WATER-LEVEL MEASUREMENTS AND THE LOCATION AND DEPTH OF SAND AND CLAY INTERVALS FOR SELECTED WELLS IN JACKSON COUNTY, MISSISSIPPI, OCTOBER 1996-JULY 1997

By Eric W. Strom and William T. Oakley

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Denver, CO 80225-0286

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CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
foot	0.3048	meter
mile	1.609	kilometer

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929–a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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ABSTRACT

The U.S. Geological Survey (USGS) collects, on a systematic basis, data needed to determine and evaluate the ground-water resources in Jackson County, Mississippi. The USGS measures water levels over time in the aquifers underlying Jackson County to assess water-level trends. In addition, the USGS continues to collect data that can be used to map the extent and thickness of the aquifers. This report presents water-level measurements collected from selected wells from October 1996 to July 1997 with associated historical water-level data. In addition, the location and depth of water-bearing sands and intervening clays underlying Jackson County determined from selected well logs are presented.

INTRODUCTION

The U.S. Geological Survey (USGS) collects, on a systematic basis, data needed to determine and evaluate the ground-water resources in Jackson County, Mississippi (fig. 1). Continued growth in the area depends on the availability of an adequate supply of water. The USGS measures water levels over time in the aquifers underlying Jackson County to assess water-level trends. In addition, the USGS continues to collect data that can be used to map the extent and thickness of the aquifers. Water-level measurements, in conjunction with accurate aquifer maps, provide some of the basic data necessary to evaluate ground-water supplies. In 1994, the USGS, in cooperation with the Jackson County Board of Supervisors, began an investigation to compile information on the location and depth of water-bearing sands and intervening clays underlying Jackson County. The data were entered into a geographical information system (GIS) data base and presented in a report by Strom and Oakley (1996). This information is beneficial to city planners, engineers, water managers, water-well contractors, real estate developers, industries, and consultants, as well as to scientists investigating the nature and distribution of the sediments. Continued drilling and completion of water wells in

Jackson County provides additional data concerning the location and depth of water-bearing sands.

The purpose of this report is to present water-levels measured in selected wells from October 1996 to July 1997 with associated historical water-level data. In addition, the location and depth of water-bearing sands and intervening clays which underlie Jackson County were determined from selected well logs and are presented.

METHODS

Water-level measurements were generally made with a graduated steel tape. Measurements were made in October 1996 and April 1997 in both observation and pumped wells. In pumped wells, the water-level measurements were made after the well pump had been turned off and, generally, water levels were allowed a sufficient recovery time. However, short-term fluctuations in water levels can be seen on some hydrographs as dips, probably caused by insufficient recovery time of a pumped well, or caused by drawdown from nearby pumping wells. These dips do not represent the static water level and should generally not be used when evaluating the overall water-level trend.

Geophysical and drillers' logs were used to determine the location and depth of sand and clay intervals. The 89 logs selected were checked for adequate information, plotted on 7.5-minute topographic maps, and checked for correct landnet location. Most of the subsurface materials reported on the drillers' logs were either sand or clay. For this report, sand is used to indicate aquifer type material (fine to coarse sand and gravel); clay is used to indicate confining material (clay and silt). Examples of clay and sand intervals interpreted from a geophysical log and from a driller's log are shown in figure 2. Sand intervals greater than about 20 feet in thickness and less than 2,000 feet below land surface were compiled for this report. Data determined from the logs were entered into a GIS data base which contains a total of 1,692 well logs that may be used as an aid in mapping the extent and thickness of the aquifers in Jackson County.

RESULTS

Water levels measured in selected wells were plotted with historical water-level measurements to construct well hydrographs (figs. 3-14). Measurements separated by a time period of greater than 2 years are shown either as points or gaps on the hydrographs. About half of the hydrographs (figs. 6-11) show initially declining water levels that reached a minimum level generally between the years 1975 and 1980 and then began to generally increase. Two of the hydrographs (figs. 3-4) show an overall trend of water-level decline. Two of the hydrographs (figs. 12 and 14) with relatively short periods of record generally show an overall trend of water-level increase. For two of the hydrographs (figs. 5 and 13) decreasing or increasing water-level trends are not apparent.

The sand thicknesses compiled for selected well logs generally showed two or three sand intervals, but as many as six sand intervals were reported. The sand intervals compiled in this report averaged about 45 feet in thickness, with a maximum reported sand thickness of 175 feet. Well depths averaged about 340 feet below land surface. The sand intervals from drillers' logs cannot be verified; therefore accuracy is variable. Sand intervals from geophysical logs were determined during this investigation. Graphical representations of each of the 89 well logs are presented by well identifier in alphanumerical order (fig. 15). Additional information for each well log is listed in table 1. Locations for all of the wells discussed in this report are shown on figures 16-19.

SELECTED REFERENCES

Slack, L.J., Oakley, W.T., and Cooper, L.M., 1993, Quality of ground water in Jackson County, Mississippi, March - June 1993: U.S. Geological Survey Open-File Report 93-479, 38 p.

Strom, E.W. and Oakley, W.T., 1996, Location and depth of sand and clay intervals in Jackson County, Mississippi: U.S. Geological Survey Water-Resources Investigations Report 96-4051, 120 p.

Table 1. Data for selected wells, Jackson County, Mississippi

Well log	Latitude	Longitude	7.5 minute quadrangle sheet	Landnet location	Listed owner
A056	304312	884709	Vestry	T. 04 S., R. 08 W., sec. 04	Peggy Stienski
B032	303902	884014	Easen Hill	T. 04 S., R. 07 W., sec. 34	Merlin Wagner
D093	303917	882856	Hurley	T. 04 S., R. 05 W., sec. 33	Joe Lavander
D095	303917	882930	Hurley	T. 04 S., R. 05 W., sec. 33	Hurley Fire Dept
E070	303835	884858	Vestry	T. 05 S., R. 08 W., sec. 05	Greg Barnett
E071	303554	884432	Vancleave	T. 05 S., R. 08 W., sec. 24	Steve Lyon
F128	303659	884240	Vancleave	T. 05 S., R. 07 W., sec. 17	Mike Simone
F129	303402	883806	Vancleave	T. 05 S., R. 07 W., sec. 41	Ellis Roberts
F130	303432	884205	Vancleave	T. 05 S., R. 07 W., sec. 29	Glen Reed Realty
F131	303540	884126	Vancleave	T. 05 S., R. 07 W., sec. 21	Tommy Martin
F132	303418	884125	Vancleave	T. 05 S., R. 07 W., sec. 33	Thad Whittle
F133	303453	884332	Vancleave	T. 05 S., R. 07 W., sec. 30	Russell Lane
F134	303421	884214	Vancleave	T. 05 S., R. 07 W., sec. 32	Darren Webb
G129	303400	883748	Vancleave	T. 05 S., R. 06 W., sec. 38	Ward Bayou
G130	303719	883318	Three Rivers	T. 05 S., R. 06 W., sec. 11	Greg Cumbest
G131	303538	883343	Three Rivers	T. 05 S., R. 06 W., sec. 23	A E Scarbrough
G132	303722	883440	Three Rivers	T. 05 S., R. 06 W., sec. 11	George Scarbrough
G133	303610	883354	Three Rivers	T. 05 S., R. 06 W., sec. 22	Cumbest Mfg
G134	303546	883400	Three Rivers	T. 05 S., R. 06 W., sec. 22	Donna Davis
H065	303505	882759	Big Point	T. 05 S., R. 05 W., sec. 27	Kerry Ray
H066	303739	882643	Hurley	T. 05 S., R. 05 W., sec. 12	Sam Koster
H067	303550	882733	Big Point	T. 05 S., R. 05 W., sec. 23	Gary Percival
H068	303751	882456	Hurley	T. 05 S., R. 04 W., sec. 07	Steve Strickler
J241	302956	885012	Ocean Springs	T. 06 S., R. 09 W., sec. 25	Jordan Rd Subdv
J243	303239	885156	Latimer	T. 06 S., R. 09 W., sec. 11	John Chase
J244	303246	884602	Latimer	T. 06 S., R. 08 W., sec. 03	Alex Fairley
J245	303208	885204	Latimer	T. 06 S., R. 09 W., sec. 10	Henry Cook
J246	304654	884719	Latimer	T. 06 S., R. 08 W., sec. 09	Robert Lucas
J247	303240	884730	Latimer	T. 06 S., R. 08 W., sec. 09	Kenneth Worley
J249	303213	885227	Latimer	T. 06 S., R. 09 W., sec. 10	Mary Ann Seymour
J250	303242	884438	Vancleave	T. 06 S., R. 08 W., sec. 12	Brenda Mallete
J251	303241	884704	Latimer	T. 06 S., R. 08 W., sec. 09	Robert Lucas
K288	303106	884121	Vancleave	T. 06 S., R. 07 W., sec. 16	L B Tootle
K289	303054	884301	Vancleave	T. 06 N., R. 07 W., sec. 19	Jack Braudis
K290	303057	884114	Vancleave	T. 06 S., R. 07 W., sec. 21	Kevin Brown
K291	303016	884332	Vancleave	T. 06 S., R. 07 W., sec. 19	P & P Construction
K292	303226	883849	Vancleave	T. 06 S., R. 07 W., sec. 12	Ethel Mizell
K293	303332	884124	Vancleave	T. 06 S., R. 07 W., sec. 04	Shirley Bang
K294	303123	884026	Vancleave	T. 06 S., R. 07 W., sec. 15	Shirley Bang
K295	303045	884102	Vancleave	T. 06 S., R. 07 W., sec. 21	Glen Davis

Table 1. Data for selected wells, Jackson County, Mississippi

Well log	Latitude	Longitude	7.5 minute quadrangle sheet	Landnet location	Listed owner
K296	303324	883830	Vancleave	T. 06 S., R. 07 W., sec. 01	Guy Mcmillian
K297	303216	884316	Vancleave	T. 06 S., R. 07 W., sec. 07	Jehovah Witness Ch
K298	303108	884126	Vancleave	T. 06 S., R. 07 W., sec. 16	Pete Delancy
K299	303138	883906	Vancleave	T. 06 S., R. 07 W., sec. 14	Jimmy Goff
K301	303008	884214	Vancleave	T. 06 S., R. 07 W., sec. 20	Hancock Bank
K302	303005	883821	Vancleave	T. 06 S., R. 07 W., sec. 25	Sammy Havens
L152	303135	883201	Three Rivers	T. 06 S., R. 06 W., sec. 13	Mike Bullock
L153	303208	883248	Three Rivers	T. 06 S., R. 06 W., sec. 12	Kevin Hudson
M350	303058	882716	Big Point	T. 06 S., R. 05 W., sec. 14	Lilly Orchard Church
M351	303153	883030	Three Rivers	T. 06 S., R. 05 W., sec. 08	Bobby Furby
M352	303102	883005	Three Rivers	T. 06 S., R. 05 W., sec. 17	Rodney Broussard
M353	302943	883002	Pascagoula N	T. 06 S., R. 05 W., sec. 29	Judy Brushaber
M354	303127	882814	Big Point	T. 06 S., R. 05 W., sec. 15	Robbie Gibson
M355	302856	882929	Kreole	T. 06 S., R. 05 W., sec. 33	Willie Woulard
M356	302832	882439	Kreole	T. 06 S., R. 04 W., sec. 32	Rodney Stokes
M357	302937	882734	Kreole	T. 06 S., R. 05 W., sec. 26	John Webb
M361	302825	882446	Kreole	T. 06 S., R. 04 W., sec. 31	New Vision Church
M362	303214	882411	Big Point	T. 06 S., R. 04 W., sec. 08	Mike Smith
N710	302723	885031	Ocean Springs	T. 07 S., R. 09 W., sec. 12	Super 8 Motel
N702	302522	884518	Ocean Springs	T. 07 S., R. 08 W., sec. 23	Arnold Parker
N703	302638	885001	Ocean Springs	T. 07 S., R. 09 W., sec. 12	James E Lee
N704	302539	884447	Gautier North	T. 07 S., R. 08 W., sec. 24	Margaret St John
N705	302723	885252	Biloxi	T. 07 S., R. 09 W., sec. 10	D Iberville
N706	302731	885038	Ocean Springs	T. 07 S., R. 09 W., sec. 01	Waring Oil
N708	302537	884526	Ocean Springs	T. 07 S., R. 08 W., sec. 23	Buck Oneal
N709	302759	885023	Ocean Springs	T. 07 S., R. 09 W., sec. 01	Curtis Lloyd
N710	302343	884532	Ocean Springs	T. 07 S., R. 08 W., sec. 35	Gulf Park Est
O398	302252	884144	Gautier North	T. 08 S., R. 07 W., sec. 04	Bubba Jones
O399	303928	884213	Gautier North	T. 07 S., R. 07 W., sec. 29	Mike Fremin
O400	302732	884314	Gautier North	T. 07 S., R. 07 W., sec. 06	James Fleming
O401	302629	884232	Gautier North	T. 07 S., R. 07 W., sec. 17	Rex Musgrove
O402	302759	883833	Gautier North	T. 07 S., R. 07 W., sec. 01	R Knickerbacher
O403	302602	884258	Gautier North	T. 07 S., R. 07 W., sec. 18	Little Short Stop
O404	302319	884114	Gautier North	T. 07 S., R. 07 W., sec. 38	Norman Allen
O407	302558	884247	Gautier South	T. 07 S., R. 07 W., sec. 17	Anthony Ladnier
O408	302421	884341	Gautier North	T. 07 S., R. 07 W., sec. 30	Charles Perry
O409	302247	884339	Gautier South	T. 08 S., R. 07 W., sec. 05	Graveline Pt Subdv
P452	302452	883325	Pascagoula N	T. 07 S., R. 06 W., sec. 10	Leonard Hill
P453	302421	883320	Pascagoula N	T. 07 S., R. 06 W., sec. 15	R W Jennings
P454	302517	883330	Pascagoula N	T. 07 S., R. 06 W., sec. 10	Sidney Moss

