ATTACHMENT E-2

Lithologic Logs from the Two Public Water Supply Wells in the Sylvania Area

The following well logs have been modified from Herrick, 1961 -

GEORGIA GEOLOGICAL SURVEY BULLETIN 70,
WELL LOGS of the COASTAL PLAIN of GEORGIA

SCREVEN COUNTY

Location: Approximately 100 yd. west of Savannah-Atlanta R.R., east side of Municipal Baseball Park, in Sylvania

Well No. GGS 295
Elev.: 202

Owner: No. 3 City of Sylvania
Driller: Stevens and Southern Well Drilling Company
Drilled: April 1952

	Thickness (feet)	Depth (feet)
Miocene (Undifferentiated):		
Sand: fine to coarse-grained, subangular, arkosic; with some clay, tan to red (mottled), sandy	10	10
Clay: bluish-gray to tan to red (mottled), sandy, micaceous; sand, fine-grained, with finely disseminated black pebbles of phosphate.....	10	20
Sand: fine to coarse-grained, subangular, arkosic; some clay, yellowish-green, sandy.....	105	125
Limestone: light-gray, dense, very sandy, phosphatic, fossiliferous (macroshells).....	9	134
Oligocene (Undifferentiated):		
Limestone: light-gray to cream at depth, somewhat nodular, massive, fossiliferous (fragments and molds of molluscan shells, echinoid and bryozoan remains, Ostracods and Foraminifera).....	86	220
Upper Eocene: Jackson Group: Cooper Marl:		
Limestone: white, rather soft and chalky, fossiliferous (echinoid and bryozoan remains and Foraminifera.....	38	258
Middle Eocene: Claiborne Group: Lisbon Formation:		
Limestone: light-gray, dense, very sandy, sparsely phosphatic, fossiliferous (macroshells, echinoid and bryozoan remains).....	10	268
Sand: fine to medium-grained.	22	290

	Thickness (feet)	Depth (feet)
Indurated sand: fine to medium-grained; thin tongues of limestone, gray, dense, sandy, sparsely glauconitic	40	330
Sand: fine to medium-grained; thin stringers of marl, gray, somewhat sandy.....	86	416
Sand: fine to coarse-grained.....	18	434
Limestone: gray, dense, sandy, glauconitic.....	28	462
Sand: fine to coarse-grained.....	13	475
Limestone: gray, dense, sandy, glauconitic.....	15	490

Summary

	Thickness (feet)
Miocene (undifferentiated).....	134
Oligeocene (undifferentiated).....	86
Upper Eocene (Cooper marl).....	38
Middle Eocene (Lisbon formation).....	232

Potential Water-Bearing Zones:

Limestone.....	88
Sand: fine to coarse-grained.....	18
Limestone.....	28

SCREVEN COUNTY

Location: At Sewage Treatment Plant in Sylvania
Owner: City of Sylvania
Driller: Layne-Atlantic Company
Drilled: February 1955

Well No.: 413
Elev.: 210*

	Thickness (feet)	Depth (feet)
Miocene (Undifferentiated):		
Sand: fine to medium-grained, arkosic, finely disseminated phosphate grains; clay, tan to red (mottled), sandy, limonitic	10	10

*Average Elevation based on George State Highway Maps.

	Thickness (feet)	Depth (feet)
Clay: bluish-gray to tan to red (mottled), sandy, limonitic.....	10	20
Clay: yellowish-green, sandy.....	20	40
Clay: as above, but much sandier.....	38	78
Sand: fine to coarse-grained; interbedded limestone, light-gray to white, dense (much calcitized), sandy phosphatic, fossiliferous (macroshells).....	13	91
Oligocene (Undifferentiated):		
Limestone: light-gray, very dense (much calcitized), massive, nodular, fossiliferous (some echinoid and bryozoan remains and Foraminifera).....	5	96
Limestone, yellow to white at depth, saccharoidal (highly calcitized), crystalline, nodular, fossiliferous (as above).....	7	103
Limestone: cream, nodular (much calcitized), fossiliferous (as above).....	65	168
Upper Eocene: Jackson Group: Cooper Marl:		
Limestone: whiter than above, soft, chalky, weathered(?) fossiliferous (abundant bryozoan remains and Foraminifera.....	46	214
Middle Eocene(?): Claiborne Group: Lisbon Formation:		
Sand: fine to coarse-grained, angular, fossiliferous (casts and molds of megafossils).....	2	216

Summary:

Miocene (undifferentiated).....	91	91
Oligocene (undifferentiated).....	77	168
Upper Eocene (Cooper marl).....	46	214
Middle Eocene(?) (Lisbon formation).....	2	216

Potential Water-Bearing Zones:

Sand: fine to coarse-grained.....	13	91
Limestone.....	123	214
Sand: fine to coarse-grained.....	2	216

ATTACHMENT E-3

Groundwater Flow Rate for the Perched Water-Bearing Zone

ATTACHMENT E-3

FLOW RATE IN THE PERCHED WATER-BEARING ZONE

v_s = seepage velocity in centimeters/second (cm/sec)

$v_s = -K\, i/n$

where :

K = coefficient of permeability (or hydraulic conductivity)

ranged between 0.40×10^{-6} and 1.0×10^{-4} cm/sec,

averaging 0.45 x 10 - 4 cm/sec

Hydraulic Gradient (i) averages 0.057

Porosity = 0.293

$$v_s = - \frac{(0.45 \times 10^{-4} \text{ cm/sec})\,(0.057)}{(0.293)} = 0.85 \times 10^{-5} \text{ cm/sec}$$

= 2.68 meters/year or 8.79 feet/year for the average seepage velocity

ATTACHMENT E-4

Groundwater Flow Rate for the Uppermost Aquifer

ATTACHMENT E-4

FLOW RATE IN THE UPPERMOST AQUIFER

v_s = seepage velocity in centimeters/second (cm/sec)

$v_s = -K\,i/n$

where:

K = coefficient of permeability (or hydraulic conductivity)

ranged between 1.08×10^{-3} and 1.71×10^{-3} cm/sec,

averaging 1.39×10^{-3} cm/sec

Hydraulic Gradient (i) varies from 0.022 to 0.010

Porosity = 0.429

$$v_s = -\frac{(1.39 \times 10^{-3}\ \text{cm/sec})\,(0.022)}{(0.429)} = 7.10 \times 10^{-5}\ \text{cm/sec}$$

= 22.5 meters/year or 73.8 feet/year for the higher seepage velocity

$$v_s = -\frac{(1.39 \times 10^{-3}\ \text{cm/sec})\,(0.010)}{(0.429)} = 3.24 \times 10^{-5}\ \text{cm/sec}$$

= 10.2 meters/year or 33.5 feet/year for the lower seepage velocity