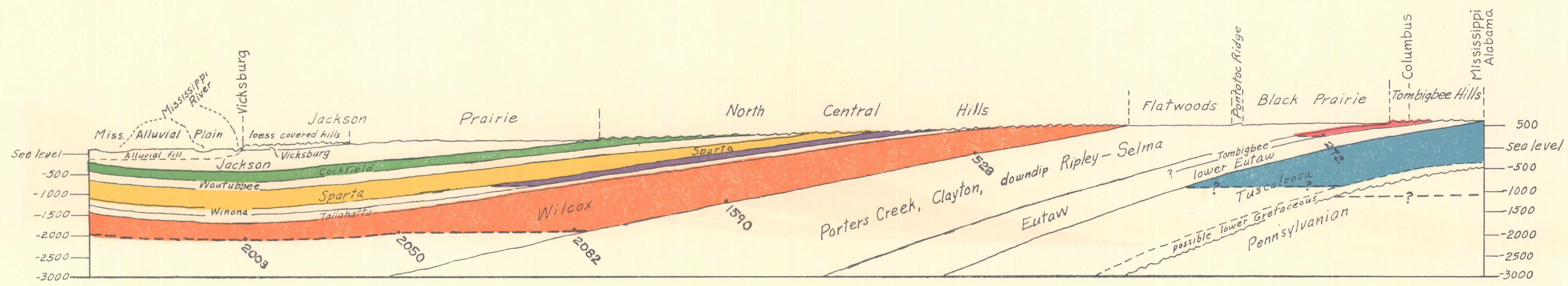
1. WEST-EAST THROUGH HERNANDO AND IUKA



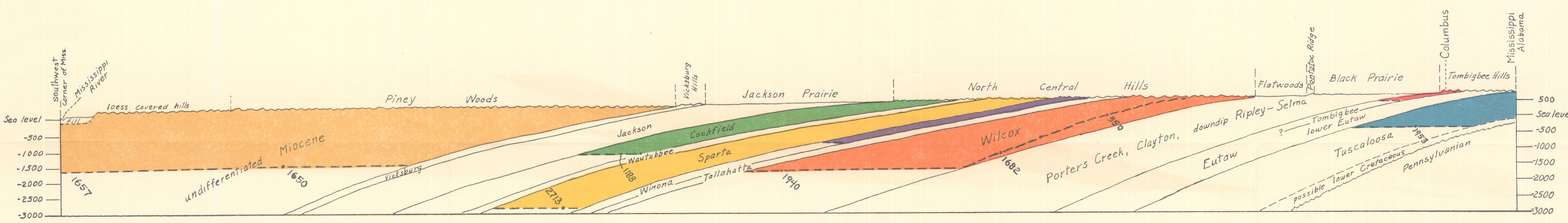
2. WEST-EAST THROUGH CLARKSDALE AND FULTON



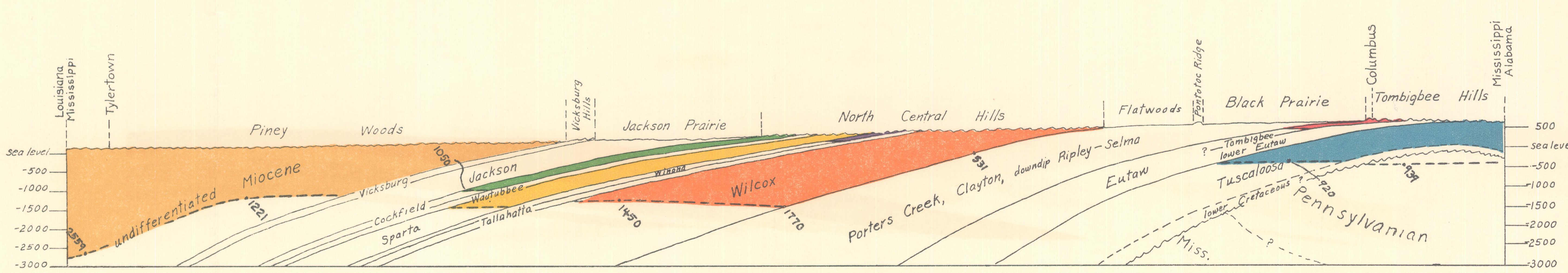
3. WEST-EAST THROUGH GREENVILLE AND ABERDEEN



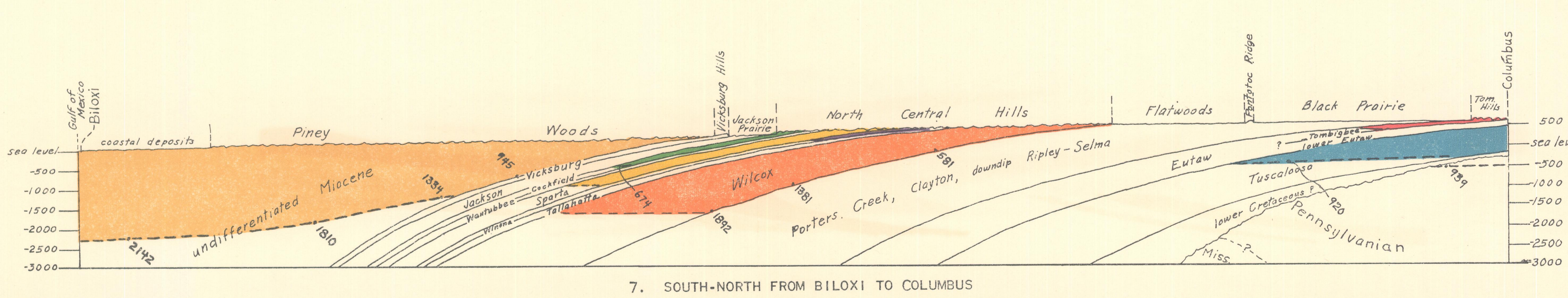
4. SOUTHWEST-NORTHEAST THROUGH VICKSBURG AND COLUMBUS



5. SOUTHWEST-NORTHEAST FROM SOUTHWEST CORNER OF MISSISSIPPI THROUGH COLUMBUS



6. SOUTHWEST-NORTHEAST THROUGH TYLERTOWN AND COLUMBUS



7. SOUTH-NORTH FROM BILOXI TO COLUMBUS

		System	Series	Formation	Member	lithology	thickness Surface	thickness downdip	Map Symbol
Cenozoic	Quaternary	Recent							
		Pleistocene							
	Tertiary	Pliocene							
		MIOCENE	(undifferentiated)			silty sands, lenses of silts, clays, lignites, clean sands	up to	6200	M
		Oligocene	Vicksburg	MINT SPRINGS		glauconitic marly sand	5-25	30	V
		Eocene	Jackson	FOREST HILL		silty clays and silty sds with a few sands	75-125	100	F
				Yazoo Moodys Branch					
				COCKFIELD		river laid sands with lenses of silts, clays and lignites	150-300	450	C
				Lisbon	Wautubbee (Cook Mountain)				
					SPARTA (KOSCIUSKO)	Sand with lenses of clay and silt toward the northwest	50-400	700	S
					Zilpha WINONA	green, glauconitic, marly, marine sand	15-60	150	W
				Tallahatta	Neshoba				
			WILCOX	(undifferentiated)		upper part mostly sand lower part sand with silt, clay, & lignite lenses	200-800	1500	Wx
		Paleocene	Midway	Porters Creek Clayton					
Mesozoic	Cretaceous	Gulf		Ripley					
				Selma					
				Eutaw	TOMBIGBEE	massive, glauconitic, micaceous, marine sand	75-125	shaled up	E
				TUSCALOOSA		upper succession of sands & red shales basal gravel	200-500	1500	T
Paleozoic	Pennsylvanian		PENNSYLVANIAN			shales & siltstones, a few porous sandstones, basal conglomerate	no outcrop	500-4000	P
	Mississippian		MISSISSIPPIAN			dense limestones & shales a few porous sandstones and limestones	no outcrop	500-1500	Ms
	Devonian		DEVONIAN			dense limestones & shales, a few porous limestones		300(?)	D

Table I.—Columnar section showing fresh-water units

indicate a low brackish water level in porous, permeable units such as the Miocene or Wilcox and a much higher level in non-porous, impermeable units such as the Porters Creek-Clayton-Selma. Fluctuations of the broken line also explain differences in origin of the sands of several fresh-water units, a low level in the Cockfield and Wilcox which were deposited by streams on land in contrast with the Winona and Tombigbee, which units were deposited in salt water and whose updip portions, only, have been flushed of their original salt water.

Descriptions of all those units which contain aquifers or which are apt to produce fresh water are given under stratigraphy.

STRATIGRAPHY

Stratigraphy deals with the sequence, distribution, and description of strata. The cross-sections have already shown how, in drilling in northwest Mississippi, aquifers in the Cockfield overlie non-producing Wautubbee beds which in turn overlie aquifers in the Sparta. Likewise, in southeast Mississippi, Miocene fresh-water sands and barren Vicksburg and Jackson beds are encountered before reaching the productive Cockfield sands. To show the relationships of these and other beds all over the state a simplified columnar section has been devised.

COLUMNAR SECTION

The columnar section (Table I) is highly generalized. Many important geologic units have been omitted because they have no significance in this report. Others are included only because of their thickness or because they make up the non-porous and impervious strata which separate the water bearing strata.

For ease of recognition in the table the names of all the units appearing in the cross-sections are underlined. The names of units which bear fresh water are capitalized whereas all the others are in lower case letters. In this way the units which contain aquifers can be identified with the same seven which are fresh water bearing (Map 1) and which are shown in the seven cross-sections.

A general statement of the kinds of material (lithology) comprising each unit follows the geological classification (Table

I). Thus the Tuscaloosa is noted as consisting of a lower gravel and a higher succession of sands and red shales. An idea is given of the thickness of the unit at its outcrop and as far downdip as it contains fresh water. Much farther down the dip where several sands produce oil or gas the Tuscaloosa is at least three times as thick as at the outcrop, but such deeper data are not pertinent here. Details of the lithologies and thicknesses of the strata, and of the aquifers they contain are reserved for the description of the water-bearing units.

DESCRIPTIONS OF FRESH-WATER UNITS

This electrical log study indicates that the 12 fresh water bearing units of Mississippi are of unequal importance. Consequently, they are listed below in two ways, first as to their order, older to younger, from base upward, in the columnar section (Table I), and second downward in the order of their apparent increasing importance as indicated by the thicknesses and porosity-permeability curves of the aquifers they contain.