Table 1. Data for selected wells, Jackson County, Mississippi

Well log	Latitude	Longitude	7.5 minute quadrangle sheet	Landnet location	Listed owner
P455	302421	883212	Pascagoula N	T. 07 S., R. 06 W., sec. 16	Moss Point
Q530	302338	882945	Kreole	T. 07 S., R. 05 W., sec. 33	Johnny Whitehead
Q531	302357	883015	Pascagoula N	T. 07 S., R. 05 W., sec. 29	Moss Point
Q532	302530	882728	Kreole	T. 07 S., R. 05 W., sec. 23	Robert Mccormick
Q533	302454	882735	Kreole	T. 07 S., R. 05 W., sec. 23	Ft Lake Fire Dept
Q534	302809	882851	Kreole	T. 07 S., R. 05 W., sec. 04	Ronald Blackson
Q535	302134	882942	Grand Bay SW	T. 08 S., R. 05 W., sec. 09	Bechtel Corp
Q536	302243	882616	Kreole	T. 07 S., R. 05 W., sec. 01	Henry Maki

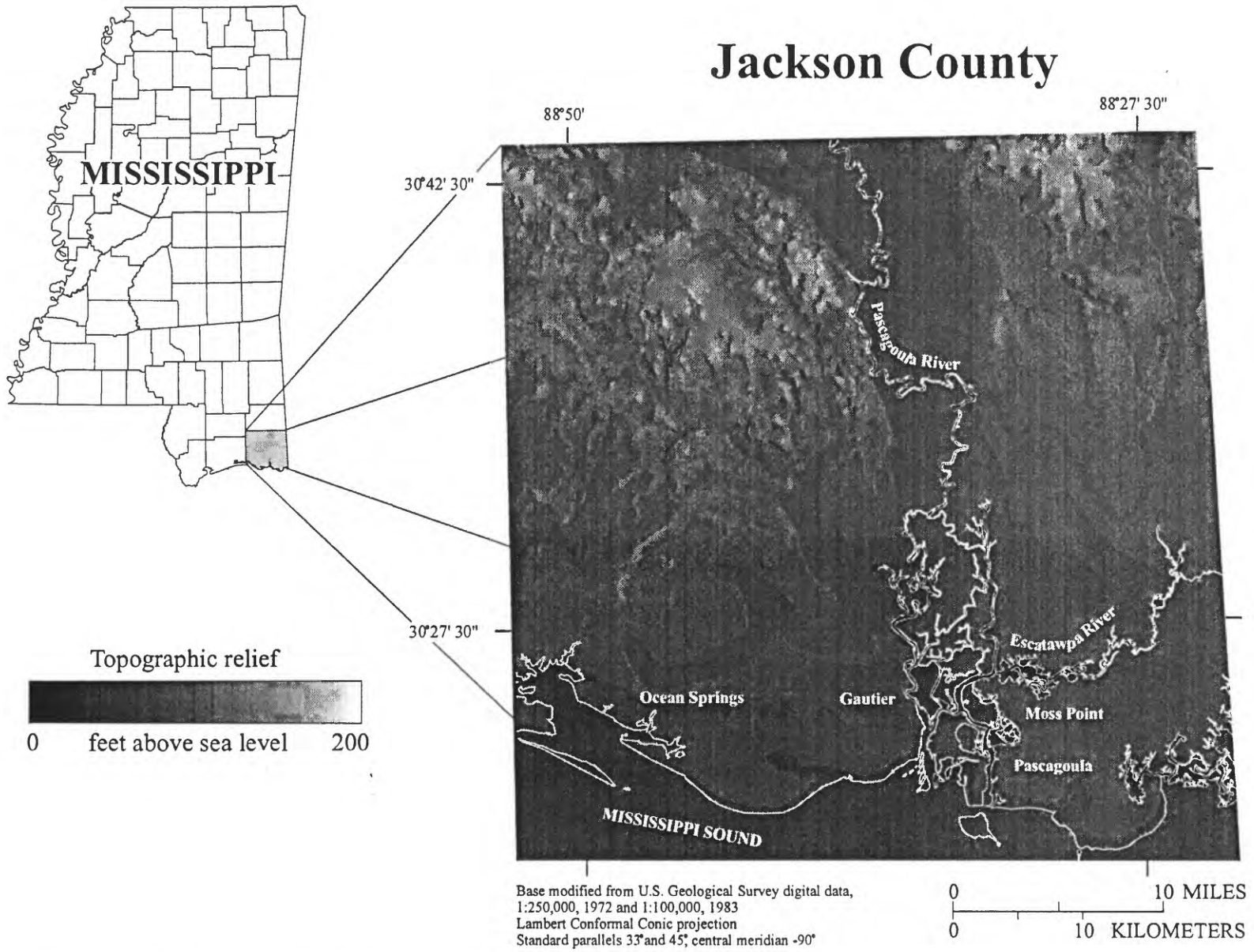
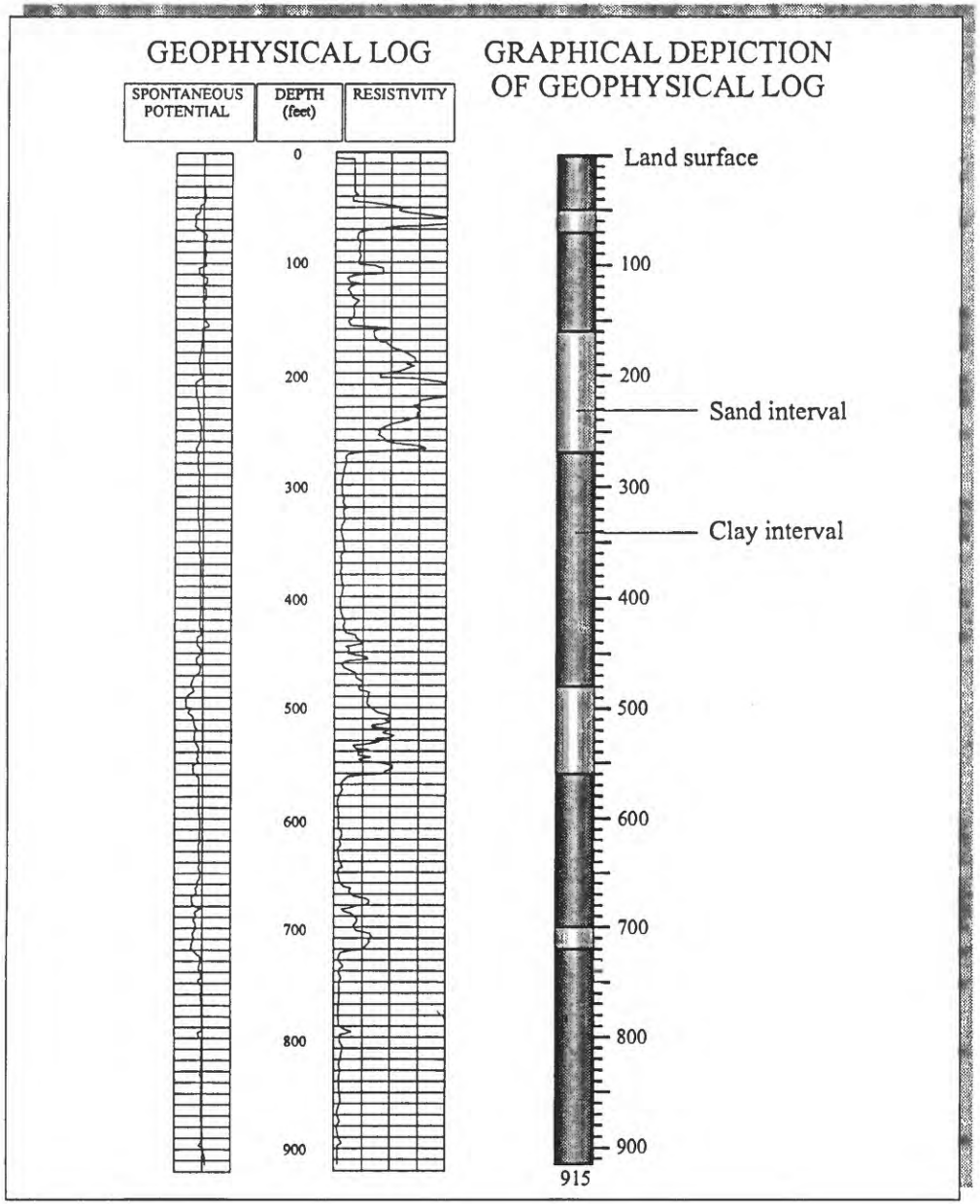


Figure 1. Location and generalized topography of Jackson County, Mississippi.



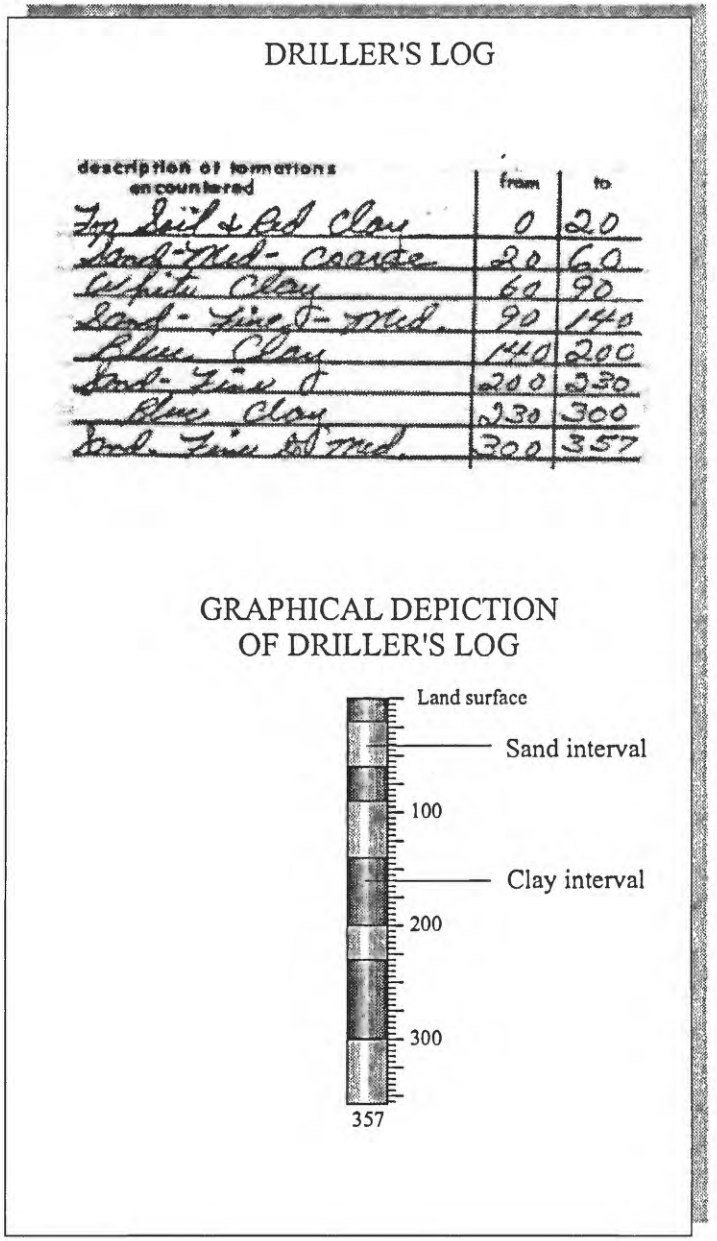


Figure 2. Examples of sand and clay intervals determined from a geophysical log and from a driller's log.

