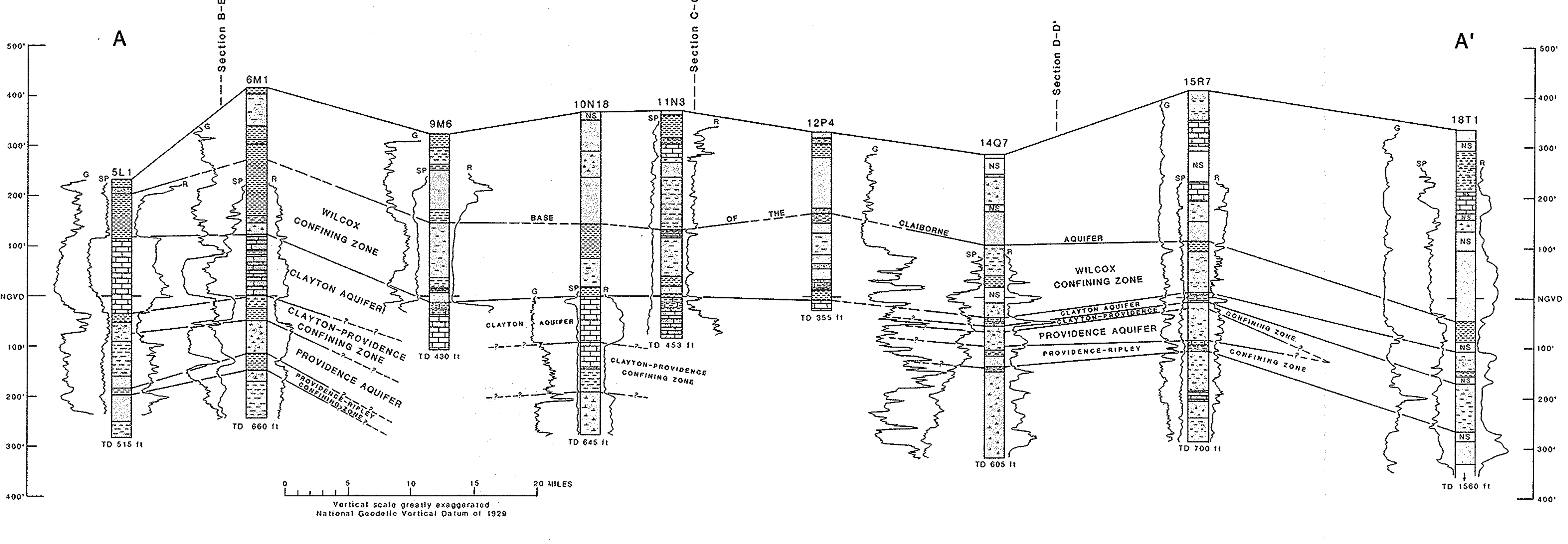
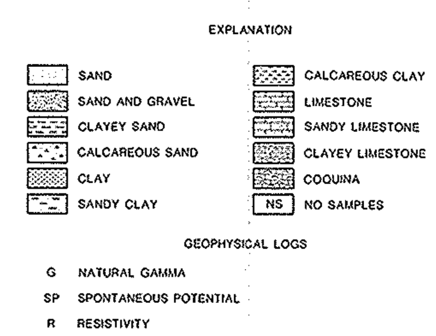


Figure 3.—Hydrogeologic section A-A'.