Order of Age		Order of Importance	
12	Miocene	1	Miocene
11	Vicksburg	2	Wilcox
10	Forest Hill	3	Sparta
9	Cockfield	4	Cockfield
8	Sparta	5	Tuscaloosa
7	Winona	6	Winona
6	Wilcox	7	Eutaw
5	Eutaw	8	Pennsylvanian
4	Tuscaloosa	9	Mississippian
3	Pennsylvanian	10	Vicksburg
2	Mississippian	11	Forest Hill
1	Devonian	12	Devonian

The most important features of these units are discussed in the next few pages: extent of outcrop; chief lithology; and the number and continuity of the aquifers. Other matters included are quality of water, reasons for large or limited belts of production, and reasons for some aquifers appearing to have better production possibilities than others.

DEVONIAN AQUIFERS

Aquifers in the Devonian rocks are probably more numerous in northeast Mississippi than our present knowledge indicates. The possible Devonian aquifer recognized in the Union County well appears, from the electrical log, to be a porous limestone of 5 feet thickness in a series of dense limestones and shales about 300 feet in thickness. There are several such porous beds in the Devonian outcrop north and northeast in Tennessee. Although Eutaw, Tuscaloosa, Pennsylvanian, and Mississippian beds are to be encountered at shallower depths, the Devonian may produce fresh water in enough places to be an economical source if these overlying beds do not contain aquifers, or if they are salt water bearing. To date, Devonian waters have not been used, but they are a potential supply. However, until more electrical logs showing these strata are available, it is impossible to predict the probable producing area except to note that it will comprise the more northeastern counties, Tishomingo, Alcorn, Tippah, Union, Pontotoc, Lee, Itawamba, and Prentiss. The position of the Devonian is shown in the first cross-section as directly underlying the Tuscaloosa, whose fresh water bearing basal gravels might permit migration into whatever porous-permeable Devonian strata lie below them. In this instance aquifers could be charged without there having to be an outcrop to receive rainfall.

MISSISSIPPIAN AQUIFERS

Aquifers in the Mississippian beds are recognized in electrical logs of two oil tests in Itawamba County in northeast Mississippi —four in one well and three in another. Although they are thin and only poor to fair aquifers, they may produce potable waters if overlying beds fail. They indicate that porous limestones and sandstones are in a series of dense limestones and shales 500 to 1500 feet in thickness.

Mississippian strata are indicated in the first cross-section as underlying the Tuscaloosa in several places and as underlying the Tuscaloosa in much of the second cross-section. Thus, the basal Tuscaloosa gravels may feed fresh water into porous Mississippian beds just as in the case cited above for the Devonian. However, some of these strata may have received fresh water directly from rainfall on the outcrop in Tishomingo County where some six Mississippian formations of Tishomingo County have been described by Morse[1].

Again, the probable Mississippian producing area is in the northeast counties—Tippah, Benton, Union, Pontotoc, Lee, Itawamba, Monroe, Chickasaw, and Calhoun. Although beds of this age are encountered in oil well drilling to the west of Benton, Union, and Pontotoc counties, electrical records and drill cuttings indicate that Mississippian strata in that region are too dense, or too cherty, or too shaly to contain aquifers.

PENNSYLVANIAN AQUIFERS

Several aquifers at several horizons in Pennsylvanian beds were discovered in electrical logs in Chickasaw County, and it is probable that other logs will eventually show other freshwater beds of that age in adjacent counties to the west, southwest, south, southeast, and east, but not to the north. From 500 to 4000 feet of Pennsylvanian shales and siltstones occupy a broad east-west syncline from Lowndes County westward to Grenada County, but only a few sands in the eastern part of the basin are porous and permeable enough to produce water. As in the case of the western Mississippian strata, the western Pennsylvanian strata are too dense and too shaly for production.

The Pennsylvanian aquifers recorded in Chickasaw County are from the upper few hundred feet of the unit and are fair to good. They may have derived their waters from the overlying Tuscaloosa basal gravels, or they may have obtained their supply from the outcrop to the east, 25 to 100 miles in Alabama.

Disappointing, to date, is the failure of fresh water to appear in the "Millstone grit", the pebble and coarse sand conglomerate at the base of the Pennsylvanian in most wells of Mississippi and adjacent Alabama. This "grit" should produce fresh water somewhere in northeast Mississippi.

TUSCALOOSA FORMATION

Much more is known concerning the aquifers in the Tuscaloosa formation, the oldest Upper Cretaceous unit cropping out in Mississippi. The unit is exposed as a north-south belt along

[1]Morse, William Clifford, Paleozoic rocks of Mississippi, Mississippi State Geological Survey Bulletin 23, 1930.

the Alabama line in the northeastern counties, Tishomingo, Itawamba, Monroe, and Lowndes, where its thickness is 200 to 500 feet. Only the upper one-half to three-fourths of the formation crops out in Mississippi; the lower part is in Alabama.

Both exposures and downdip development show a thick basal gravel and sand series and an upper succession of sands, glauconitic sands, red and green silts or clays, carbonaceous silts, lignites, and bentonites. From the electrical logs, both the lower and upper successions appear capable of producing fresh water, as testified by five thick aquifers in a 300-foot section in No. 3 test of Chickasaw County and seven good to excellent aquifers in a 550-foot interval in No. 2 test of Clay County. The exposed Tuscaloosa and its probable extent of production are shown on Map 3. The manner in which the unit thickens down the dip is portrayed in all the cross-sections.

EUTAW FORMATION

The Eutaw formation is comprised of two divisions, a lower sand-shale succession from 200 to 500 feet in thickness, and an upper massive, glauconitic, silty, micaceous, fine grained sand, the Tombigbee, from 75 to 125 feet in thickness. Only the Tombigbee appears capable of producing fresh water. Its outcrop is a narrow north-south belt through northeast Mississippi, 5 to 15 miles west of the Tuscaloosa exposure.

Despite its massiveness the Tombigbee sand does not appear as favorable as the thinner Tuscaloosa aquifers. Judging from the outcrop, the rather low porosity-permeability observed in the electrical logs is due to grains of silt and fine flakes of mica having clogged the spaces between the grains of fine sand. A second reason for its poor showing is that the Tombigbee is entirely marine, so that its original salt content is being flushed out even now. A third reason may be that it is shaling out downdip, as shown by the manner in which the sand is terminated in the cross-sections.

Whatever the reason for its poor showing, the Tombigbee provides only a small potential producing belt in Pontotoc, Lee, Chickasaw, Monroe, Clay, Lowndes, and Noxubee Counties (Map 1). Poor aquifers are recorded in five oil tests in this belt. They are labeled "E", for Eutaw, in Map 3, so as not to confuse Tombigbee with Tuscaloosa.

WILCOX FORMATION

Wilcox beds provide the second most important aquifers as revealed by this electrical log study. Strata of Wilcox age are 200 to 800 feet in thickness on the outcrop in northeast and east-central Mississippi where their erosion has helped form the North Central Hills physiographic belt. In this report, no attempt has been made to differentiate the Wilcox. However, the lower one-half of the unit is distinguished from the upper one-half by a greater number of lenses of carbonaceous shale, lignite, and silty clay in thick beds of clean sand. The sand beds are good aquifers because they are sufficiently continuous and have good porosity-permeability on the outcrop and down the dip to the west and southwest. The sands in the upper part of the unit are even better developed and have fewer lenses of silt, clay, and lignite, hence look even more productive. Included in this upper division is the so-called Meridian sand which is well developed on the surface near Meridian, but which is indistinguishable from the Wilcox in electrical logs short distances down the dip.

The Wilcox has a very broad outcrop belt and an even broader potential producing belt extending to the Mississippi River on the west and southwest as far as a line drawn from Washington County southeast to Wayne County (Map 1). Within the exposure and downdip belt are 41 oil tests whose electrical logs indicate satisfactory Wilcox aquifers, as many as 3 to 8 aquifers each in some wells (Map 3). In one test, No. 1 Sunflower, are 10 fair to excellent potential water bearing sands. The apparently high porosity-permeability recorded by the electrical logs is believed due to the continuity of the sands from the outcrop far down the dip, to the thickening of these sands downdip, and to the fact that the sands were deposited in fresh water, not in sea water.

WINONA MEMBER

The Winona member of the Lisbon formation crops out in a narrow, gently curving belt closely paralleling the Wilcox belt on the west (Map 1). At the Alabama line it is only 15 feet in thickness, but it thickens northwestward so that in Montgomery

County it is at least 60 feet in thickness. The unit then thins northward and loses its surface identity in Panola County where it is overlapped by the Kosciusko. The Winona consists of greenish, glauconitic, marly, fossiliferous, marine sands which weather quickly to red ferruginous outcrops marked by irregular sandy ledges cemented by limonite derived from the oxidation of the glauconite. Because of its high iron content the Winona is not a desirable aquifer, although numerous domestic wells and a few wells supplying small towns derive their supplies from it.

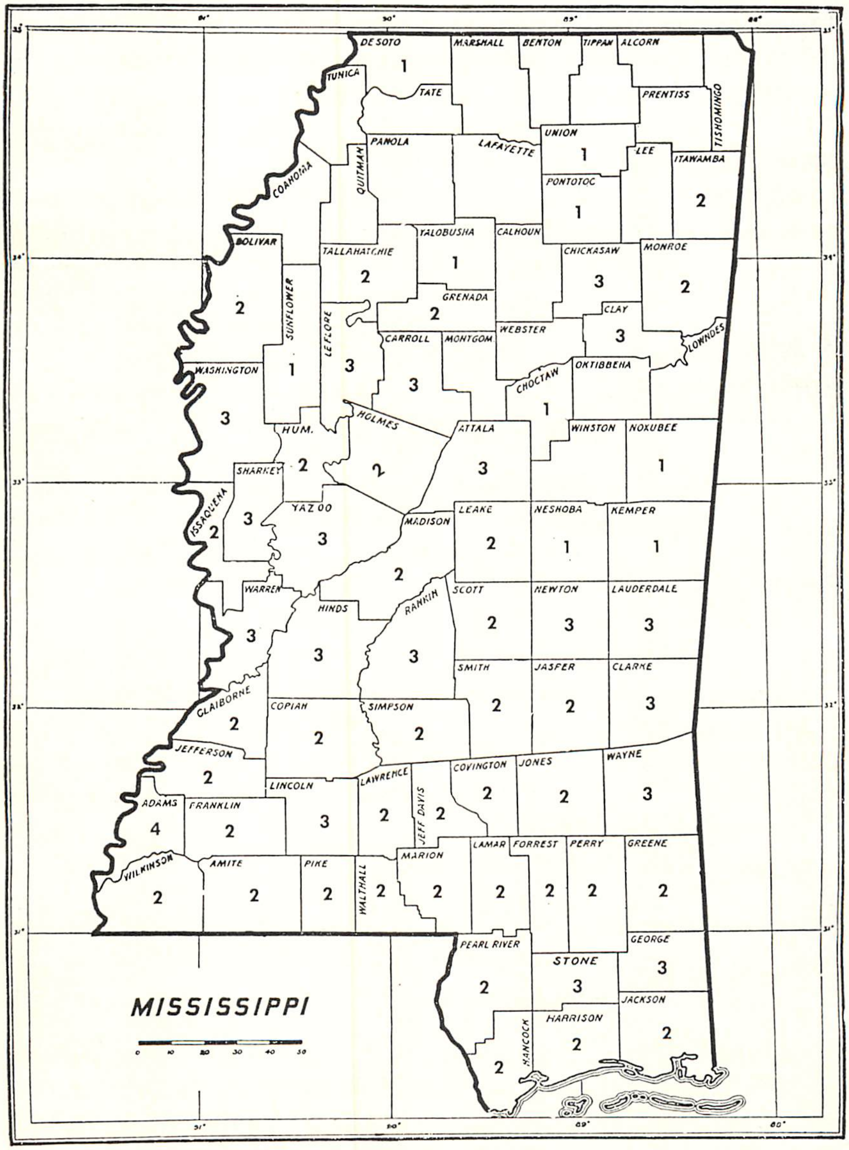
The Winona has a potential downdip producing belt of varying width, 60 to 70 miles in northwest Mississippi but only 5 to 10 miles in the east part of the state (Map 1). The broader part is probably due to the thinning of the marine sands and the thickening of an underlying sand (the Neshoba of Tallahatta age) which was laid down in fresh water from Newton County northwestward. The southeastward narrowing of the potential producing belt seems due to the pronounced thinning of the Winona in that direction, as shown in the sixth and seventh cross-sections.