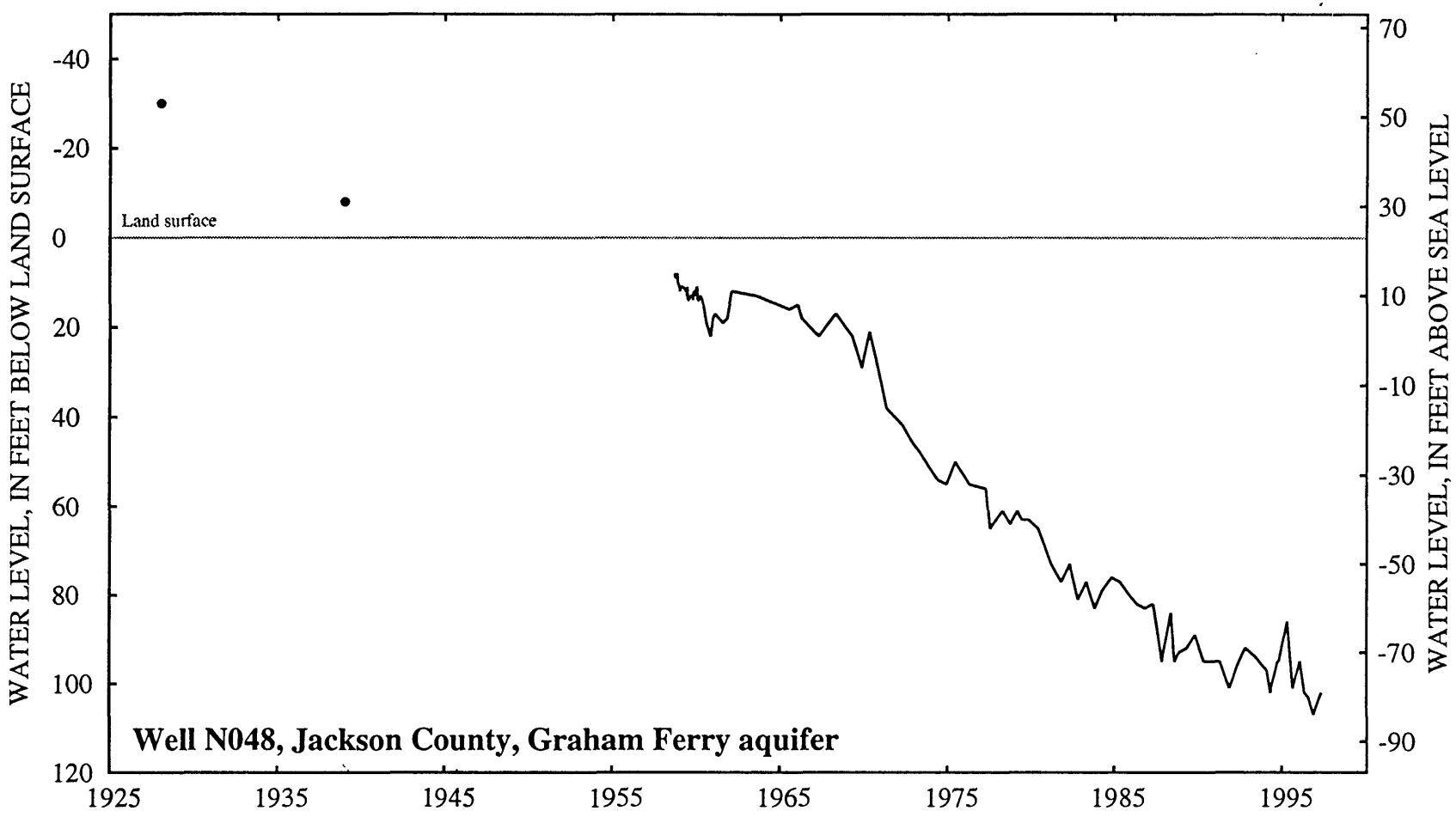


Figure 3. Hydrograph of well N048.

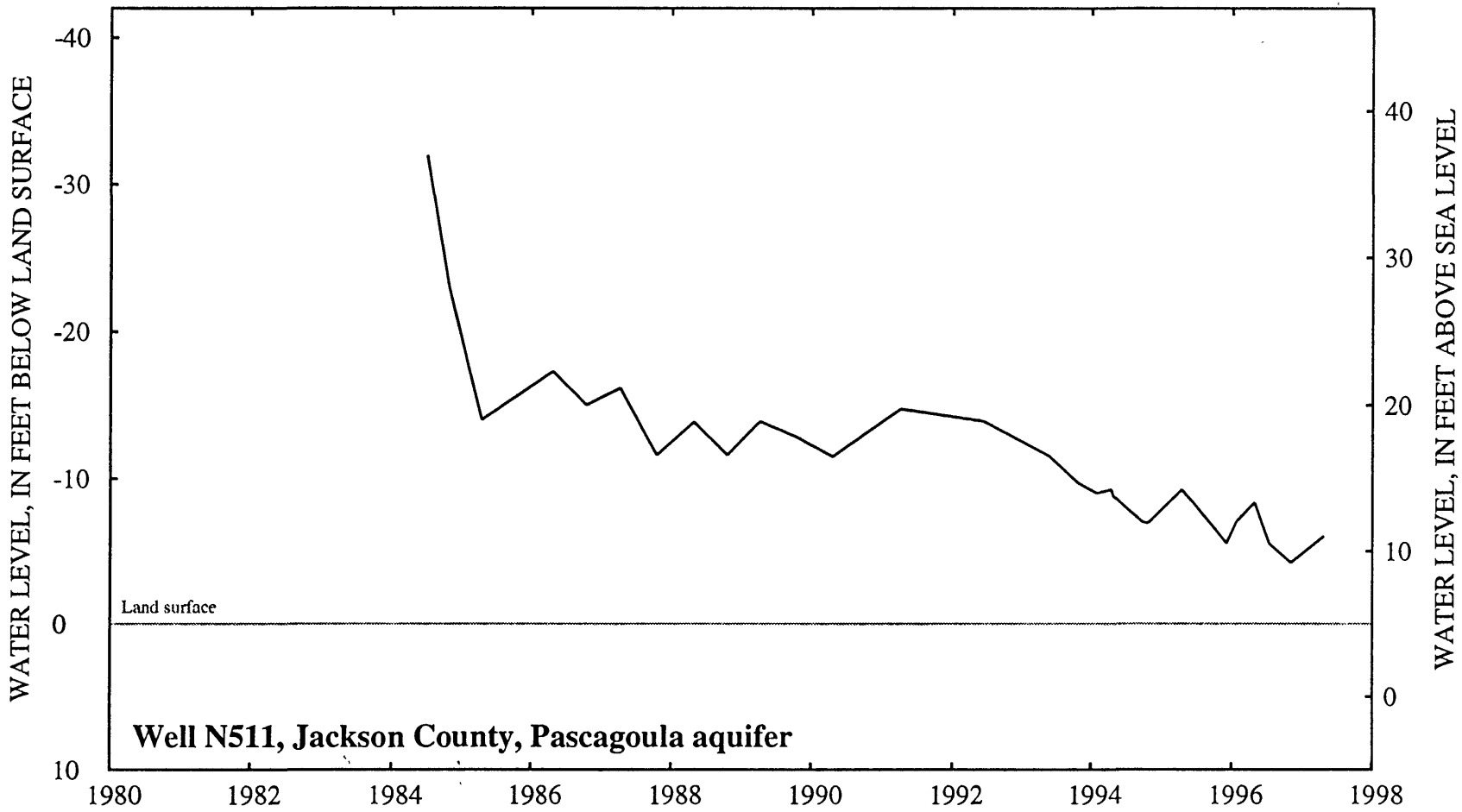


Figure 4. Hydrograph of well N511.

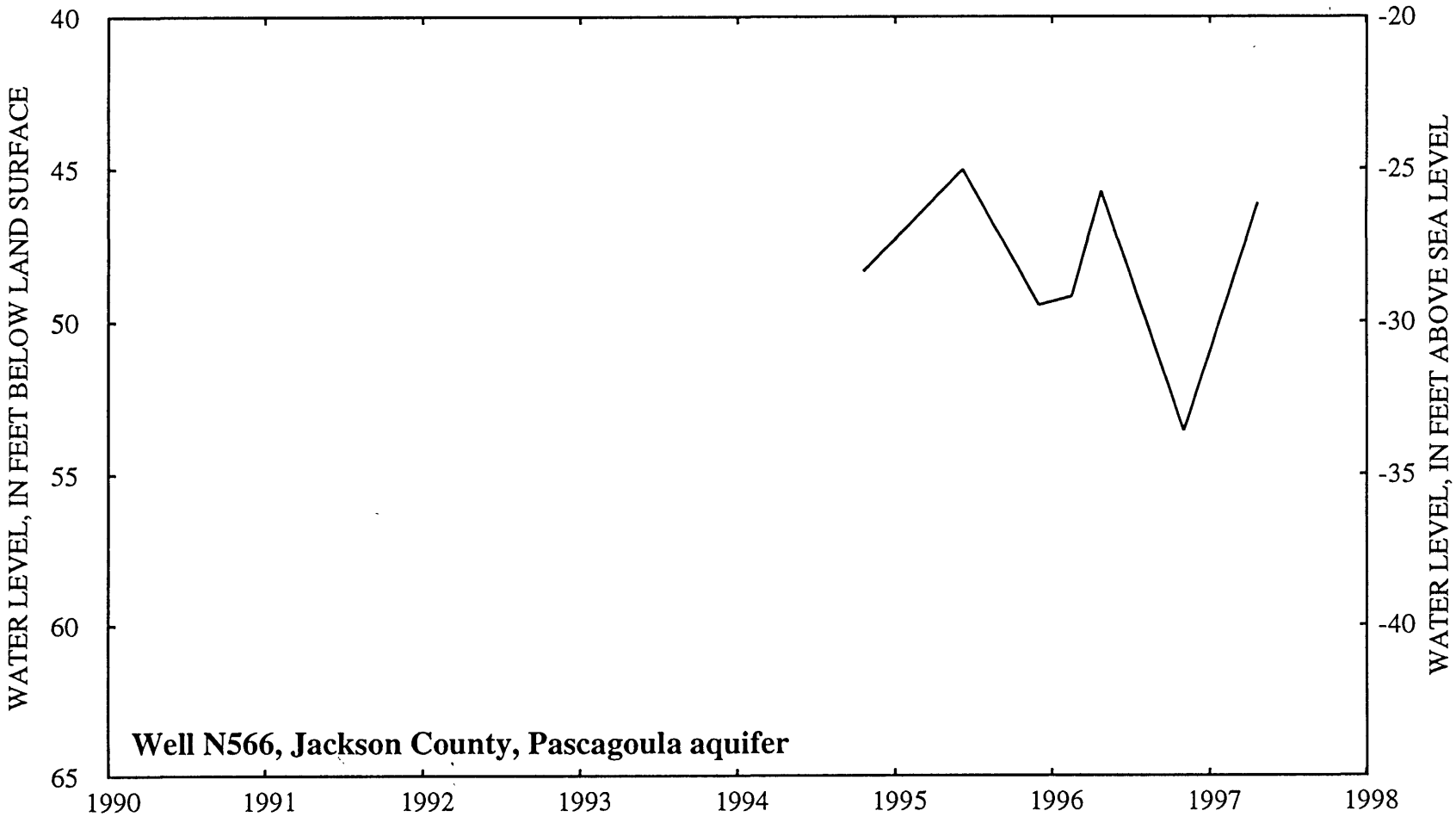


Figure 5. Hydrograph of well N566.