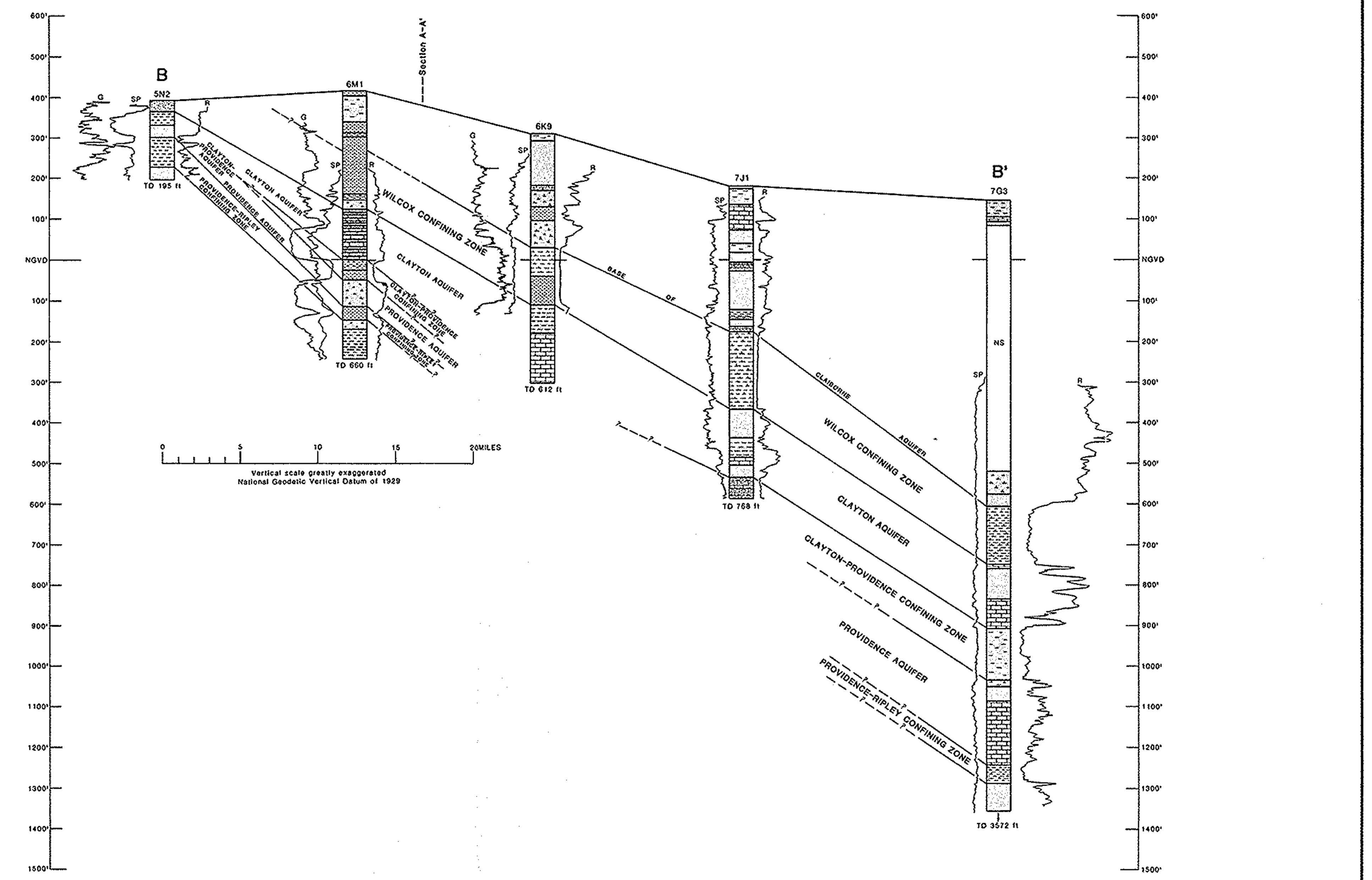


Figure 4.—Hydrogeologic section B-B'.

AQUIFER DEFINITION

In the study area, several aquifers are used for water supply. They are, in descending order: (1) the principal artesian aquifer (Warren, 1944); (2) the Claiborne aquifer (Ripy and others, 1981); (3) the Clayton aquifer (covered in this report); (4) the Providence aquifer (Clarke and others, 1983); (5) the Cusseta aquifer; (6) the Blufftown aquifer; and (7) the Tuscaloosa aquifer. The general lithology, thickness, and correlation of the aquifer units are listed in table 1.

In the clastic province (fig. 2), the Clayton aquifer consists mainly of medium to coarse sand. In this area, the Clayton aquifer yields quantities of water sufficient for domestic use.

In the carbonate province (fig. 2), the Clayton aquifer is limited mainly to the middle limestone unit of the Clayton formation (figs. 3-6). An exception occurs at wells 6K9, 7J1, and 7G3 (figs. 4, 9) in the western part of the province, and at well 12L21 (fig. 5) near Albany, Dougherty County, where the aquifer locally includes 10-90 ft of permeable sand of the upper part of the Clayton formation and the lowermost beds of the Wilcox Group. At well 15N1 (figs. 6, 7) in southern Crisp County, the aquifer includes 15 ft of sand from the lower part of the Clayton formation. The water-bearing properties of the Clayton aquifer are greatest in the carbonate area. (See section on Aquifer Properties.)