Electrical logs of eight oil tests within this belt show poor to excellent Winona aquifers, in Clarke, Newton, Holmes, Bolivar, and Leflore Counties (Map 3). Test No. 1 in Bolivar County shows three such water bearing sands.

SPARTA MEMBER

The Sparta Member provides aquifers of third importance in Mississippi, as revealed by this electrical log study. "Sparta" is a driller's term for the middle, sandy, chiefly non-marine member of the Lisbon formation, Claiborne group. On the outcrop it is called the Kosciusko sand. Its exposure forms a crescentic belt across the state from Tennessee to Alabama (Map 1).

In the Kosciusko region, at about the center of Mississippi, the unit is chiefly sand, 300 feet in thickness. Immediately to the northwest it thins slightly, but in the northern counties it thickens as the sand contains more and more lenses of clay, and silt, and beds of coarser, grit-sized sand. Southeast of Kosciusko the unit thins progressively so that at the Alabama line it is but 50 feet in thickness, as shown in the cross-sections.



Map 2.—Distribution of Oil Tests yielding fresh-water data

Everywhere on the outcrop the sands are water bearing, and as they continue down the dip they provide excellent aquifers in a broad potential producing area (Map 2). In this belt 36 oil tests indicate "good" to "excellent" high porosity-permeability beds, in some holes as many as five each.

COCKFIELD FORMATION

The Cockfield formation provides the fourth best aquifer in Mississippi. Its belt of outcrop is only a few miles wide at the Alabama line but widens northwestward to 15 to 25 miles in Holmes and Carroll Counties at the edge of the Mississippi Alluvial Plain (Map 1). The increase in width is partly due to a thickening of the unit from 150 feet in Clarke County to 300 feet at its northern extremity, and partly to a lessening of dip as revealed in the cross-sections.

The Cockfield consists of river-laid sands containing lenses of silts, clays, and lignites. The sands appear to continue down the dip, for a broad potential producing zone (Map 3) is indicated by the electrical logs of 18 oil tests in the west-central part of the state. At least 3 aquifers each are noted in several holes. Some of the best, as in No. 2 test of Simpson County, are 15 to 20 feet in thickness and of excellent porosity-permeability.

FOREST HILL

Electrical logs of two tests, No. 1 Warren County and No. 2 Simpson County, show fair to excellent aquifers in strata which appear to be Forest Hill in age. This condition is rather surprising since Forest Hill beds on the outcrop are predominantly stream laid silty sands or silty clays, and lignites. Forest Hill strata must include, then, several clean sands which intersect the surface and which extend some 40 miles downdip under the Miocene cover.

The Forest Hill is exposed in a rather narrow belt in Warren, Hinds, and Rankin Counties, 5 to 10 miles northeast of the updip edge of the Miocene (Map 1). In western Hinds County its thickness is almost 100 feet, but it pinches out east of Rankin County and is overlain by the marine Red Bluff clay which is too nearly impervious to serve as an aquifer.

VICKSBURG FORMATION, MINT SPRINGS MEMBER

Strata comprising the Vicksburg group in Mississippi are ordinarily not water-bearing. However, tests No. 1 of Copiah County and No. 1 of Wayne County, indicate that the Mint Springs member of the Vicksburg Formation may contain enough water to serve as a satisfactory aquifer. Electrical logs of these tests show that the unit is unusually porous and permeable at the sites of the wells, probably because sands prevail locally over the marly material which is the dominant Mint Springs lithology. Because of the local development of sands, then, the Mint Springs member should be considered a potential producer of fresh water although in few places is it thicker than 30 feet. It crops out on the updip (north) side of the Vicksburg exposure in Warren, Hinds, and Rankin Counties, but the unit is not recognized with certainty eastward along the belt of Vicksburg outcrop which passes through Wayne County and into Alabama. Because of its very narrow exposure the Mint Springs is not shown on Map 1, and because of its thinness it is not distinguished in the cross-sections.

MIOCENE FORMATIONS

Electrical logs show that Miocene beds furnish the best aquifers in Mississippi. They are most numerous, have the greatest thicknesses, the best porosity-permeability, the broadest outcrop belt, and the widest zone of potential production.

Miocene strata crop out as a very broad belt comprising the southern one-third of the state (Map 1). They produce fresh water in the outcrop area and as far south as the barrier islands off Mississippi's Gulf coast, where flowing wells are common. They are undifferentiated in this electrical log study, but on the outcrop the Miocene is subdivided into three members, the Catahoula, the Hattiesburg, and the Pascagoula. In the exposures and in the shallower subsurface the Miocene consists of non-marine silty clays containing lenses of carbonaceous silts, thin lignites, gray-white silts, and a few bodies of fine grained clean sand which must continue down the dip. The sands act as aquifers. Oil test records reveal a thickness of at least 6200 feet of Miocene beds in the southwest corner of the state, of which the upper 1500 to 2200-foot interval contains fresh-water sands.

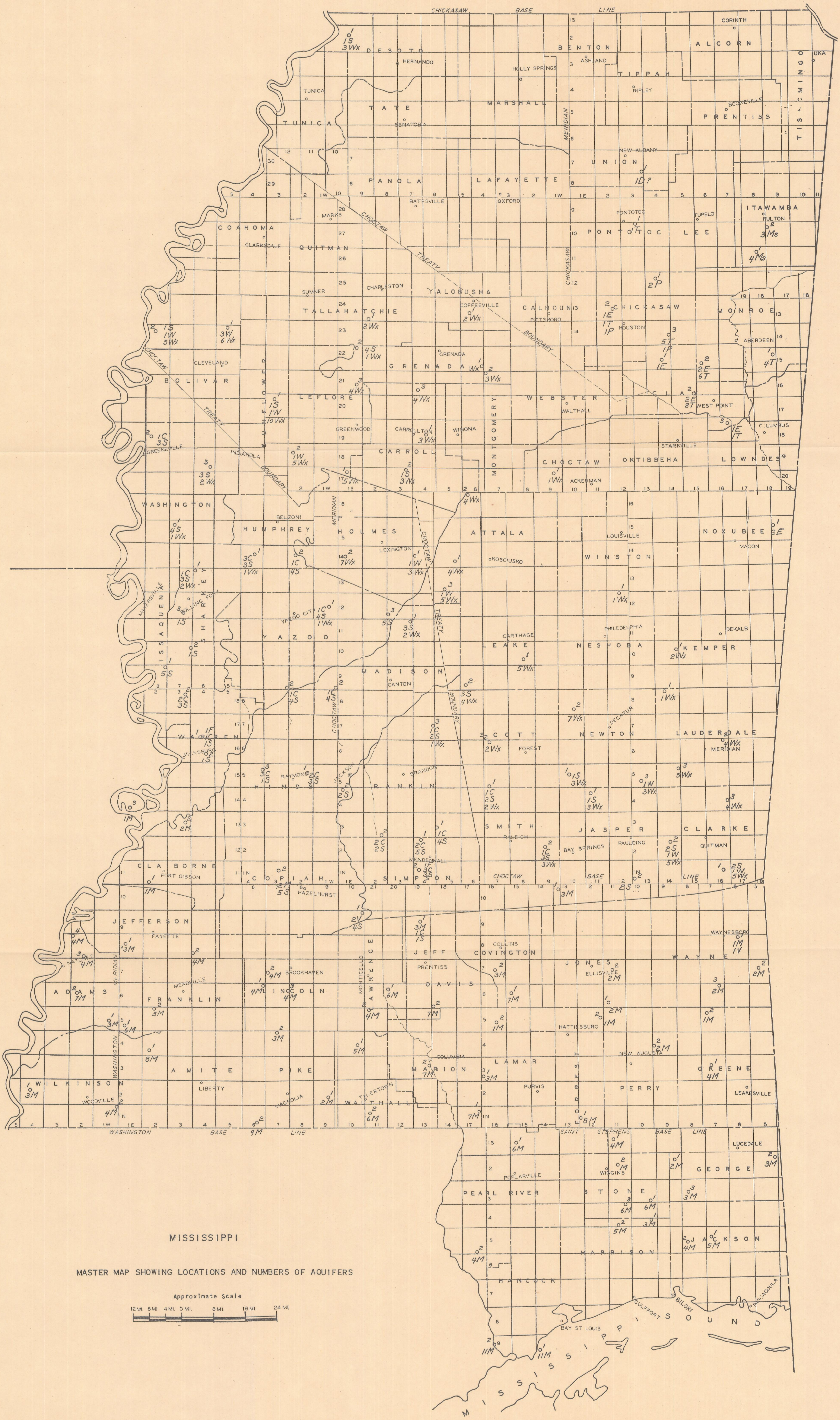
The greatest number of Miocene aquifers is in Hancock County where two oil tests show 11 each. Many aquifers are in excess of 50 feet in thickness, and the fifth sand in No. 1 test of Franklin County is 112 feet in thickness. However, Miocene fresh water bearing strata are poorly represented in parts of Greene, Perry, and Forrest Counties in southeast-central Mississippi, a condition probably due to but few clean sands up dip on the outcrop. Likewise aquifers are thin or absent in parts of Claiborne, Copiah, and Jefferson Counties. Near Natchez the sand bodies appear to contain mineralized waters, probably high in fluoride content. Such waters may still be potable, but they are probably not satisfactory for use in some industries, as determined by Dr. J. B. Price of the Millsaps College Chemistry Department.