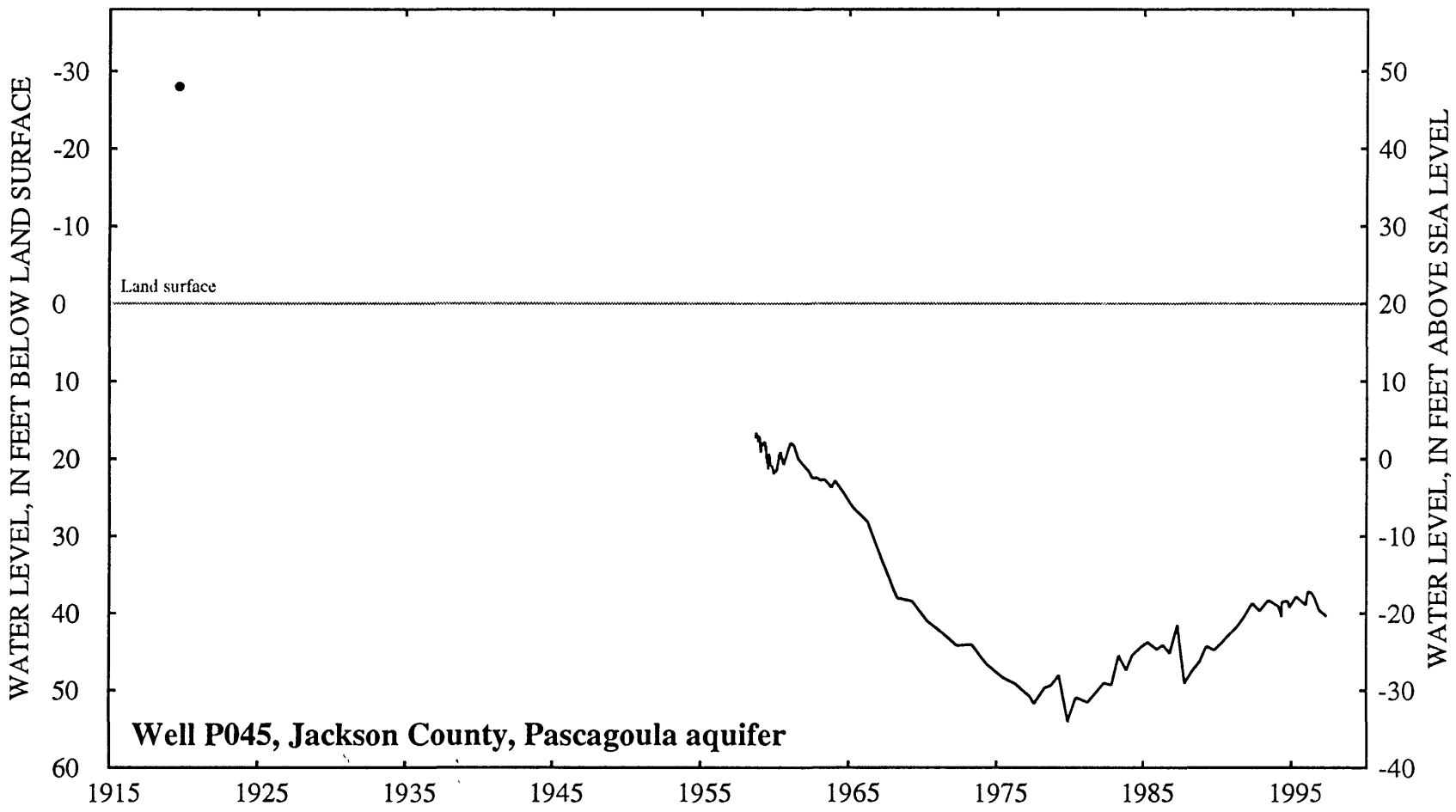


Figure 6. Hydrograph of well P045.

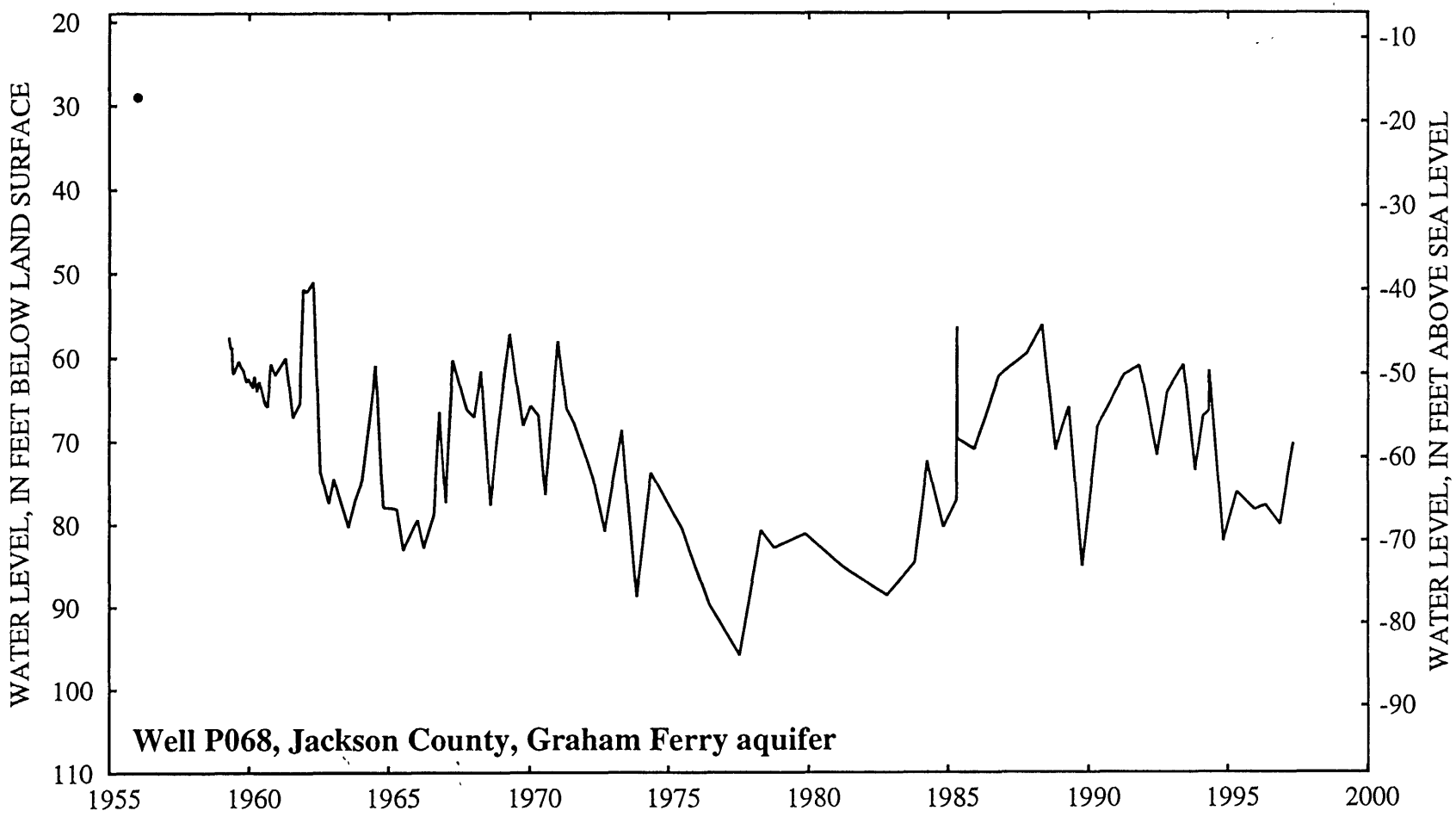


Figure 7. Hydrograph of well P068.

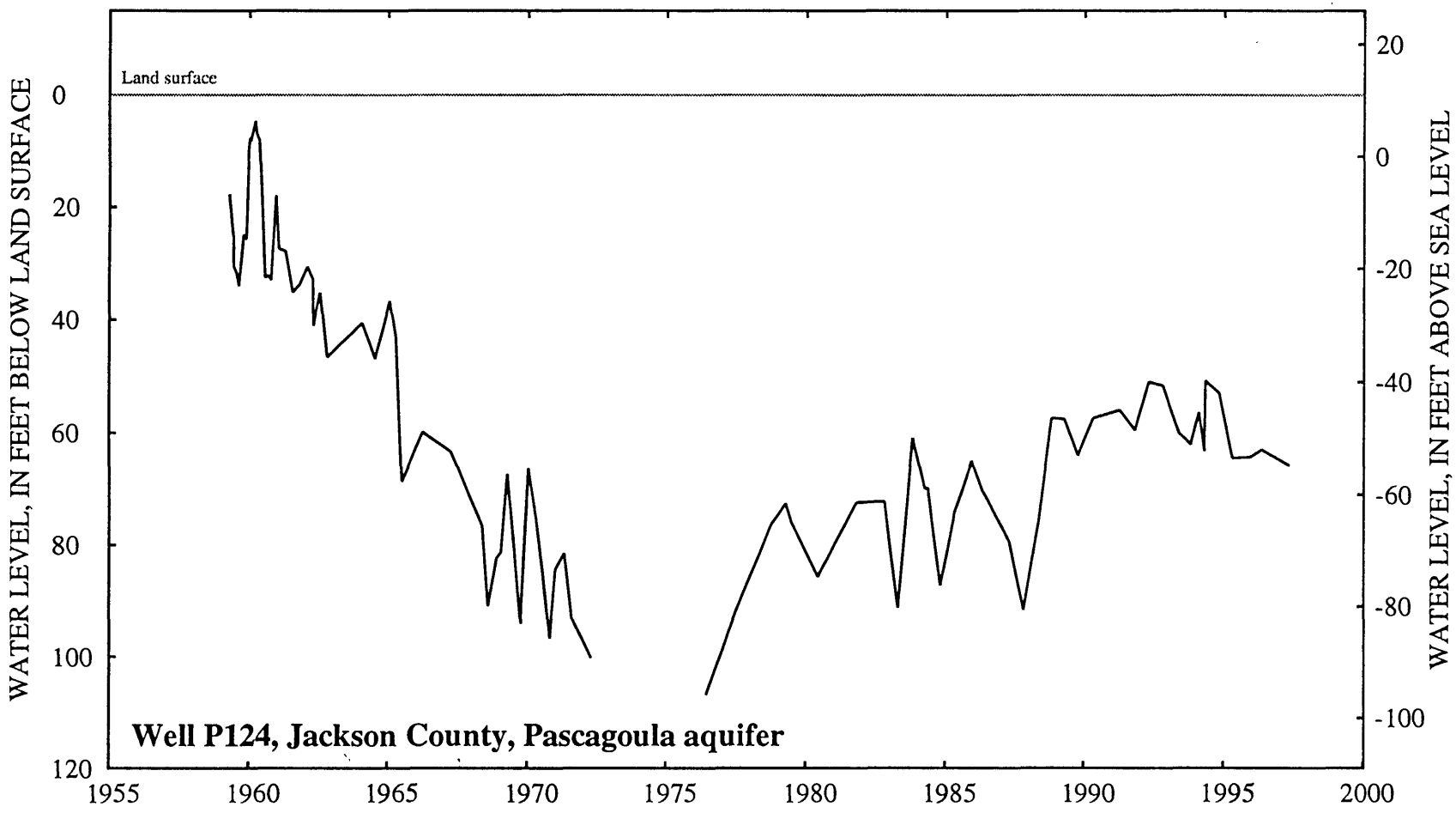


Figure 8. Hydrograph of well P124.

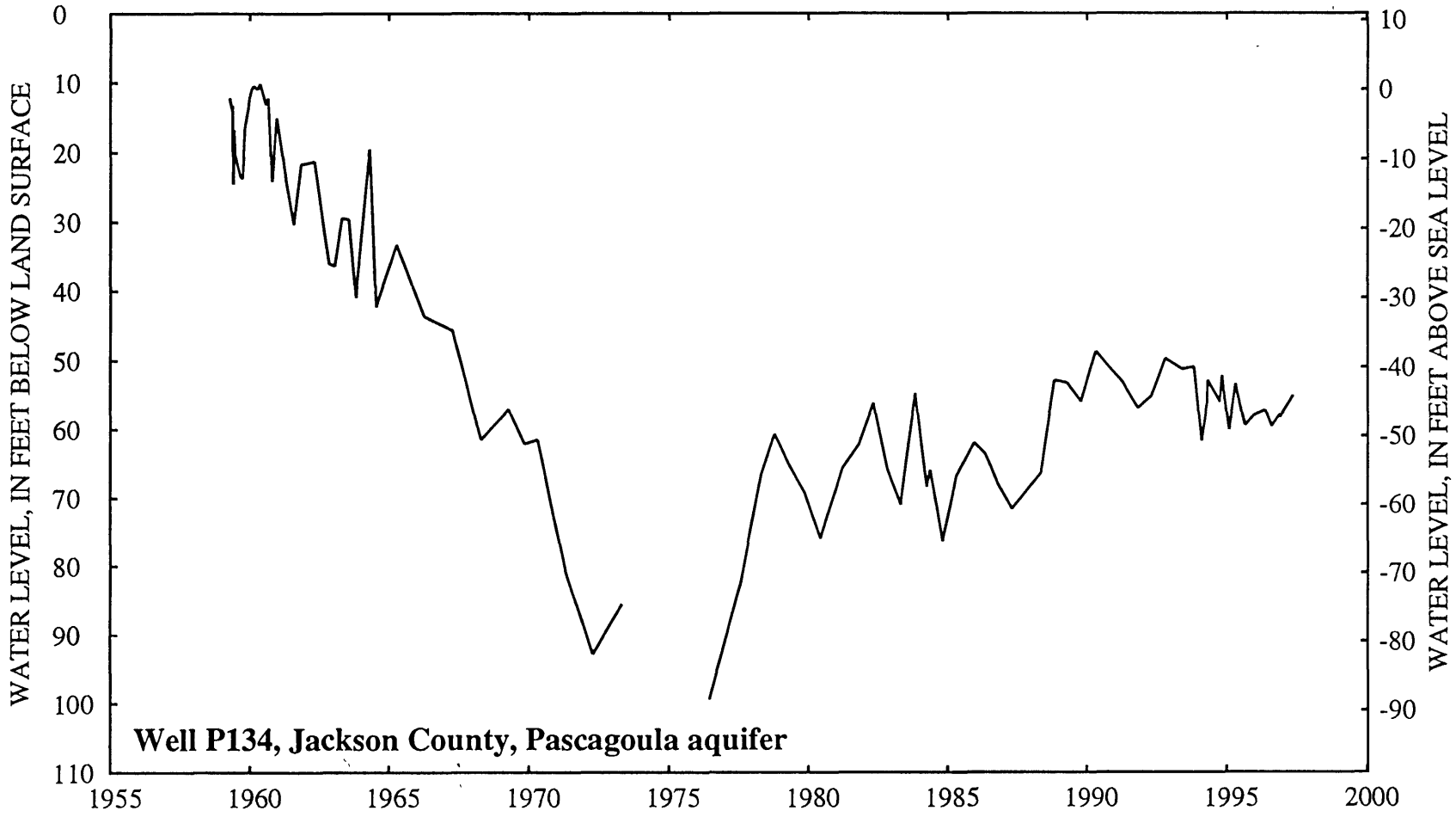


Figure 9. Hydrograph of well P134.