In the transition province (fig. 2), the upper part of the aquifer consists of 10 to 20 ft of clayey limestone (wells 14Q7, 15R7, fig. 6). The remainder of the aquifer consists of silty, fine to medium, calcareous sand containing thin limestone and clay layers. Because of the high clay and silt content in this area, the water-bearing characteristics of the Clayton aquifer are significantly reduced.

In the carbonate and transition provinces, the Clayton aquifer is confined below by the lower part of the Clayton formation and the uppermost part of the Providence Sand, which combine to form the Clayton-Providence confining zone (table 1). In most of the clastic province (fig. 2), the Clayton-Providence confining zone is absent and the Clayton aquifer directly overlies fine to coarse sand of the Providence aquifer (table 1) and forms the Clayton-Providence aquifer (well 5N2, fig. 4). An exception occurs between wells 15R7 and 18T1 (fig. 3) in the eastern part of the clastic province, where sediments that make up the Providence aquifer grade into silty clay and very clayey sand and form an underlying confining zone.

Throughout most of the study area, the Clayton aquifer is confined above by silt and clay beds of the Wilcox Group and the upper part of the Clayton formation which together form the Wilcox confining zone (table 1). In the eastern part of the study area, the Wilcox confining zone includes the Porters Creek Clay (table 1) which is absent in the western part of the study area. The Wilcox confining zone is distinguished on well logs as a zone of high natural gamma radiation and of low electrical resistivity (figs. 3-6). Sandy layers within the Wilcox confining zone may yield quantities of water sufficient for domestic use.