THE MASTER MAP

As previously mentioned, the master map (Map 3) has been devised to summarize both the geographic and stratigraphic position of the aquifers as discovered in reviewing the electrical logs of nearly 500 oil tests. Also, as previously stated, the map indicates the oil tests to be scattered unevenly as was dictated by the information available, as summarized in Map 2. Thus there are two oil tests in most counties, but a few counties have three or even four. Some northern counties have only one, and a few have none, because oil tests were never drilled or because the record of those drilled shows no aquifers, or because the shallow, fresh water beds were cased off before an electrical log was run.

Each test is located as a circle on the map as recorded in the county by county listings at the end of this report. For example, oil test No. 1 of Lauderdale County is placed in the large square representing the township Town 8 North, Range 14 East, and in the location of Section 4 of that township, according to the position of Section 4 in the grid of a normal township reproduced below.

However, in a few instances the section reported for a test does not conform to the position of the same numbered section in the normal township grid. This is because the older counties bordering the Mississippi River, notably Warren, Claiborne, Jefferson, Adams, and Wilkinson, and adjacent Franklin County,



MISSISSIPPI

MASTER MAP SHOWING LOCATIONS AND NUMBERS OF AQUIFERS

Approximate Scale

12 MI. 8 MI. 4 MI. 0 MI. 8 MI. 16 MI. 24 MI

may have more or fewer than 36 sections per township, which sections are numbered irregularly and are usually of irregular shape. Thus, test No. 3 in Adams County is situated in Section 53, Town 8 North, Range 2 West. To overcome this difficulty in locating it on the master map the test is spotted within the township at the position it would occupy if the sectioning followed

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

the normal grid pattern above. In each instance of a location in a township having irregular sections the irregularity is noted in the county by county descriptions as "irregular Section_____" with the words "regular Section_____" added.

Data below the scattered oil tests on the master map show the number of producing sands in each of the fresh water bearing units encountered in drilling. These units are the same as those capitalized in the stratigraphic column, Table I; shown in the cross-sections; and indicated as exposures and producing belts in the geological map, Map 1. The number of fresh water producing units in any single test is designated by letters, from base upward, as follows:

M	Miocene	Wx	Wilcox
V	Vicksburg	E	Eutaw
F	Forest Hill	T	Tuscaloosa
C	Cockfield	P	Pennsylvanian
S	Sparta	Ms	Mississippian
W	Winona	D	Devonian

Then, a number designation is used to show the number of aquifers in each unit. Thus, test No. 1 in Clarke County has two Sparta aquifers (2 S), one Winona aquifer (1 W), and five Wilcox aquifers (5 Wx). No attempt has been made to show the thicknesses of these fresh-water sands and the depths at which they are encountered. These data are provided in the listing of aquifers, county by county.

LISTING OF AQUIFERS, COUNTY BY COUNTY

At the end of this report, the listing of the aquifers, county by county, provides some of the more specific data a water driller needs. Thus, in looking at the same oil test, No. 1 of Clarke County, it is seen that the top and base of each sand is recorded and a notation made as to the probable value of each sand as an aquifer—poor, fair, good, or excellent. The shallowest sand is 13 feet in thickness (343 to 356 feet), the first of two Sparta aquifers, and is only a "fair" prospect for fresh water. In contrast, the third sand, of Winona age, is thicker but is rated "poor" as a prospect. The rating is based on the porosity-permeability as shown by the electrical log, not on the thickness of the bed. However, some sands are ranked "excellent" because of both thickness and porosity-permeability, as the fourth Wilcox sand in test No. 2 of Attala County, which bed is 58 feet in thickness. In a few counties other qualities are noted where aquifers are few and thin, or where there are several thin aquifers but close enough together to produce through a single string of perforations in casing. Other qualities mentioned are the probabilities of brackish water where shallower aquifers are lacking, or mineralized waters which are known through chemical analyses.

ADAMS

Placid Oil Co. No. 1 U.S.A. wildcat
Irregular Sec. 30-5N-1W (regular Sec. 22)
Adams County
Elevation 188 TD 11340 D&A
Log started @ 88 feet

Miocene	101	172	poor—probably fluoride water
Miocene	439	470	poor " " "
Miocene	480	533	poor " " "

H. W. Elliott No. 1 E. B. Ogden
Irregular Sec. 36-6N-2W (regular Sec. 17)
Adams County
Elevation 299 TD 7534 LaGrange Field
Log started @ 30 feet

Miocene	242	290	poor
Miocene	499	519?	poor
Miocene	851	862	poor
Miocene	1000	1019	poor
Miocene	1057	1090	good
Miocene	1160	1182	good
Miocene	1320	1345	poor

Roeser & Pendleton No. 1 Natchez Airport
Irregular Sec. 53-8N-2W (regular sec. 34)
Adams County
Elevation 295 TD 10339 D&A
Log started @ 88 feet

Miocene	160	250	poor—probably fluoride water
Miocene	400	521	poor " " "
Miocene	660	682	poor " " "
Miocene	751	857	poor " " "

Humble Oil & Refining No. 1 Ida Stowers
Irregular Sec. 9-8N-2W (regular Sec. 6)
Adams County
Elevation 283 TD 6305 D&A
Log started @ 67 feet

Miocene	105	160	poor—probably fluoride water
Miocene	202	246	good
Miocene	260	278	good
Miocene	529	548	fair

Amite

Gulf Refining Co. No. A-2 J. A. Rowland et al
Sec. 29-4N-2E (Regular section 26)
Amite County
Elevation 310 TD 11580 Gloster Field
Log started @ 93 feet

Miocene	142	204	fair
Miocene	224	326	fair
Miocene	538	587	good
Miocene	588	613	fair
Miocene	705	817	fair
Miocene	822	927	good
Miocene	1056	1162	poor—fluoride water?
Miocene	1704	1762	fair

Humble Oil Refining No. 1 H. C. Spears
Sec. 27-1N-6E
Amite County
Elevation 351 TD 11893
Log started @ 118 feet

Miocene	118	191	good
Miocene	322	447	good
Miocene	509	548	good
Miocene	642	709	good
Miocene	1031	1103	good
Miocene	1852	2047	good
Miocene	2200	2247	good
Miocene	2300	2322	good
Miocene	2352	2380	fair

Attala

E. P. Halliburton Inc. Well No. 1 C. S. Hester
Sec. 26-14N-5E
Attala County
Elevation 318 TD 5202
Log started @ 850

Wilcox	858	882	excellent
Wilcox	889	932	excellent
Wilcox	1541	1551	excellent
Wilcox	1575	1590	good

Hunt Oil Co. Well No. 1 J. D. Murphy
Sec. 4-16N-6E
Attala County
Elevation 318 TD 5748
Log started @ 530

Wilcox	685	747	fair
Wilcox	874	955	good
Wilcox	962	1039	good
Wilcox	1107	1165	excellent

Clint Crosby Well No. 1 J. F. Allen
Sec. 33-13N-5E
Attala County
Elevation 290 TD 4534
Log started @ 440

Winona	440	522	fair
Wilcox	724	781	excellent
Wilcox	850	868	excellent
Wilcox	908	938	excellent
Wilcox	992	1041	fair
Wilcox	1301	1321	fair

Bolivar

Hunt Oil Co. No. 1 Rayner
Sec. 4-23N-5W
Bolivar County
Elevation 150 TD 5057 D&A
Log started @ 554 feet

Winona?	660	669	poor
Winona?	728	739	good
Winona?	746	758	good
Wilcox	909	922	fair
Wilcox	997	1025	good
Wilcox	1221	1240	good
Wilcox	1252	1262	good
Wilcox	1345	1390	very good
Wilcox	1419	1508	very good

Seaboard Oil Co. Well No. 1 Chicago Mill & Lumber Co.
Sec. 9-23N-8W
Bolivar County
Elevation 150 TD 4786 D&A
Log started @ 575

Sparta?	575	742	excellent
Winona?	989	1080	excellent
Wilcox?	1220	1257	poor
Wilcox?	1322	1338	poor
Wilcox	1388	1396	poor
Wilcox	1464	1480	poor
Wilcox	1717	1922	possibly brackish water

Calhoun

Honolulu Oil Corporation No. 2 D. R. Davis
Sec. 27-12S-1E
Calhoun County
Elevation 369 TD 8390 D&A
Log started @ 100 feet
No fresh-water sands

Carter Oil Company No. 1 John W. Crane
Sec. 31-13S-1E
Calhoun County
Elevation 392 TD 9237 D&A
Log started @ 240 feet
No fresh-water sands

Carroll

C. E. Walters No. 1 Flippin Wildcat
Sec. 22-19N-4E
Carroll County
Elevation 290 feet TD 4880 D&A
Log started @ 708 feet

Wilcox	839	849	good
Wilcox	882	889	poor
Wilcox	1001	1015	fair

H. Barksdale Brown & Co. Well No. 1 Mrs. Riesie Gee
Sec. 2-17N-3E
Carroll County
Elevation 456 TD 3561 D&A
Log started 177 feet

Sparta?	177	265	excellent
Wilcox	792	822	excellent
Wilcox	1120	1145	poor—mineralized
Wilcox	1272	1304	poor—mineralized

Billups Brothers & Barnett Serio Well No. 1 N. H. Heath
Sec. 29-21N-4E
Carroll County
Elevation (none) TD 4696 D&A
Log started @ 600 feet

Wilcox	584	593	poor
Wilcox	719	787	possibly brackish water
Wilcox	844	858	poor brackish
Wilcox	883	909	poor brackish

Chickasaw

Vaughey and Vaughey No. 1 U. S. A.
Sec. 9-12S-4E
Chickasaw County
Elevation 350 TD 2740 D&A
Log started at 80 feet

Pennsylvanian	1117	1196	poor
Pennsylvanian	1203	1215	fair

Carter Oil Co. No. 1 Fowler-Langley Unit
Sec. 22-13S-2E
Chickasaw County
Elevation 327 TD 4905 D&A
Log started @ 75 feet

Eutaw	1110	1135	poor
Tuscaloosa	1458	1470	poor
Pennsylvanian	1761	1787	good

Carter Oil Co. No. 1 Minnie S. Pulliam
Sec. 24-14S-4E
Chickasaw County
Elevation 304 TD 4905 D&A
Log started at 48 feet