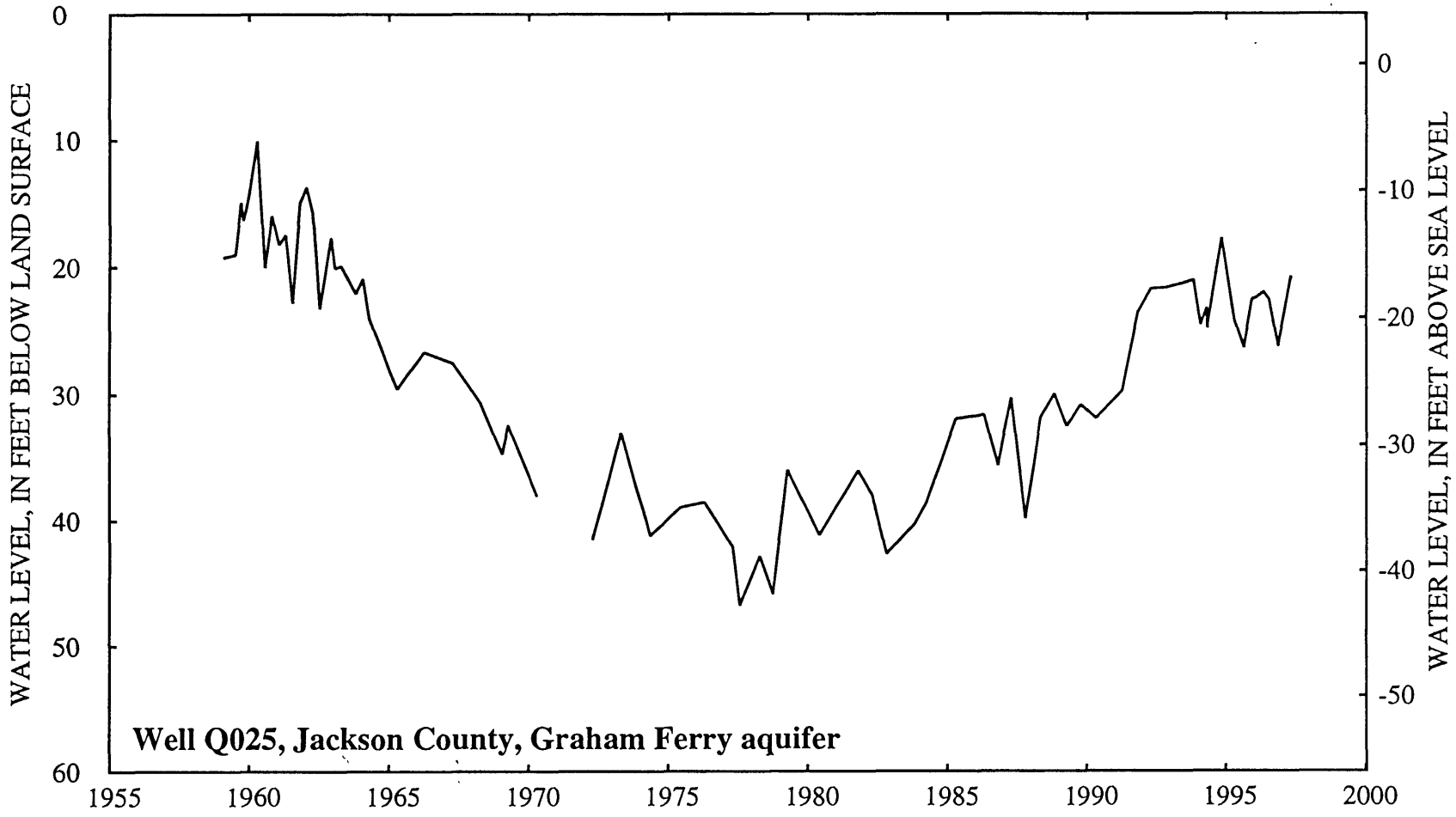


Figure 10. Hydrograph of well Q025.

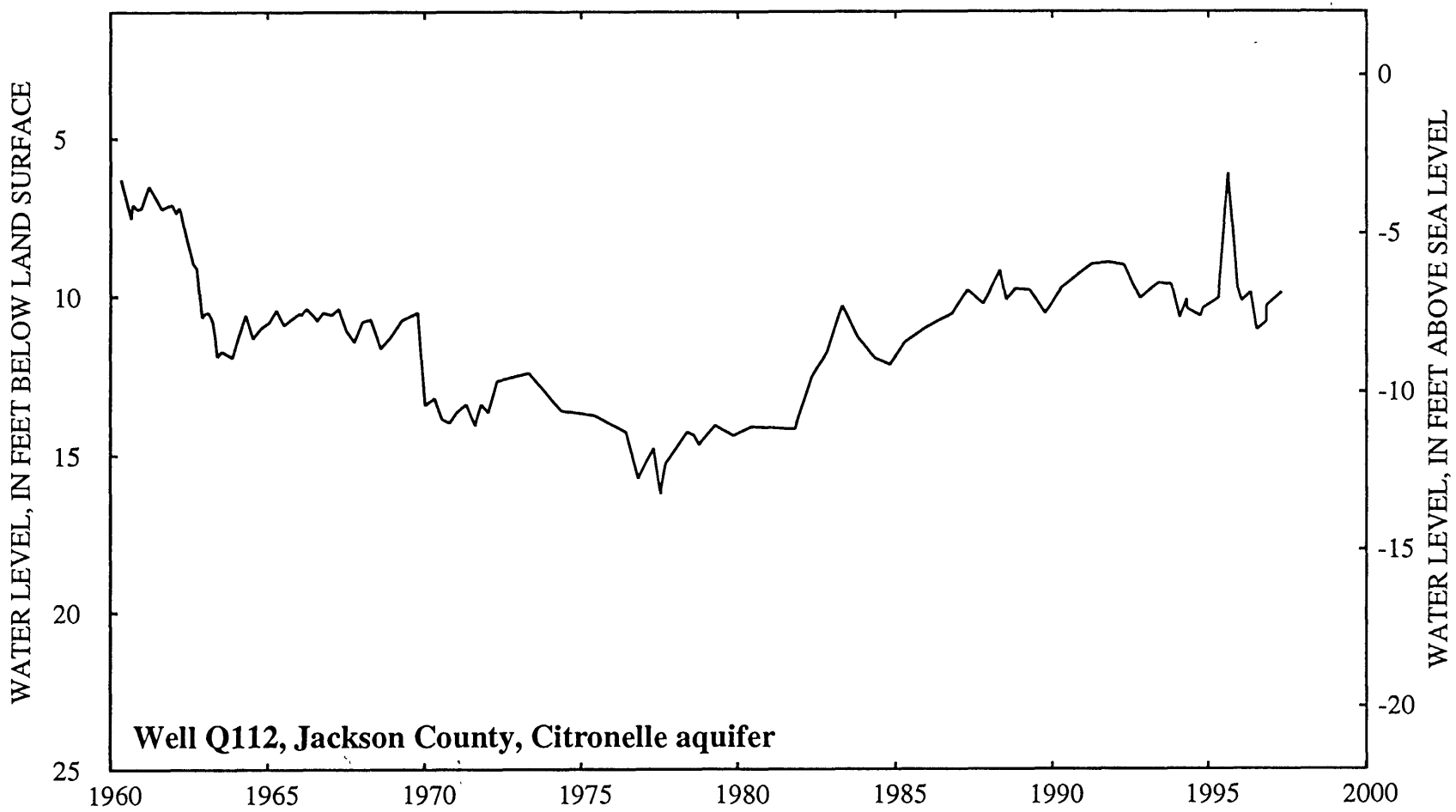


Figure 11. Hydrograph of well Q112.

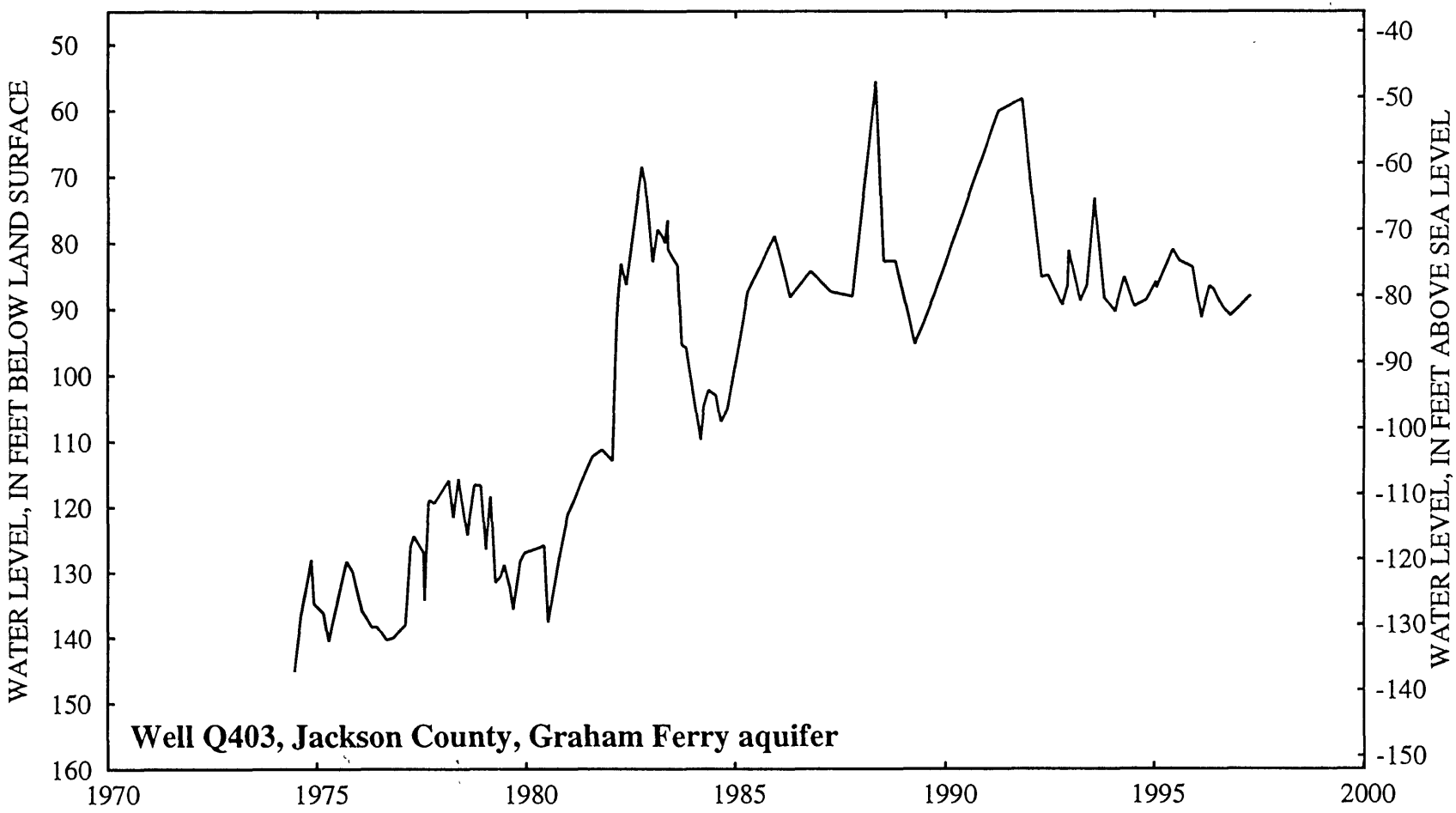


Figure 12. Hydrograph of well Q403.