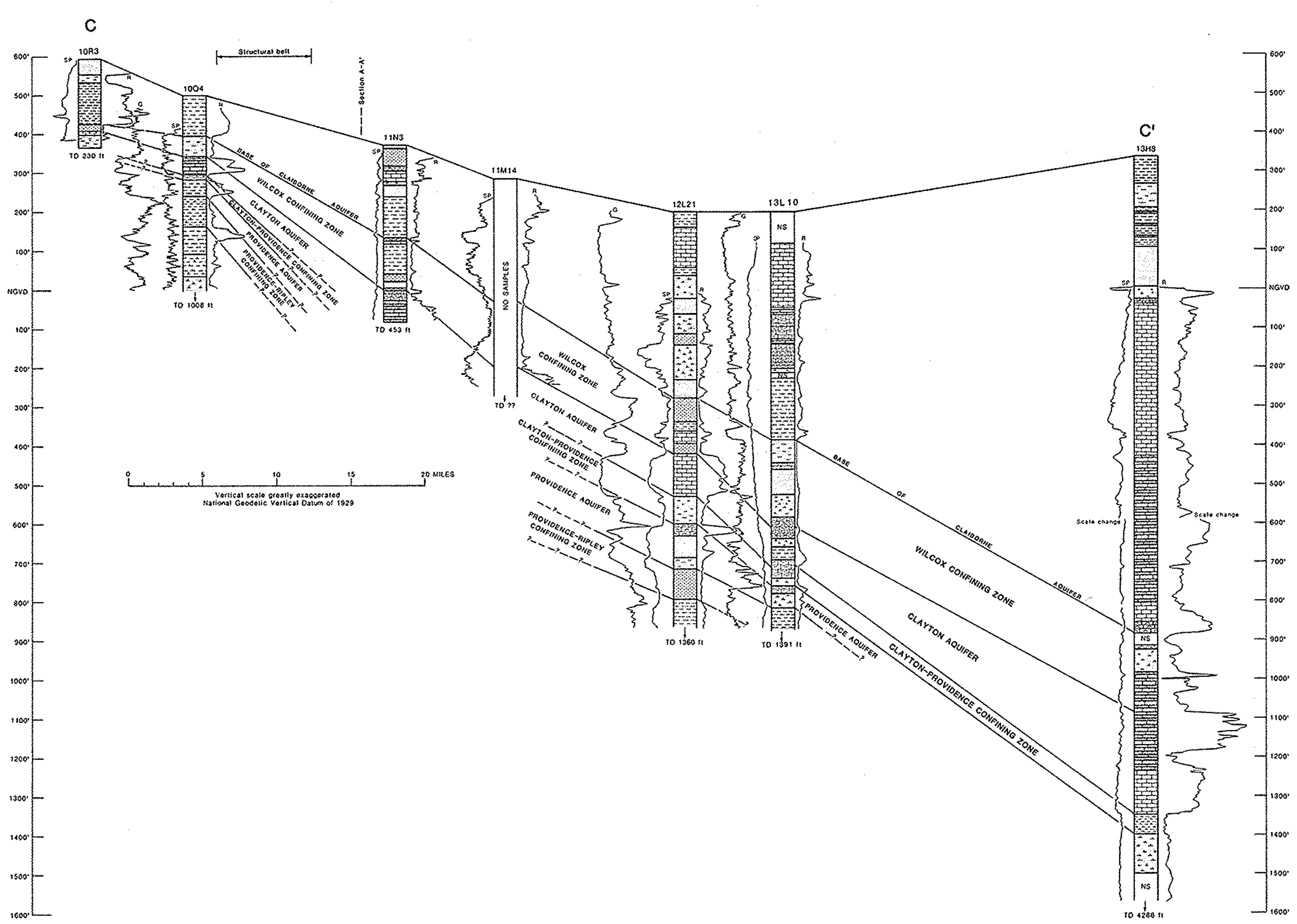


Figure 5.—Hydrogeologic section C-C'.

Table 2.—Record of wells used on hydrogeologic sections

County	Well No.	Georgia Geologic Survey No.	Latitude-longitude	Name or owner	Date drilled	Altitude of land surface (ft)	Comments
Clay	5L7	--	313628-085314	Fort Gaines, 4 (1979 well)	2/79	232	General lithology from driller's log.
Crisp	14P14	3518a	315731-0835423	Veterans Memorial St. Park, GGS TW-1	2/82	252	Do.
Do.	15N1	108	314950-0834608	Cecil Pate, 1	2/46	364	Lithologic log by S. M. Herrick.[2]
Dooly	14R6	3393	321209-0835422	Byromville, 2	5/79	358	General lithology from driller's log.
Do.	15R7	3159	321111-0834628	William Horne, GGS TW-1	5/82	412	Lithologic log by M. Y. Curtin.[1]
Dougherty	12L21	3406	313534-084103	USGS TW-10	12/78	198	Lithologic log from Hicks and others (1981).
Do.	13L10	3187	313105-084064	USGS TW-1	4/77	195	Lithologic log by P. E. Huddleston.[1]
Early	6K9	3443	312827-0845515	Kolomoki State Park, GGS TW-1	11/79	310	Lithologic log by A. Gernazian[1] and B. J. Ripy.[1]
Do.	7J1	437	311742-0834135	W. J. Howell (Famers Gin & Warehouse, 1)	6/55	180	Lithologic log from Herrick (1961). Reversals on Sp log.
Lee	11M14	--	314220-0841637	E. F. Carlton (Nichols TW)	10/78	283	—
Mitchell	13H8	109	310828-0840403	J. H. Pullen	8/44	338	Lithologic log from Herrick (1961).
Pulaski	18T1	3511	322245-0832901	Arrowhead TW-1	4/81	334	Lithologic log by D. C. Prowell.[2]
Quitman	5N2	--	314854-0850324	USGS Hatcher, TW 1	--	390	Lithologic log by A. D. Donovan.[2]
Randolph	6M1	--	314020-0845338	Colman	2/83	416	General lithology from driller's log.
Do.	9M7	3449	313953-0843615	C. T. Martin, GGS TW-2	4/80	322	Lithologic log by B. J. Ripy.[1]
Seminole	7G3	187	310317-0844840	W. E. Harlow, 1	2/49	147	Lithologic log from Herrick (1961).
Sumter	10Q4	--	320241-0842214	Univ. of Ga. Experiment Sta.	12/79	500	General lithology from driller's log.
Do.	14Q7	3366	320403-0835910	Danville Ferry, GGS TW-9	11/78	283	Lithologic log by P. E. Huddleston.[1]
Do.	12P4	225	325842-0841253	L. G. Childers	1/51	328	Preliminary lithologic log by Vaux Owen.[2]
Terrell	10N18	—	314636-0842641	Dawson, 5 Lemon St. well	7/78	368	Lithologic log from nearby GGS well 213 (Herrick, 1961).
Do.	11N2	406	314948-0842150	Bronwood, 1	11/54	370	Lithologic log from Herrick (1961).
Webster	10R3	488	320703-0842648	Jeb Sewell (Winkler Farms)	3/56	593	Do.
Worth	16J30	3154	311903-0834413	S'thrn. Invstrs., Cecil Key, 1	3/76	320	Poor-quality drill cuttings available.