Tuscaloosa	1021	1062	good
Tuscaloosa	1100	1121	good
Tuscaloosa	1159	1205	good
Tuscaloosa	1243	1262	good
Tuscaloosa	1267	1300	good
Pennsylvanian	1409	1450	good

CHOCTAW

Henson-Rife Company No. 1 W. J. Green
Sec. 10-17N-9E
Choctaw County
Elevation 387 TD 4005 D&A
Log started @ 484 feet

Wilcox	484	528	good

CLAIBORNE

Tidewater Assoc. Oil Co. No. 1 T. L. Furr
Irregular Sec. 60-11N-2E (regular Sec. 32)
Claiborne County
Elevation 245 TD 10005 D&A
Log started @ 216 feet

Miocene	329	360	poor

Danciger Oil & Refining Co. No. 1 Claude Taylor
Irregular Sec. 31-13N-3E (regular Sec. 14)
Claiborne County
Elevation 321 TD 9906 D&A
Log started @ 156 feet

Miocene	156	170	fair
Miocene	360	398	poor

Clarke

G. L. Higgason No. 1 W. J. Lane
Sec. 14-1N-16E
Clarke County
Elevation 354 TD 5626 D&A
Log started @ 259 feet

Sparta	343	356	fair
Sparta	369	375	fair
Winona	597	614	poor
Wilcox	928	953	good
Wilcox	974	982	good
Wilcox	999	1010	good
Wilcox	1270	1275	poor
Wilcox	1860	1892	fair

White No. 1 Matt Eddins
Sec. 10-2N-14E
Clarke County
Elevation 338 TD 5990 D&A
Log started @ 255 feet

Sparta	255	290	poor
Sparta	473	482	poor
Sparta	552	603	good
Wilcox	1088	1101	poor

Harry W. Elliot No. 1 Long Bell
Sec. 24-4N-16E
Clarke County
Elevation 515 TD 4540 D&A
Log started @ 105 feet

Wilcox	180	198	fair
Wilcox	313	315	poor
Wilcox	432	461	fair
Wilcox	1090	1122	good

Clay

Union Producing Co. No. 1 J. N. Henderson
Sec. 22-15S-4E
Clay County
Elevation 437 TD 10557 D&A
Log started @ 64 feet

Eutaw	648	658	poor

Carter Oil Co. No. 1 Mattie B. McFadden
Sec. 36-16S-5E (in a fragmental section 5 miles northwest of West Point)
Clay County
Elevation 205 TD 9580 D&A
Log started @ 174 feet

Eutaw	473	486	poor
Eutaw	495	503	poor
Tuscaloosa	718	798	excellent
Tuscaloosa	812	842	excellent
Tuscaloosa	880	900	good
Tuscaloosa	963	1000	excellent
Tuscaloosa	1055	1068	excellent
Tuscaloosa	1102	1130	excellent
Tuscaloosa	1141	1190	excellent
Tuscaloosa	1200	1229	excellent

Atlantic Refining Co. No. 1 R. G. Dunning
Sec. 12-19N-16E (7 miles southeast of West Point)
Clay County
Elevation 184 TD 9243 D&A
Log started @ 210 feet

Eutaw?	586	621	poor
Tuscaloosa	1030	1039	poor
Tuscaloosa	1395	1412	poor

Copiah

Sinclair—Wyoming No. 1 Johnson
Sec. 1-9N-10E
Copiah County
Elevation 227 TD 10674 D&A
Log started @ 526 feet

Vicksburg	946	977	fair
Vicksburg	991	1010	fair
Sparta	2028	2066	good
Sparta	2143	2170	fair
Sparta	2233	2268	good
Sparta	2391	2572	good

Arkansas Fuel No. 1 Carraway
Sec. 15-1N-3W
Copiah County
Elevation 367 TD 10303 D&A
Log started @ 200 feet

Miocene	301	320	good
Miocene	518	526	fair
Sparta	2246	2280	good
Sparta	2308	2333	good
Sparta	2398	2460	good
Sparta	2533	2608	good
Sparta	2677	2713	good

COVINGTON

Freeport Sulphur Mrs. P. Scarborough
Sec. 17-6N-15W
Covington County
Elevation 276 TD 1910 D&A
Log started @ 221 feet

Miocene	297	322	poor
Miocene	489	500	poor
Miocene	540	610	good
Miocene	675	703	fair
Miocene	770	793	good
Miocene	968	991	fair
Miocene	1028	1050	good

Cities Service No. 1 R. Aultman
Sec. 22-7N-16W
Covington County
Elevation 293 TD 9719 D&A
Log started @ 203 feet

Miocene	203	230	good
Miocene	501	522	fair
Miocene	796	803	poor

DeSoto

Union Producing Co. No. 1 Withers
Sec. 18-2S-9W
DeSoto County

Elevation 220 TD 4884 D&A
Log started @ 27 feet

Sparta?	27	69	poor
Wilcox	1360	1538	fair
Wilcox	1560	1643	fair
Wilcox	1671	1702	good

Forrest

Humble Oil No. 1 R. Batson et al
Sec. 19-1N-12W
Forrest County

Elevation 286 TD 9872 Maxie Field
Log started @ 53 feet

Miocene	53	88	good
Miocene	510	551	poor
Miocene	586	621	poor
Miocene	649	682	fair
Miocene	891	920	fair
Miocene	933	970	fair
Miocene	1086	1152	good
Miocene	1328	1334	poor

H. H. Duck & J. Willis Hughes C. O. Herchenhahn
Sec. 13-5N-12W
Forrest County

Elevation 237 TD 9005 D&A
Log started @ 50 feet

Miocene	50	90	fair

Franklin

Kemp Drilling Co. Well No. 1 H. W. Carter
Irregular Sec. 42-5N-1E (regular Sec. 29)
Franklin County
Elevation 175 TD 7010 D&A
Log started @ 583 feet

Miocene	583	627	poor
Miocene	633	728	excellent
Miocene	772	792	fair
Miocene	1209	1227	good
Miocene	1250	1362	excellent
Miocene	1386	1427	excellent

I. P. LaRue Well No. 1 U.S.A.
Sec. 4-5N-2E
Franklin County
Elevation TD 6976 D&A
Log started @ 283 feet

Miocene	498	543	excellent
Miocene	1013	1108	excellent
Miocene	1117	1214	excellent
Miocene	1516	1532	good
Miocene	1638	1650	good

George

Crow Drilling Co. Well No. 1 A. S. Dantzler
Sec. 11-2S-9W
George County
Elevation 208 TD 8295 D&A
Log started @ 848 feet

Miocene	959	1023	excellent
Miocene	1134	1293	excellent

I. P. Larue—Stanford & Crow Well No. 1 Mrs. Florence Boss et al
Sec. 12-2S-5W
George County
Elevation 103 TD 8503 D&A
Log started @ 844 feet

Miocene	910	1021	excellent
Miocene	1050	1084	good
Miocene	1138	1152	good

The Ohio Oil Co. Well No. 1 L. N. Dantzler
Sec. 20-3S-8W
George County
Elevation (none) TD 5849 D&A
Log started @ 904 feet

Miocene	916	1007	excellent
Miocene	1158	1175	good
Miocene	1386	1476	excellent

GREENE

Gulf Refining Co. No. 1 Greene County School
Sec. 16-3N-7W
Greene County
Elevation 252 TD 2135 D&A
Log started @ 131 feet

Miocene	294	304	fair
Miocene	452	570	good
Miocene	657	690	good
Miocene	731	746	fair

I. P. Larue, Jr. No. 1 U.S.A.
Sec. 8-5N-7W
Greene County
Elevation 266 TD 8514 D&A
Log started @ 601 feet

Miocene	656	701	good

GRENADA

J. R. Lockhart Wildcat
Sec. 25-22N-6E
Grenada County
Elevation 324 TD 3687 D&A
Log started @ 50 feet

Wilcox	460	470	poor

The Pines Petroluem Corp. No. 1 Gwen Salter
Sec. 6-21N-7E
Grenada County
Elevation (none) TD 3780 D&A
Log started @ 143 feet

Wilcox	224	286	poor mineralized
Wilcox	363	370	poor mineralized
Wilcox	486	574	poor mineralized

Hancock

Gulf Refining Co. & Melben Oil Co. Well No. 1 State of Miss. (Offshore) Lat. N 30 degrees, 10 minutes, 58 seconds by Long. W 89 degrees, 20 minutes, 24 seconds (in Sec. 19-9S-14W by land survey)

Hancock County (in Mississippi Sound of St. Joe Point)
Elevation 23 feet derrick floor TD 10573 D&A
Log started @ 167 feet

Miocene	270	369	excellent
Miocene	501	586	excellent
Miocene	702	793	excellent
Miocene	1058	1149	excellent
Miocene	1253	1372	excellent
Miocene	1478	1547	excellent
Miocene	1681	1731	excellent
Miocene	2198	2246	excellent
Miocene	2520	2565	excellent
Miocene	2655	7748	excellent
Miocene	2820	2825	excellent

J. Willis Hughes Well No. 1 R. S. Russ Et Al
Sec. 18-9S-16W
Hancock County
Elevation (none) TD 6070 D&A
Log started @ 467 feet

Miocene	618	700	excellent
Miocene	728	780	excellent
Miocene	785	800	excellent
Miocene	1030	1062	excellent
Miocene	1094	1157	excellent
Miocene	1166	1191	excellent
Miocene	1218	1304	excellent
Miocene	1354	1438	excellent
Miocene	1688	1812	excellent
Miocene	1824	1872	excellent
Miocene	1893	2137	excellent

HARRISON

R. W. Morton, Jr. U. S. A. No. 1
Sec. 26-4S-10W
Harrison Co.
Elevation 148 TS 9778 D&A
Log started @ 1400 feet

Miocene	1432	1566	excellent
Miocene	1770	1848	excellent
Miocene	2038	2142	brackish

Humble Oil & Refining Co. Dantzler Lumber Co. No. 1
Sec. 33-4S-11W
Harrison Co.
Elevation 156 TD 8936 D&A
Log started @ 157 feet

Miocene	190	305	excellent
Miocene	402	433	good
Miocene	1290	1410	good
Miocene	1440	1492	good
Miocene	1513	1588	good

HINDS

Plains Production Co. No. 1 J. S. Taylor
Sec. 14-5N-2W
Hinds County
Elevation 279 TD 7555 D&A
Log started @ 330 feet

Cockfield	867	942	good
Cockfield	993	1087	good
Sparta	1585	1673	good
Sparta	1688	1746	good
Sparta	1811	1873	good

Premier Oil Ref. Co. of Texas No. 1 Landstreet-Liphon
Sec. 5-4N-1E
Hinds County
Elevation 271 TD 5015 D&A
Log started @ 582 feet