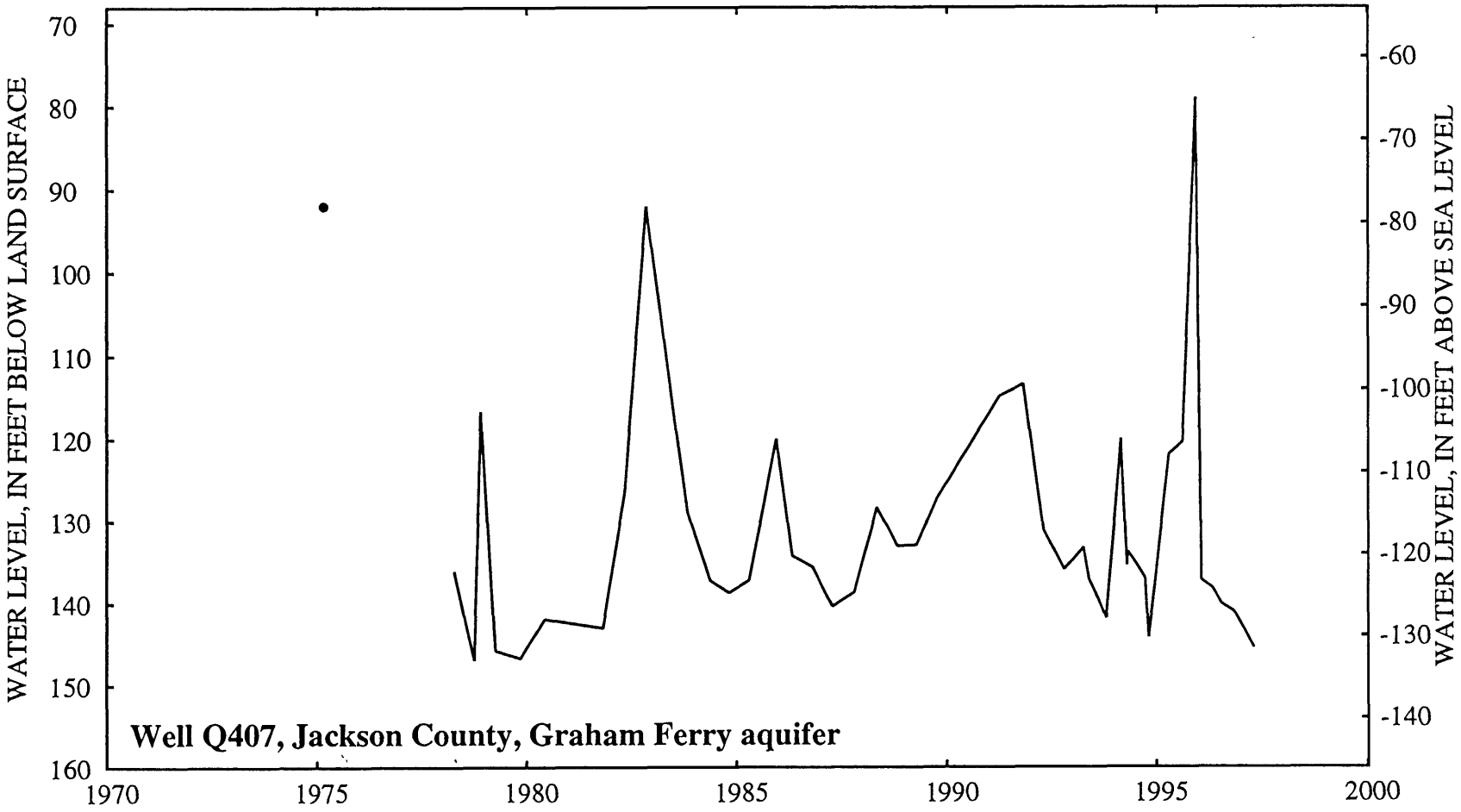


Figure 13. Hydrograph of well Q407.

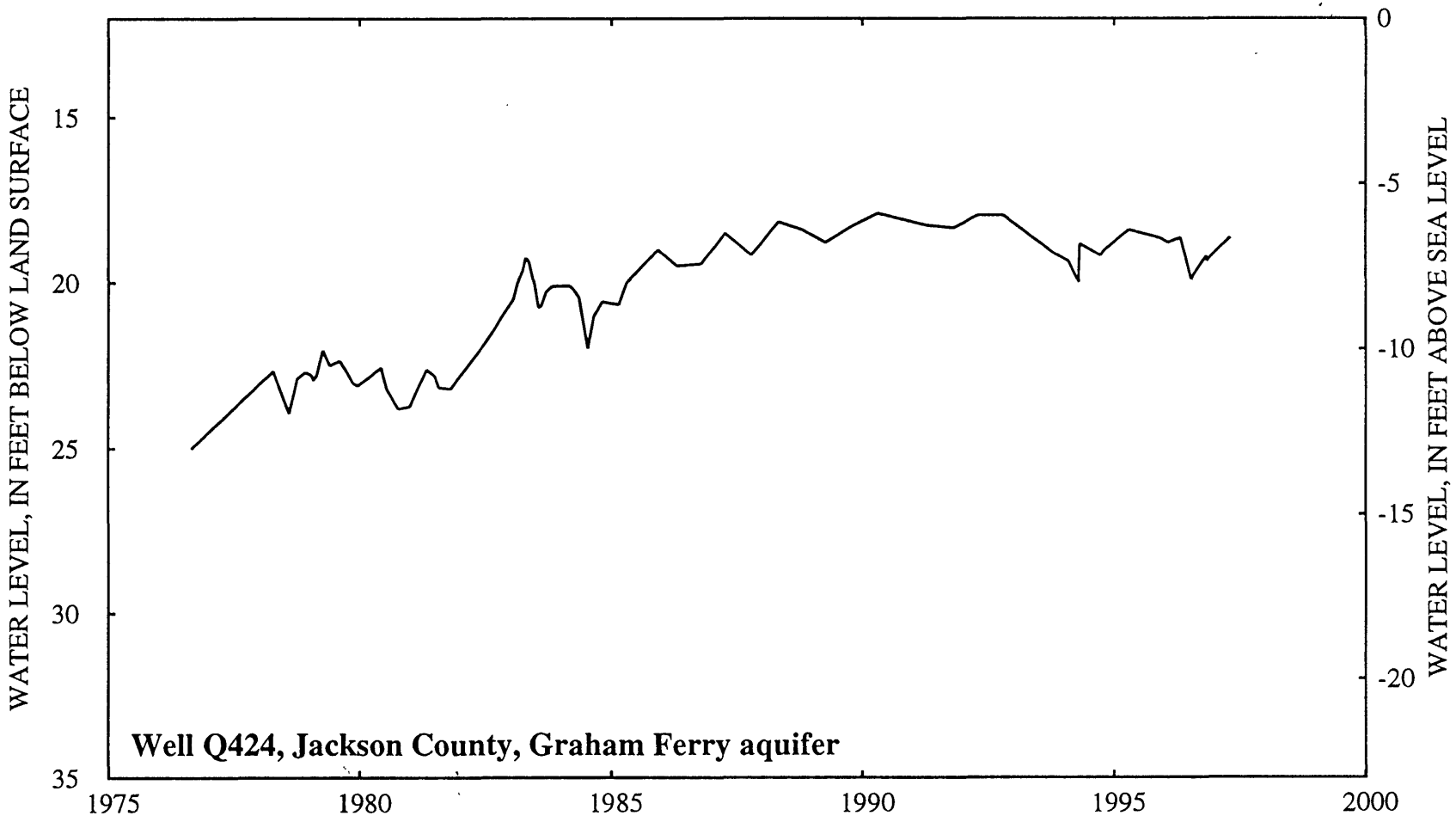


Figure 14. Hydrograph of well Q424.

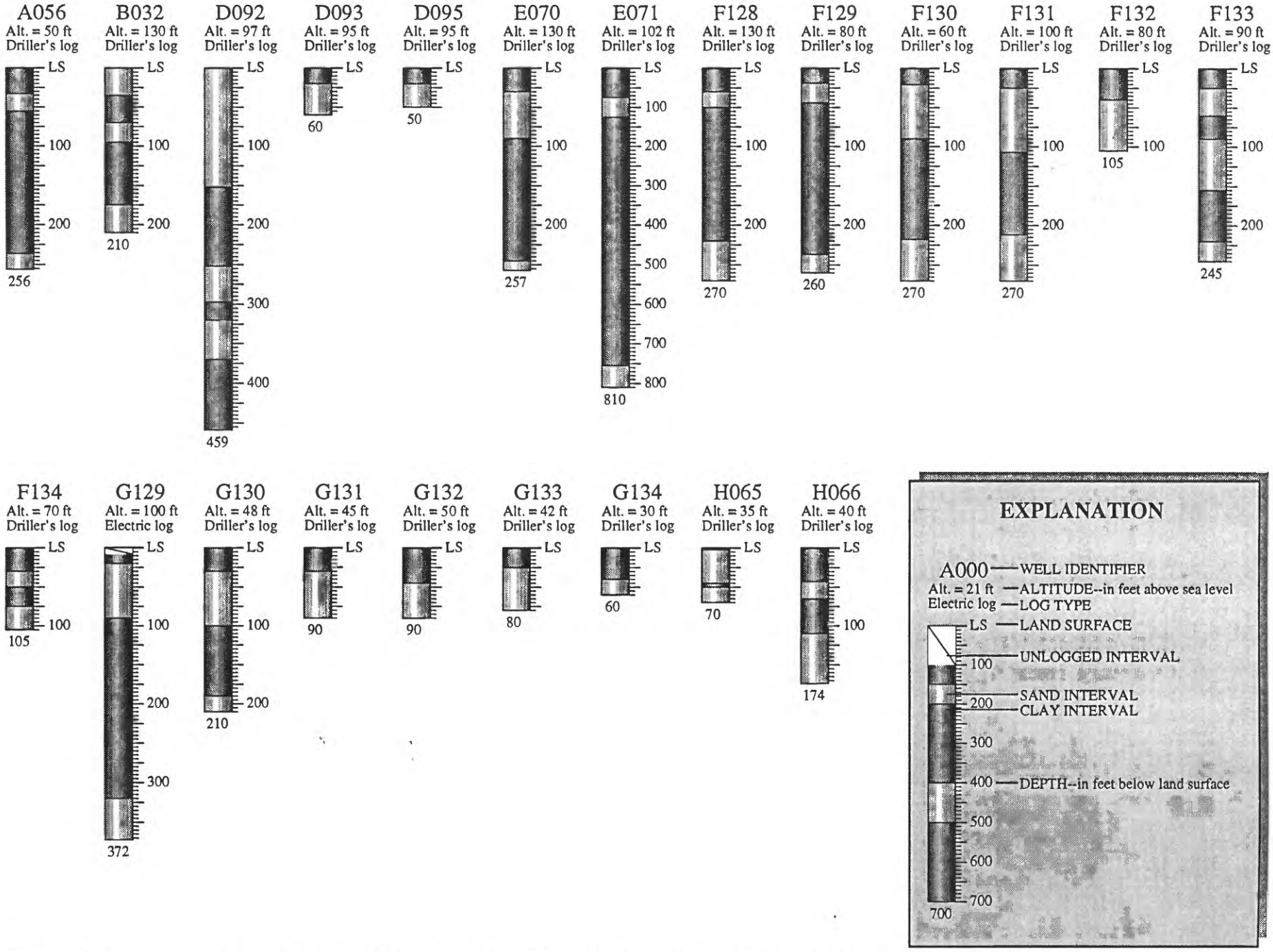


Figure 15. Depth of sand and clay intervals for selected well logs, Jackson County, Mississippi.