1 Georgia Geologic Survey.
2 U.S. Geological Survey.

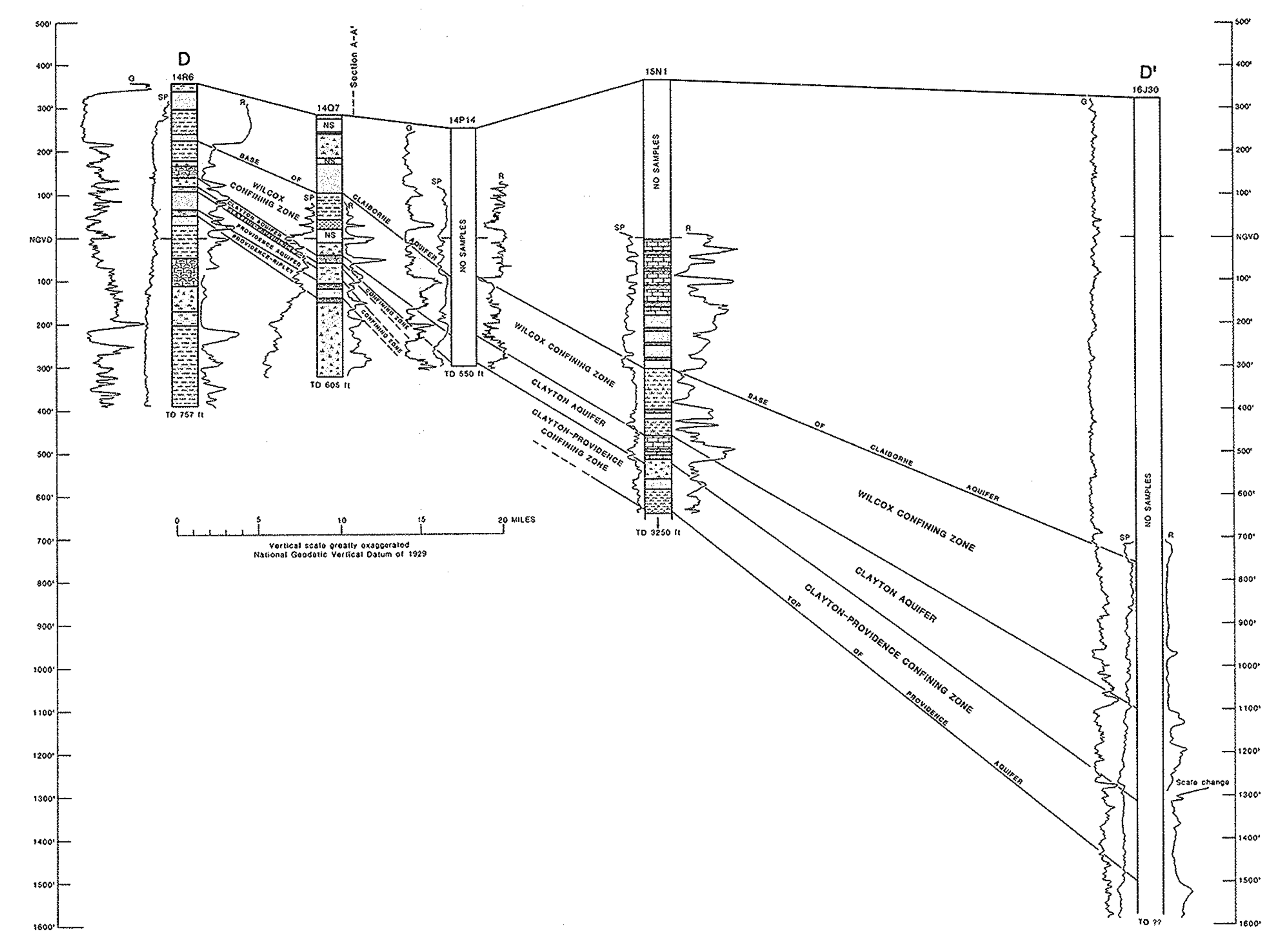


Figure 6.— Hydrogeologic section D-D'.

Cartography by Willis G. Hester

HYDROGEOLOGY OF THE CLAYTON AQUIFER OF SOUTHWEST GEORGIA.

By
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1984