Sparta	829	953	good
Sparta	1109	1188	

Hassie Hunt Wildcat
Sec. 12-5N-4W
Hinds County
Elevation 174 TD 4567 D&A
Log started @ 95 feet

Cockfield	892	922	fair
Cockfield	1079	1092	fair
Cockfield	1207	1233	poor
Sparta	1623	1870	good

Holmes

Hawkins & Matthews Well No. 1 W. L. Ellis
Sec. 18-14N-4E
Holmes County
Elevation 382 TD 5007
Log started @ 596 feet

Winona	658	682	good
Wilcox	888	1010	excellent
Wilcox	1223	1236	poor
Wilcox	1251	1264	poor

A. H. Rowan Well No. 1 J. W. Eakin
Sec. 20-14N-1E
Holmes County
Elevation 323 TD 598
Log started @ 638 feet

Wilcox	672	806	excellent
Wilcox	813	889	excellent
Wilcox	918	958	excellent
Wilcox	964	1017	excellent
Wilcox	1256	1292	good
Wilcox	1602	1787	good
Wilcox	2053	2082	fair

HUMPHREYS

Union Producing Co. Well No. 1 C. B. Box
Sec. 15-14N-4W
Humphreys County
Elevation 115 TD 5647
Log started @ 29 feet

Cockfield	34	212	good
Cockfield	252	296	fair
Cockfield	330	356	fair
Sparta	432	557	excellent
Sparta	564	583	excellent
Sparta	675	774	good
Wilcox	1229	1305	good

Slick Oil Company Well No. 1-A. J. V. Hines
Sec. 21-14N-2W
Humphreys County
Elevation 119 TD 7008
Log started @ 35 feet

Cockfield	579	651	good
Sparta	705	799	excellent
Sparta	811	888	excellent
Sparta	939	968	excellent
Sparta	1011	1095	good

ISSAQUENA

Sun Oil Co. Well No. 1 Haynes-Johnson
Sec. 1-9N-8W
Issaquena County
Elevation 102 TD 4502
Log started @ 896 feet

Sparta	1258	1288	fair
Sparta	1320	1385	good
Sparta	1407	1427	good
Sparta	1462	1484	good
Sparta	1540	1670	excellent

Burnes & Miller Well No. 1 Mohanna
Sec. 11-18N-3E
Issaquena County
Elevation 92 TD 7012
Log started @ 60 feet

Cockfield	837	1010	good
Cockfield	1048	1072	fair
Sparta	1399	1438	fair
Sparta	1630	1652	fair
Sparta	1797	1918	good

Itawamba

W. E. Sistrunk No. 1 Gilmore-Puckett Lumber Co.
Sec. 10-11S-8E
Itawamba County
Elevation 350 TD 1852 D&A
Log started @ 440 feet

Mississippian	460	485	possible aquifer, poor
Mississippian	777	781	fair
Mississippian	960	967	fair
Mississippian	1228	1238	fair

Clay Oil and Gas Co. No. 1 Stegall
Sec. 7-10S-9E
Itawamba County
Elevation not reported TD 1430 D&A
Log started @ 305 feet

Mississippian	668	696	fair
Mississippian	787	803	poor
Mississippian	835	848	poor

Jackson

J. R. Brown International Paper Co. No. 1
Sec. 17-5S-7W
Jackson County
Elevation 125 TD 8828 D&A
Log started @ 945 feet

Miocene	1019	1036	excellent
Miocene	1042	1092	excellent
Miocene	1320	1389	excellent
Miocene	1426	1443	good
Miocene	1467	1473	good

Humble Oil & Refining Co. Dantzler Lumber Co. No. B-1
Sec. 20-5S-8W
Jackson County

Elevation 108 TD 11334 D&A
Log started @ 148 feet

Miocene	539	633	excellent
Miocene	696	721	good
Miocene	752	772	poor
Miocene	1387	1599	brackish

Jasper

Tip Ray Et Al Well No. 1 Masonite Corporation
Sec. 8-4N-11E
Jasper County

Elevation 485 TD 8312
Log started @ 530 feet

Sparta	542	628	excellent
Wilcox	960	972	fair
Wilcox	991	1138	excellent
Wilcox	1383	1451	good

Gulf Refining Co. Well No. 1 Helen Morrison
Sec. 30-1N-13E
Jasper County

Elevation 328 TD 6571
Log started @ 32 feet

Sparta	614	663	good
Sparta	695	752	good

Jefferson

R. H. Alagood-Lyle Cashion Co. Well No. 1 James McClure
Irregular Sec. 28-8N-1E (regular Sec. 17)
Jefferson County

Elevation 316 TD 6218 D&A
Log started @ 432 feet

Miocene	590	599	good
Miocene	780	810	good
Miocene	914	966	excellent

The Gulf Refining Co. Well No. 2 Ella Cato
Regular Sec. 30-8N-4E
Jefferson County
Elevation 485 TD 7908 D&A
Log started @ 65 feet

Miocene	83	90	poor
Miocene	563	622	excellent
Miocene	900	925	poor
Miocene	936	952	poor

Jefferson Davis

W. S. Richardson Well No. 1 Maggie Berry
Sec. 15-9N-19W
Jefferson Davis County
Elevation 428 TD ?
Log started @ 728 feet

Miocene	760	805	good
Miocene	883	895	poor
Miocene	928	953	excellent
Cockfield	1475	1512	good
Sparta	1878	1994	good

Sinclair-Wyoming Well No. 2 Newman Lumber Co.
Sec. 31-6N-18W
Jefferson Davis County
Elevation 291 TD 11638
Log started @ 52 feet

Miocene	203	241	good
Miocene	232	352	good
Miocene	373	391	good
Miocene	700	754	good
Miocene	1058	1118	excellent
Miocene	1217	1241	excellent
Miocene	1270	1282	excellent

Jones

Gulf Refining Co. Well No. 1 L. L. Majors
Sec. 29-6N-11W
Jones County
Elevation 260 TD 12924
Log started @ 155 feet

Miocene	281	350	good
Miocene	442	608	good

H. E. Williams Well No. 1 Board of Supervisors
Sec. 16-7N-11W
Jones County
Elevation 283 TD 9314
Log started @ 48 feet

Miocene	403	411	fair
Miocene	637	674	good

Kemper

R. J. Dean Well No. 1 W. A. Land
Sec. 12-10N-14E
Kemper County
Elevation 553 TD 2102 D&A
Log started @ 153 feet

Wilcox	398	463	excellent
Wilcox	488	531	excellent

Lafayette

Adams Oil & Gas Co. No. 1 Lewellen
Sec. 9-10S-1W
Lafayette County
Elevation 436 TD 4006 D&A
Log started @ 295 feet in Porters Creek shale
No water sands

Lamar

Union Producing Co. Well No. 1 Pinelands Minerals Inc.
Sec. 30-3N-16W
Lamar County
Elevation 274 TD 7772 D&A
Log started @ 90 feet

Miocene	185	263	excellent
Miocene	580	620	fair
Miocene	812	862	fair

Honolulu Oil Corp. Well No. 1 Newman Lbr. Co.
Sec. 22-5N-16W
Lamar County
Elevation 373 TD 9339 D&A
Log started @ 80 feet

Miocene	503	537	fair

Lauderdale

Magnolia Petroleum Co. Well No. 1 Culpepper
Sec. 4-8N-14E
Lauderdale County
Elevation 426 TD 6257 D&A
Log started @ 612 feet

Wilcox	623	780	excellent

C. L. Higgason & L. L. Chapman Well No. 1 Malone Thigpen
Sec. 2-6N-16E
Lauderdale County
Elevation 473 TD 5040 D&A
Log started @ 270 feet

Wilcox	410	425	good
Wilcox	587	641	fair
Wilcox	654	673	good
Wilcox	748	806	excellent

American Liberty Oil Co. Well No. 1 Flintkote Corp.
Sec. 12-5N-14E
Lauderdale County
Elevation none TD 5010 D&A
Log started @ 624 feet

Wilcox	798	806	fair
Wilcox	1027	1092	poor, broken
Wilcox	1119	1182	excellent
Wilcox	1256	1313	excellent
Wilcox	1340	1381	excellent

LAWRENCE

Humble Oil Co. Well No. 1 Parkman
Sec. 8-6N-20W
Lawrence County
Elevation 210 TD 6958 D&A
Log started @ 49 feet

Miocene	310	333	excellent
Miocene	348	359	excellent
Miocene	407	421	excellent
Miocene	562	579	fair
Miocene	687	724	poor
Miocene	901	938	excellent

Tidewater Association Well No. 1 Denkmann Lumber Co.
Sec. 5-5N-11E
Lawrence County
Elevation 455 TD 10810 Producer
Log started @ 40 feet

Miocene	85	201	good
Miocene	328	360	excellent
Miocene	662	727	excellent
Miocene	840	877	excellent

LEAKE

Carraway-Travis No. 1 Jim Kelly
Sec. 27-10N-8E
Leake County
Elevation 425 TD 6015 D&A
Log started @ 500 feet

Wilcox	575	666	fair
Wilcox	784	802	good
Wilcox	927	949	good
Wilcox	1018	1030	good
Wilcox	1533	1601	poor

Don Reese No. 1 C. H. Denson
Sec. 29-9N-6E
Leake County

Elevation 403 TD 5476 D&A
Log started @ 332 feet

Sparta	415	458	excellent
Sparta	550	502	excellent
Sparta	639	670	fair
Wilcox	1142	1213	fair
Wilcox	1246	1263	fair
Wilcox	1588	1626	poor
Wilcox	1650	1682	fair

Lee

J. F. Michael No. 1 Temple-Harmon Unit
Sec. 8-11S-7E
Lee County

Elevation 341 TD 1762 D&A
Log started @ 103 feet
No fresh-water sands

K. A. Ellison No. 1 W. H. Neeley
Sec. 28-11S-5E
Lee County

Elevation 315 TD 4257 D&A
Log started @ 298 feet
No fresh-water sands

Leflore

Lynn Oil Co. No. 1 J. I. Lundy
Sec. 9-17N-1E
Leflore County

Elevation 188 TD 5516 D&A
Log started @ 759 feet

Wilcox?	833	861	excellent
Wilcox	912	924	fair
Wilcox	986	1032	excellent
Wilcox	1102	1110	fair
Wilcox	1247	1255	fair

Sneed Brothers No. 1 J. A. Williams
Sec. 17-18N-2W
Leflore County
Elevation 119 TD 5026 D&A
Log started @ 550 feet