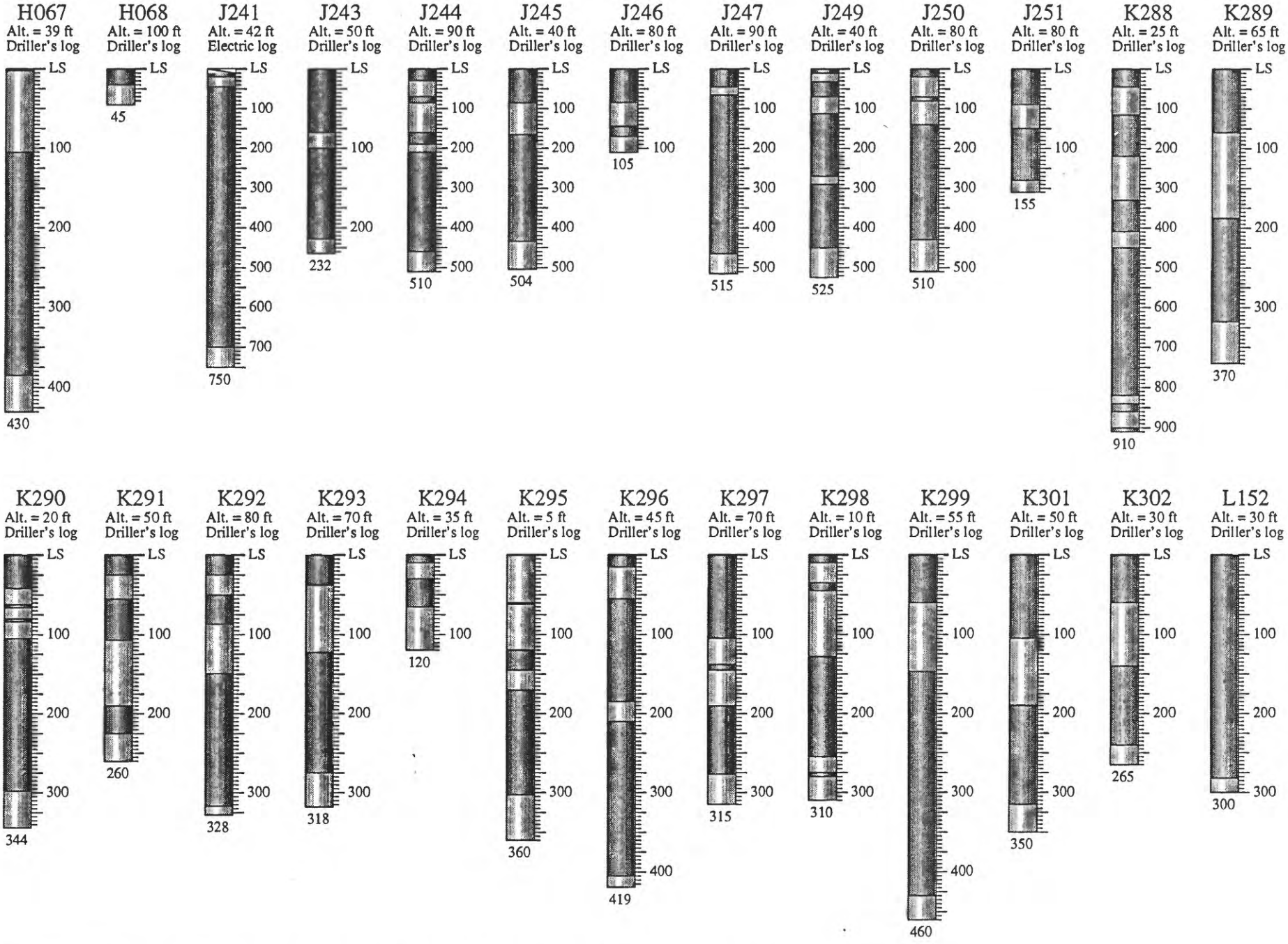


Figure 15. Depth of sand and clay intervals for selected well logs, Jackson County, Mississippi--Continued.

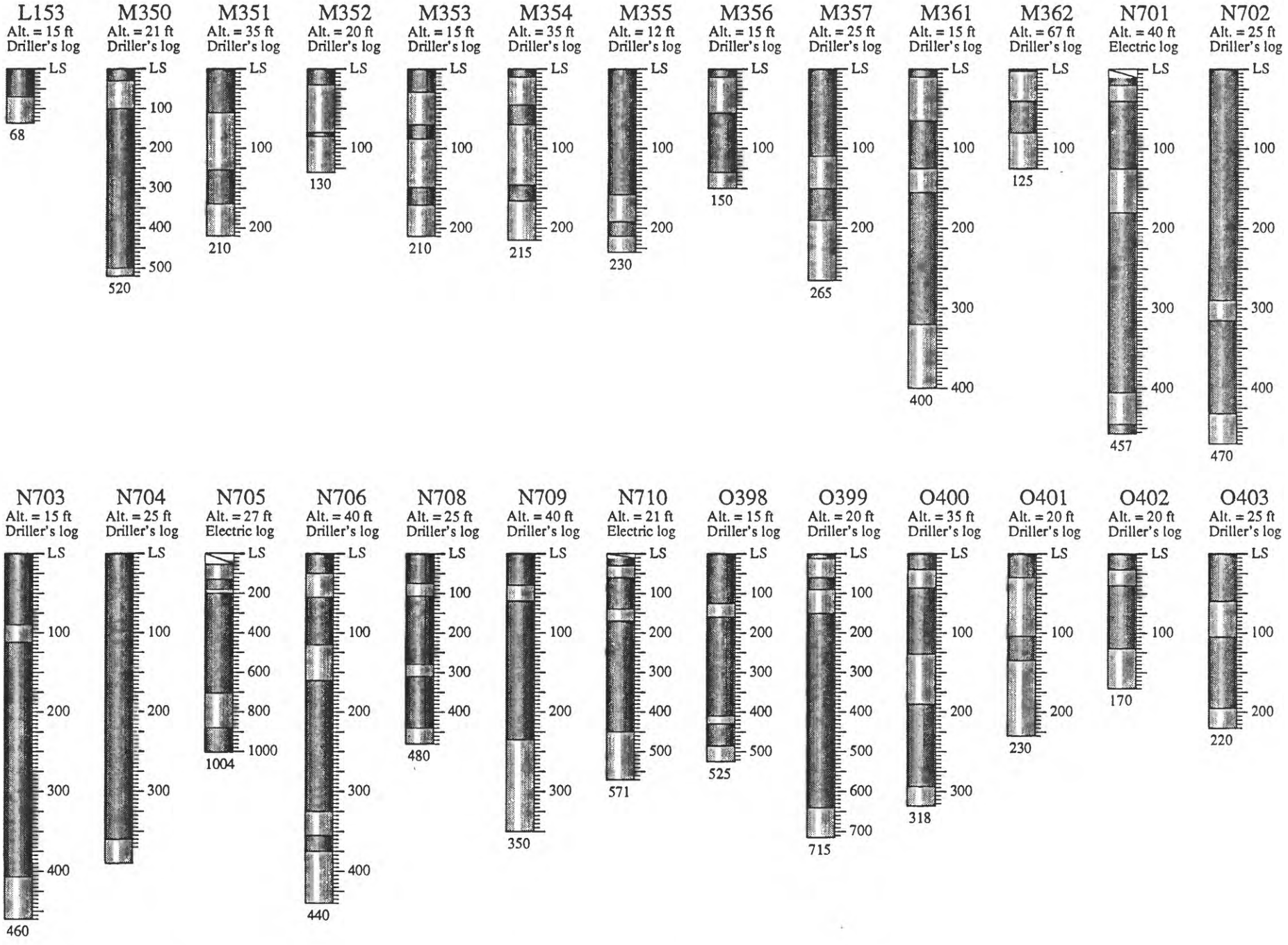


Figure 15. Depth of sand and clay intervals for selected well logs, Jackson County, Mississippi--Continued.

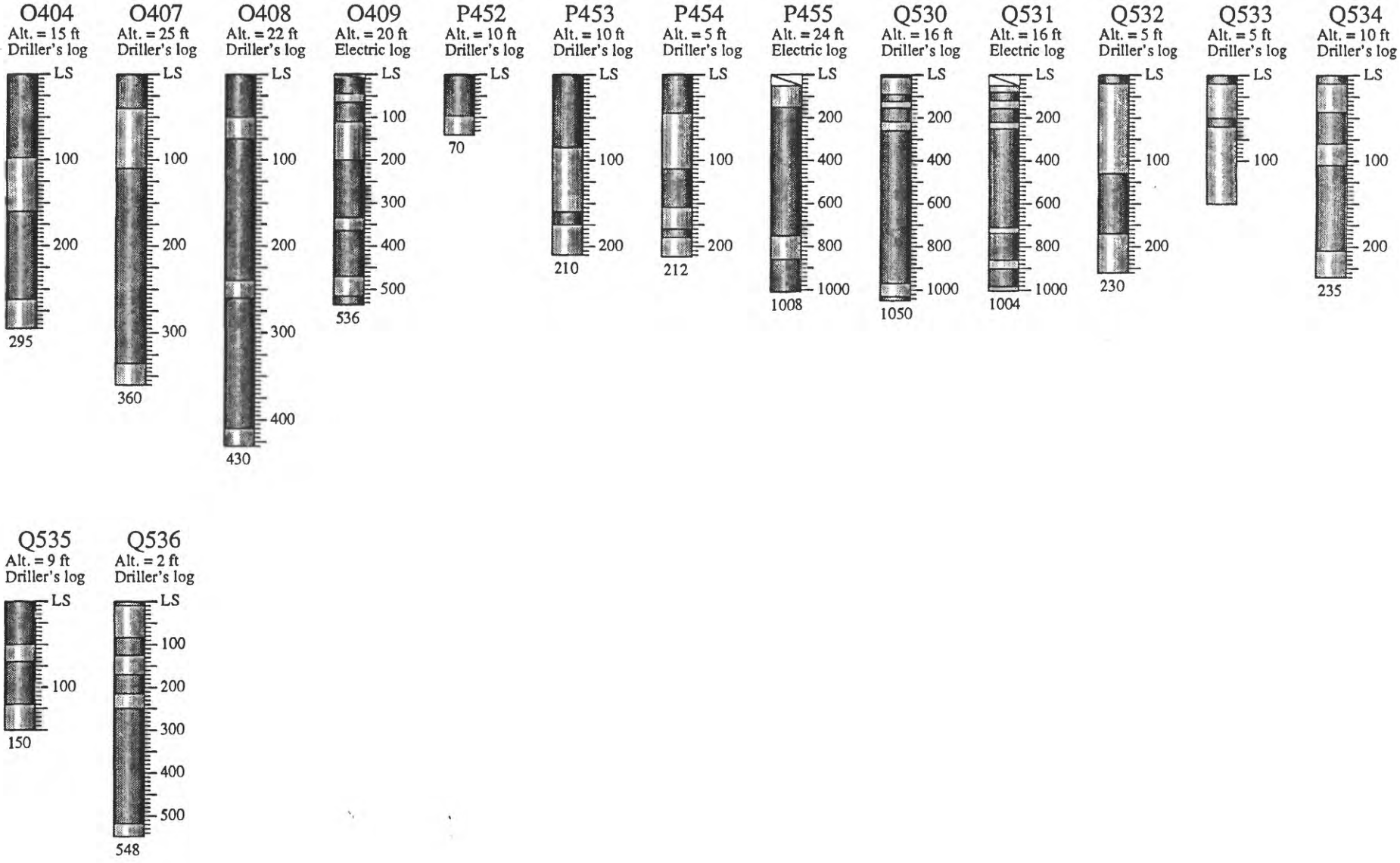


Figure 15. Depth of sand and clay intervals for selected well logs, Jackson County, Mississippi--Continued.

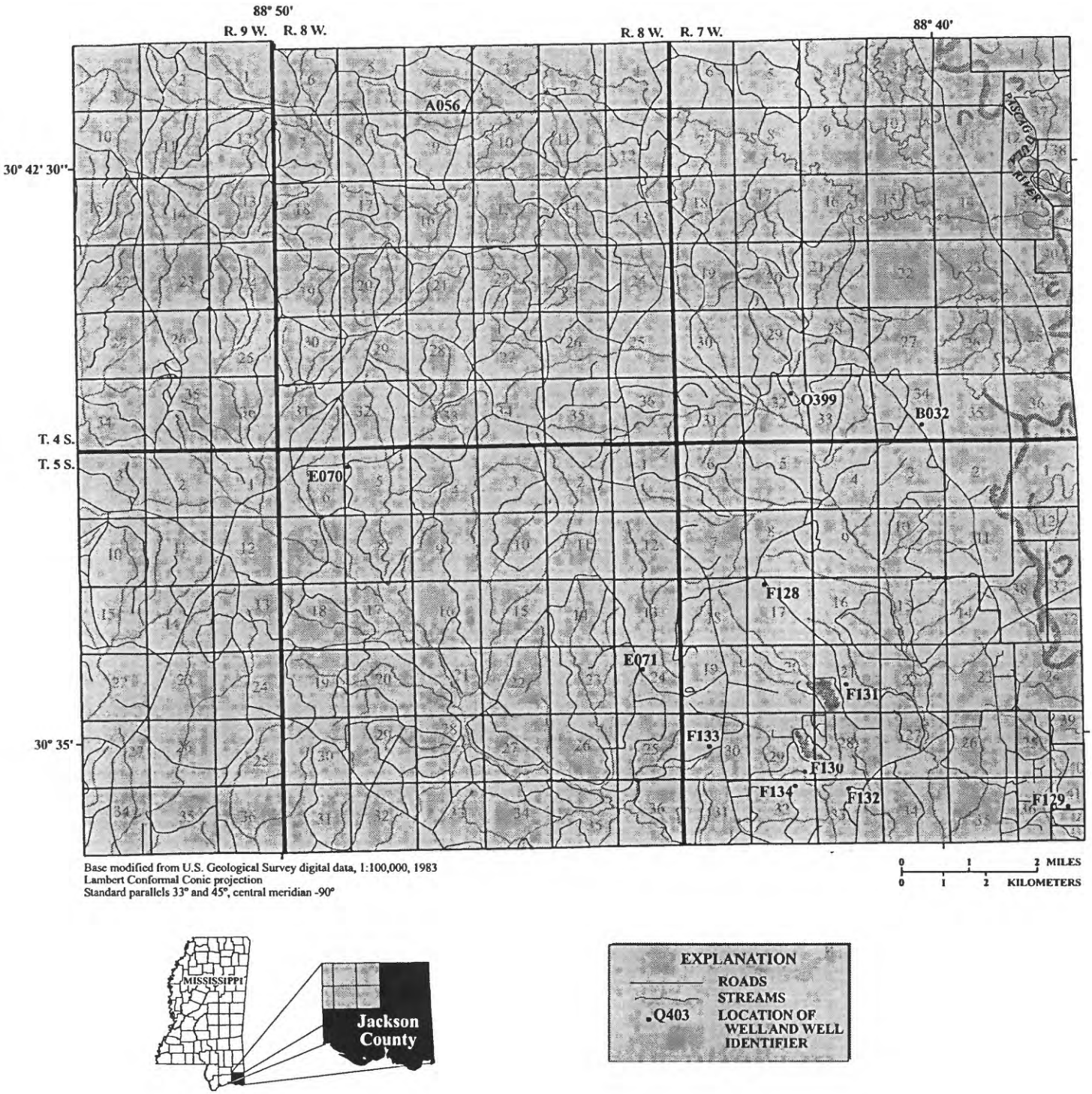


Figure 16. Location of selected wells in northwestern Jackson County, Mississippi.