Winona?	570	583	poor, mineralized
Wilcox	960	981	excellent
Wilcox	1132	1147	good
Wilcox	1219	1235	good
Wilcox	1267	1386	excellent
Wilcox	1530	1566	fair

Marshall R. Young No. 1 Kennedy
Sec. 23-21N-1E
Leflore County
Elevation 144 TD 3278 D&A
Log started @ 413 feet

Wilcox	492	503	poor
Wilcox	559	568	good
Wilcox	635	651	excellent
Wilcox	673	703	excellent

Lincoln

Texas-Pacific Coal & Oil Co. Well No. 1 W. T. Fauver
Sec. 1-6N-6E
Lincoln County
Elevation 462 TD 10318 D&A
Log started @ 90 feet

Miocene	130	184	excellent
Miocene	262	383	excellent
Miocene	988	1129	excellent
Miocene	1313	1388	fair

Sun Oil Co. Well No. 1 Loflin-Smith
Sec. 19-7N-7E Brookhaven Field
Lincoln County
Elevation 513 TD 10513
Log started @ 1054 feet

Miocene	1080	1100	excellent
Miocene	1272	1327	excellent
Miocene	1486	1500	poor

Hunt Oil Co. Well No. 3 J. L. Sutton
Sec. 12-6N-7E Mallalieu Field
Lincoln County

Elevation 398 TD 10495
Log started @ 1090 feet

Miocene	1110	1122	poor
Miocene	1230	1262	excellent
Miocene	1276	1294	excellent
Miocene	1522	1647	excellent

Madison

F. H. Shortridge Well No. 1 E. Southerland
Sec. 1-11N-3E
Madison County

Elevation 270 TD 5047 D&A
Log started @ 270 feet

Sparta	220	242	excellent
Sparta	359	547	excellent
Sparta	618	707	excellent
Wilcox	1208	1370	excellent
Wilcox	1585	1761	excellent

Love Petroleum Well No. 1 Rowland
Sec. 36-9N-1W
Madison County

Elevation 261 TD 4378 D&A
Log started @ 192 feet

Cockfield	352	438	excellent
Sparta	872	947	excellent
Sparta	1010	1057	fair
Sparta	1057	1083	excellent
Sparta	1302	1318	fair

Marion

Texas Co. Well No. 1 Ladner
Sec. 12-1N-17E
Marion County
Elevation 198 TD 2188 Producer in Baxterville Field
Log started @ 87 feet

Miocene	87	120	excellent
Miocene	158	208	excellent
Miocene	290	322	excellent
Miocene	632	642	brackish water?
Miocene	660	689	brackish water?
Miocene	710	730	brackish water?
Miocene	837	1026	brackish water?

Deep Rock Oil Corporation Well No. 1 John Well
Sec. 14-3N-13E
Marion County
Elevation 148 TD 10375 D&A
Log started @ 120 feet

Miocene	238	260	good
Miocene	268	308	excellent
Miocene	437	500	fair
Miocene	527	573	excellent
Miocene	880	931	fair
Miocene	979	1042	excellent
Miocene	1168	1221	fair

Monroe

W. C. Feasel et al No. 1 Mrs. L. W. Rea
Sec. 12-15S-18W
Monroe County
Elevation 385 TD 4396 D&A
Log started @ 88 feet in Tuscaloosa

Tuscaloosa	88	145	good
Tuscaloosa	318	405	excellent
Tuscaloosa	431	472	excellent
Tuscaloosa	685	827	excellent

Union Producing Co. No. 1 Lenoir
Sec. 29-15S-6E
Monroe County
Elevation 250 TD 5826 Muldon Field
Log started @ 55 feet

Eutaw	324	342	poor
Eutaw	407	442	poor
Tuscaloosa	631	670	fair
Tuscaloosa	690	708	good
Tuscaloosa	765	814	good
Tuscaloosa	834	860	good
Tuscaloosa	891	959	good
Tuscaloosa	1026	1042	poor

Montgomery

John W. Black Well No. 1 J. D. Patterson
Sec. 25-19N-6E
Montgomery County
Elevation 365 TD 4012 D&A
Log started @ 200 feet
No water sands in Wilcox
No sands in 700 feet of Porters Creek
Topped at 935 feet

Henderson Oil Co. Well No. 1 Columbian Mutual Life Ins. Co.
Sec. 36-21N-5E
Montgomery County
Elevation 265 TD 3479 D&A
Log started @ 230 feet
No water sands in Wilcox
No sands in 700 feet of Porters Creek
Topped at 900 feet

Neshoba

H. H. Hamilton Well No. 1 Kirkland (Ritchie)
Sec. 3-12N-12E
Neshoba County
Elevation 480 TD 4008 D&A
Log started @ 480 feet

Wilcox	481	550	excellent

Next interval (Porters Creek) 637 to 1244 contains no sands.

NEWTON

Magnolia Petroleum Co. Well No. 1 Miss. State "A"
Sec. 16-5N-10E
Newton County
Elevation 470 TD 6447 D&A
Log started @ 667 feet

Sparta	756	765	poor
Wilcox	1034	1108	excellent
Wilcox	1122	1146	poor
Wilcox	1290	1295	poor

Kingwood Oil Co. Well No. 1 Stateland B. B. Jones
Sec. 27-8N-10E
Newton County
Elevation 531 TD 4781 D&A
Log started @ 325 feet

Wilcox	468	572	excellent
Wilcox	639	654	fair
Wilcox	904	926	excellent
Wilcox	993	1005	poor
Wilcox	1358	1370	good
Wilcox	1490	1533	excellent
Wilcox	1586	1710	excellent

Sun Oil Co. Well No. 1 Hilda Wall
Sec. 28-5N-13E
Newton County
Elevation 406 TD 1993 D&A
Log started @ 108 feet
Winona or

Sparta	108	152	excellent
Wilcox	556	567	highly mineralized
Wilcox	846	860	highly mineralized
Wilcox	1590	1657	excellent

NOXUBEE

Price & Voss No. 1 A. J. Hadaway
Sec. 18-15N-19E
Noxubee County

Elevation 196 TD 2317 D&A
Log started @ 160 feet in Selma chalk

Eutaw	848	882	good
Eutaw	889	932	good

Harvey Schmidt No. 1 Pete Flora
Sec. 12-13N-16E
Noxubee County

Elevation not reported TD D&A
Log started @ 152 feet
No aquifers

OKTIBBEHA

John Allen No. 1 W. C. Howell
Sec. 2-19N-13E
Oktibbeha County

Elevation 268 TD 4975 D&A
Log started @ 271 feet
No fresh-water sands

PEARL RIVER

Sinclair Wyoming Oil Co. Well No. 1 R. Batson
Sec. 20-1S-15W
Pearl River County

Elevation 282 TD 9580 D&A
Log started @ 311 feet

Miocene	340	418	excellent
Miocene	517	567	excellent
Miocene	903	914	poor
Miocene	996	1068	excellent
Miocene	1261	1432	excellent
Miocene	1480	1517	good

Roeser & Pendleton Well No. 1 R. J. Williams
Sec. 34-5S-17W
Pearl River County
Elevation 66 TD 9814 D&A
Log started @ 1062 feet

Miocene	1136	1300	excellent
Miocene	1928	2350	excellent
Miocene	2383	2488	excellent
Miocene	2546	2578	fair

Perry

Fohs Oil Co. Well No. 1 Bond Lumber Co.
Sec. 17-1S-11W
Perry County
Elevation 229 TD 7586 D&A
Log started @ 238 feet

Miocene	672	698	fair
Miocene	734	789	good
Miocene	803	864	good
Miocene	876	945	good

Union Producing Co. B. M. Stevens
Sec. 19-4N-9W
Perry County
Elevation 216 TD 7886 Glazier Salt Field
Log started @ 97 feet

Miocene	480	518	fair
Miocene	648	763	fair

Pike

Humble Oil & Refining Co. Fortenberry No. 1
Sec. 27-2N-9E
Pike County
Elevation 345 TD 12002 D&A
Log started @ 976

Miocene	220	463	excellent
Miocene	519	619	excellent

Sells Petroleum Co. J. Williams No. 1
Sec. 4-4N-7E
Pike County
Elevation 468 TD 11172 D&A
Log started @ 1376 feet

Miocene	1419	1542	excellent
Miocene	1690	1731	excellent
Miocene	1887	1928	fair

Pontotoc

S. A. Guiberson, Jr. No. 1 L. J. Lyon
Sec. 3-10S-3E
Pontotoc County
Elevation 500 TD 2233 D&A
Log started @ 78 feet in Ripley
All sands of low porosity permeability unless

Tuscaloosa	1230	1242	poor

O. W. Killam No. 1 T. R. Hall
Sec. 7-10S-4E
Pontotoc County
Elevation 481 TD 2385 D&A
No aquifers

Rankin

Lion Oil Co. & Refining Co. Well No. 1 Morrow
Sec. 19-3N-5E
Rankin County
Elevation 477 TD 8903 D&A
Log started @ 317 feet

Cockfield	863	1052	good
Sparta	1310	1341	good
Sparta	1414	1518	good
Sparta	1582	1623	excellent
Sparta	1651	1718	excellent

R. B. Lack & Nelson Exploration Co. Well No. 1 L. E. Ridgeway
Sec. 35-3N-2E
Rankin County
Elevation 446 TD 9188 D&A
Log started @ 755 feet

Cockfield	1188	1220	fair
Cockfield	1288	1315	good
Sparta	1662	1800	excellent
Sparta	1900	1940	poor

Phillips Petroleum Co. Well No. 1 Denkmann
Sec. 13-7N-4E
Rankin County
Elevation 388 TD 12005 D&A
Log started @ 35 feet

Cockfield	460	520	poor
Sparta	835	850	poor
Sparta	922	985	good
Wilcox	1568	1661	fair

SCOTT

Carter Et Al Well No. 1 Newell Mineral Lse.
Sec. 32-5N-7E
Scott County
Elevation 415 TD 7316 D&A
Log started @ 54 feet

Cockfield	410	430	poor
Sparta	964	1034	poor
Sparta	1040	1095	poor
Wilcox	1613	1645	poor
Wilcox	1717	1770	poor

E. L. Martin Well No. 1 Newell Mineral Lease
Sec. 5-6N-7E
Scott County
Elevation 443 TD 7928 D&A
Log started @ 800 feet

Wilcox	1130	1200	poor
Wilcox	1257	1308	poor

Sharkey

Hunt Oil Co. Well No. 1 A. P. Cameron
Sec. 6-13N-6W
Sharkey County
Elevation 116 TD 4200 D&A
Log started @ 615 feet

Cockfield	685	695	fair
Sparta	848	938	poor
Sparta	1011	1044	good
Sparta	1068	1128	good
Wilcox	1604	1692	fair
Wilcox	1702	1758	fair

Ralph E. Fair Inc. Well No. 1 Houston Estate
Sec. 12-10N-7W
Sharkey County
Elevation 97 TD 4060 D&A
Log started @ 852 feet

Sparta	983	1107	excellent

Charles W. Crader Well No. 1 D. D. Wells
Sec. 27-12N-7W
Sharkey County
Elevation 100 TD 4014 D&A
Log started @ 874 feet

Sparta	1047	1215	excellent

Simpson

Gulf Refining Co. Well No. 3 Wilbe Lumber Co.
Sec. 5-2N-4E
Simpson County
Elevation 443 TD 10407 D&A
Log started @ 639 feet

Cockfield	1216	1230	excellent
Cockfield	1239	1254	good
Sparta	1520	1533	good
Sparta	1637	1653	excellent
Sparta	1850	1860	fair
Sparta	1873	1880	fair
Sparta	1960	2009	excellent

Carter Oil Co. Well No. 1 K. W. Allison
Sec. 17-1N-4E
Simpson County
Elevation 288 TD 5927 D&A
Log started @ 598 feet

Forest Hill?	607	638	excellent if a sand
Cockfield	1048	1073	good
Cockfield	1158	1174	fair
Cockfield	1277	1290	fair
Sparta	1742	1770	good
Sparta	1880	1907	good
Sparta	1960	1978	fair

SMITH

Gulf Refining Co. Well No. 1 A. P. Foley
Sec. 8-10N-13W
Smith County
Elevation 411 TD 2269
Log started @ 95 feet

Miocene	122	147	excellent
Miocene	194	211	excellent
Miocene	240	306	excellent

Haynes & Ownby Drilling Co. Well No. 1 Smith Co. School Land
Sec. 16-2N-9E
Smith County
Elevation 381 TD 6512
Log started @ 538

Cockfield	566	633	excellent
Sparta	811	856	excellent
Sparta	1028	1084	excellent
Sparta	1108	1142	excellent
Wilcox	1607	1633	poor
Wilcox	1729	1783	good
Wilcox	1876	1937	good

STONE

Harry I. Morgan Well No. 1 University of Miss.
Sec. 35-3S-10W
Stone County
Elevation 181 TD 8324 D&A
Log started @ 135 feet

Miocene	291	323	excellent
Miocene	436	450	fair
Miocene	656	802	excellent
Miocene	862	888	good
Miocene	942	972	good
Miocene	1004	1198	good but broken

Danciger Oil & Refining Well No. 1 Stone County
Sec. 16-2S-11W
Stone County
Elevation 124 TD 8324 D&A
Log started @ 124 feet

Miocene	505	526	fair
Miocene	572	650	excellent
Miocene	731	808	excellent
Miocene	1057	1192	excellent
Miocene	1241	1361	excellent

Richard W. Norton, Jr. Well No. 5 L. W. Dantzler Lbr. Co.
Sec. 2-4S-11W
Stone County
Elevation 188 TD 11502 D&A
Log started @ 60 feet

Miocene	108	198	poor looks like fluoride water
Miocene	318	436	poor looks like fluoride water
Miocene	650	768	poor looks like fluoride water
Miocene	980	1200	poor looks like fluoride water
Miocene	1290	1391	poor looks like fluoride water
Miocene	1730	1810	fair looks like fresh water

Sunflower

Marshall R. Young No. 1 McClain
Sec. 9-20N-3W
Sunflower County
Elevation 130 TD 4500 D&A
Log started @ 427 feet

Sparta	465	590	excellent
Winona?	620	666	excellent
Wilcox	742	833	excellent
Wilcox	912	928	fair
Wilcox	947	955	fair
Wilcox	972	986	fair
Wilcox	1040	1058	fair
Wilcox	1136	1148	fair
Wilcox	1279	1292	fair
Wilcox	1317	1352	excellent
Wilcox	1368	1397	excellent
Wilcox	1492	1532	excellent

Tallahatchie

Marshall R. Young Well No. 1 Ogilvie
Sec. 32-24N-2E
Tallahatchie County
Elevation 160 TD 3976 D&A
Log started @ 196 feet

Wilcox	438	450	fair
Wilcox	527	553	fair

Gulf Refining Co. Well No. 1 T. P. Cason
Sec. 2-21N-1W
Tallahatchie County
Elevation 173 TD 1215 D&A
Log started @ 155 feet

Sparta?	185	244	excellent
Sparta?	244	278	fair
Sparta?	458	468	fair
Sparta?	572	589	good
Wilcox	771	901	excellent

Union

Harry L. Cullet No. 1 L. Ross Nabors
Sec. 36-7S-3E
Union County
Elevation 425 (estimated) TD 1614 D&A
Log started @ 84 feet

Devonian	1609	1614 TD	possible porous limestone

Walthall

Gulf Refining Co. Well No. 1 Ferwood Lumber Co.
Sec. 23-4N-10E
Walthall County
Elevation 462 TD 11510 D&A
Log started @ 40 feet

Miocene	40	113	excellent
Miocene	152	251	excellent
Miocene	319	341	good
Miocene	562	581	fair
Miocene	1021	1164	poor may be brackish water

Sells Petroleum T. L. Wood No. 1
Sec. 17-1N-11E
Walthall County
Elevation 371 TD 10652 D&A
Log started @ 1392 feet

Miocene	1599	1841	excellent
Miocene	2078	2142	good
Miocene	2178	2193	good
Miocene	2250	2230	good
Miocene	2353	2380	fair
Miocene	2494	2559	good

Warren

Magnolia Petroleum Co. Well No. 1 J. H. Hall
Irregular Sec. 39-17N-4E (regular Sec. 33)
Warren County
Elevation 139 TD 2233 D&A
Log started @ 250 feet

Forest Hill?	286	316	fair
Cockfield	842	987	fair
Sparta	1080	1157	poor looks like brackish water

Magnolia Petroleum Co. Well No. 1 H. D. Ragsdale
Irregular Sec. 24-16N-4E (regular Sec. 22)
Warren County

Elevation 274 TD 3918 D&A
Log started @ 499 feet

Cockfield			all sands look brackish
Sparta	1886	2003	fair

National Asso. Petroleum Co. Well No. 1 Jeff Davis Heirs
Irregular Sec. 23-14N-1E (regular Sec. 33)
Warren County

Elevation 92 TD 4435 D&A
Log started @ 255 feet

Miocene	269	281	poor
Cockfield			all sands look brackish

Washington

Warren Petroleum Co. Well No. 1 Leroy Percy State Park
Sec. 8-15N-7W
Washington County

Elevation 112 TD 5504 D&A
Log started @ 787 feet

Sparta	848	858	poor
Sparta	883	902	poor
Sparta	1038	1558	poor
Sparta	1119	1235	poor
Wilcox	1690	1847	good

Roeser & Pendleton Inc. Conn. General Life Ins. Co. No. 1
Sec. 20-19N-8W
Washington County

Elevation 144 TD 6097 D&A
Log started @ 613 feet

Cockfield?	809	849	excellent
Sparta?	962	1168	excellent
Sparta	1224	1250	good
Sparta	1288	1334	fair

Grubb & Hawkins Well No. 1 S. M. Neil
Sec. 26-18N-6W
Washington County
Elevation 122 TD 6429 D&A
Log started @ 773 feet

Sparta	882	1003	excellent
Sparta	1071	1102	fair
Sparta	1119	1198	excellent
Wilcox	1861	1890	good unless brackish
Wilcox	1903	2088	good unless brackish

WAYNE

Southport Petroleum Co. Well No. 1 Evans
Sec. 3-8N-6W
Wayne County
TD 902 D&A
Log started @ 80 feet

Miocene	99	118	poor
Vicksburg	168	189	good if sand

Southeastern Drilling Co. Well No. 1 School land
Sec. 16-7N-5W
Wayne County
Elevation 221 TD 7337
Log started @ 395 feet

Miocene	402	424	good
Miocene	553	589	excellent

Humble Oil Co. Well No. 1 Robinson Land Co.
Sec. 2-6N-7W
Wayne County
Elevation 225 TD 8570 D&A
Log started @ 40 feet

Miocene	113	145	fair
Miocene	137	291	fair

Wilkinson

Justice Mears (Serio) Well No. 1 Best
Irregular Sec. 27-2N-4W (regular Sec. 20)
Wilkinson County
Elevation 55 TD 8515 D&A
Log started @ 862 feet

Miocene	863	913	excellent
Miocene	932	1061	excellent
Miocene	1141	1221	excellent

U. S. Geological Survey Centerville Triangular Division Camp Test well No. 3
Irregular Sec. 3-1N-1W (regular Sec. 1)
Wilkinson County
Elevation 356 TD 1670 D&A
Log started @ 20 feet

Miocene	43	70	excellent
Miocene	1148	1251	excellent
Miocene	1442	1597	good
Miocene	1603	1657	good

Winston

A. P. Flannes-J. C. Stienmitz No. 1 D. L. Fair Lumber Co.
Sec. 27-14N-14E
Winston County
Elevation (not reported) TD 4570 D&A
Log started @ 322 feet in Porters Creek shale
No aquifers

Yalobusha

J. S. Henderson No. 1 Stone
Sec. 21-24N-6E
Yalobusha County
Elevation not reported TD 3212 D&A
Log started @ 199 feet

Wilcox	209	360	poor, low porosity
Wilcox	568	610	poor, low porosity

Stewart Oil Company No. 1 Creekmore
Sec. 21-24N-7E
Yalobusha County
Elevation 255 TD 3188 D&A

All sands appear brackish or highly mineralized

YAZOO

Don Reese Well Fouche No. 1
Sec. 22-12N-1W
Yazoo County
Elevation 262 TD 6502 D&A
Log started @ 504 feet

Cockfield	563	580	poor
Sparta	787	816	poor
Sparta	940	986	excellent
Sparta	1028	1050	excellent
Sparta	1118	1200	good
Wilcox	1803	2050	good if not brackish

Hunter Jones Well W. M. Link No. 1
Sec. 36-9N-3W
Yazoo County
Elevation 172 TD 6029 D&A
Log started @ 289 feet

Cockfield	760	922	excellent
Sparta	1303	1357	excellent
Sparta	1390	1519	excellent
Sparta	1548	1667	excellent
Sparta	1740	1811	excellent

Carter Oil Co. Well J. L. Wilson No. 1
Sec. 30-12N-3E
Yazoo County
Elevation 240 TD 12,245 D&A
Log started @ 50 feet

Sparta	400	423	poor looks brackish
Sparta	453	480	poor looks brackish
Sparta	550	590	poor looks brackish
Sparta	659	738	good
Sparta	738	760	good