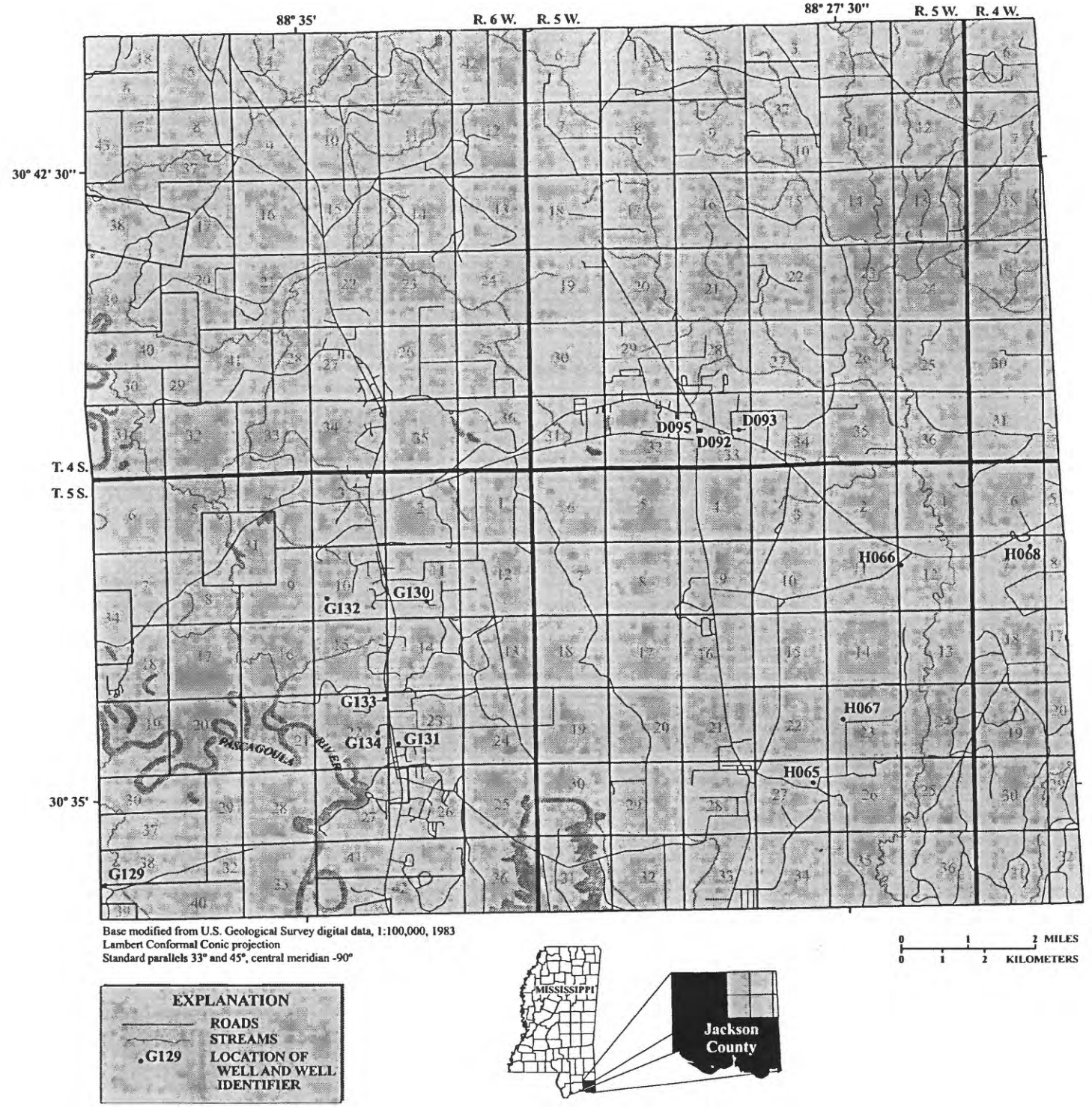


Figure 17. Location of selected wells in northeastern Jackson County, Mississippi.

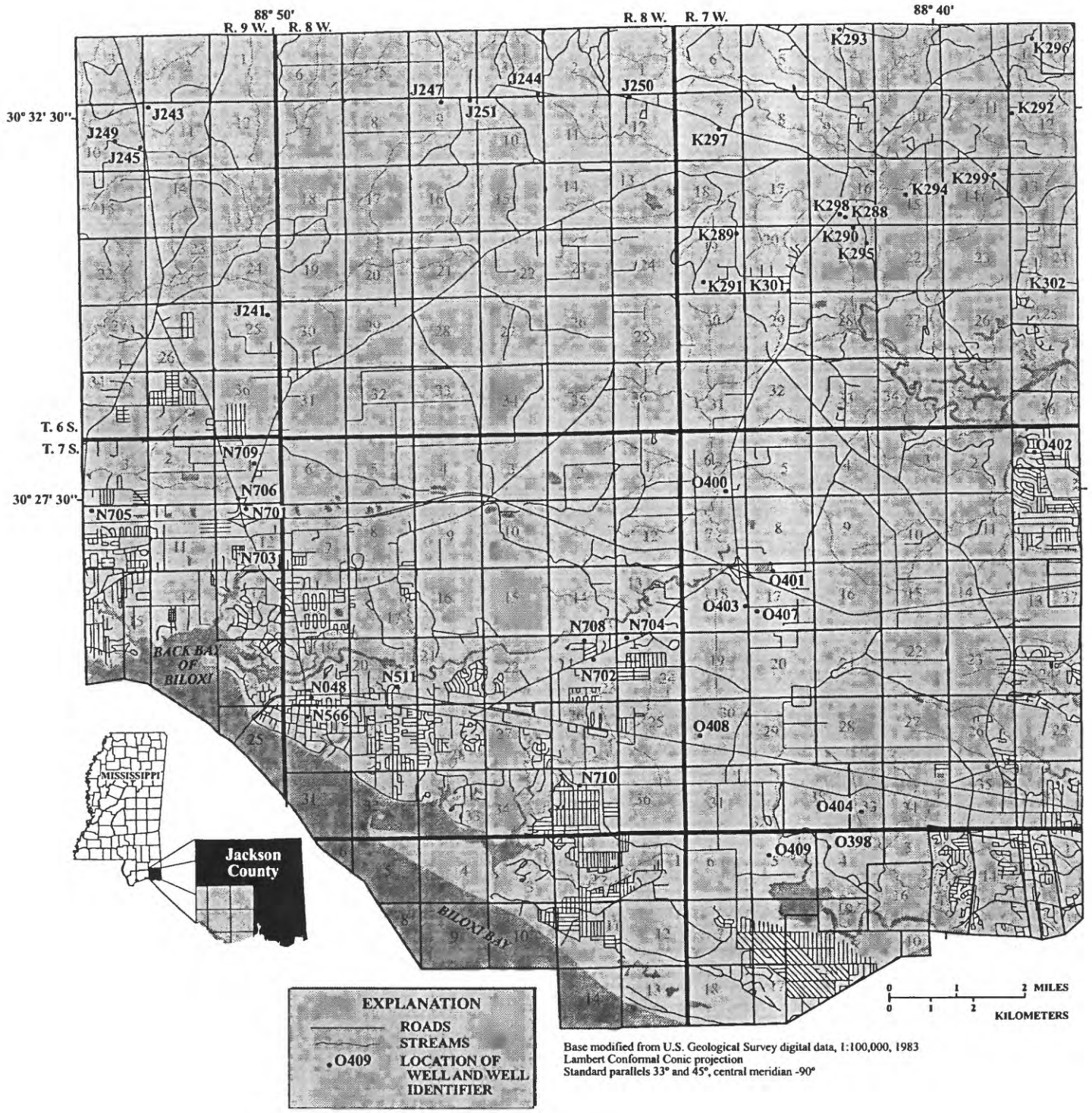


Figure 18. Location of selected wells in southwestern Jackson County, Mississippi.

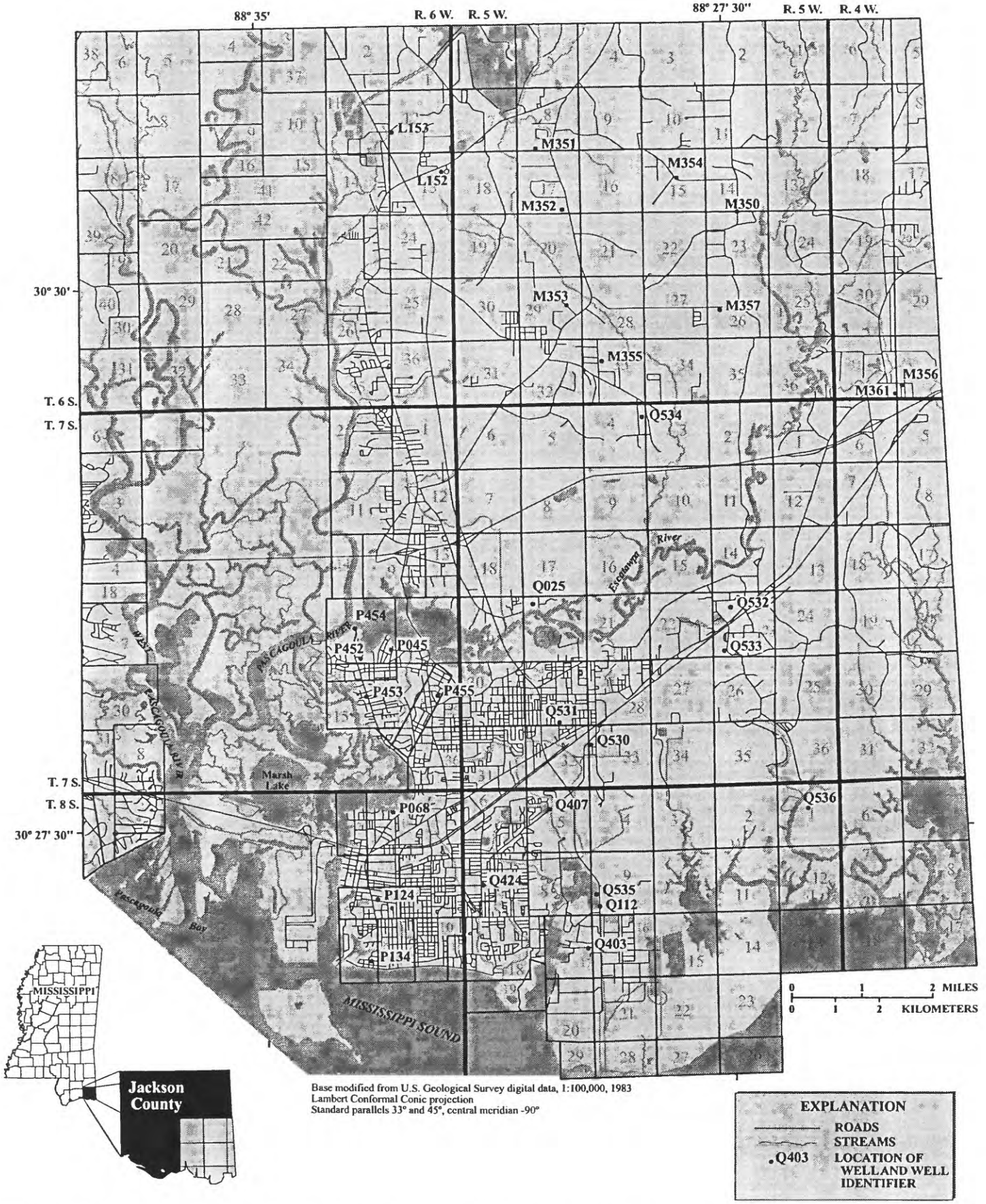


Figure 19. Location of selected wells in southeastern Jackson County, Mississippi.