GROUND-WATER RESOURCES OF SOUTH CAROLINA'S COASTAL PLAIN -- 1988

AN OVERVIEW

by

Roy Newcome, Jr.

STATE OF SOUTH CAROLINA

WATER RESOURCES COMMISSION
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EXPLANATION OF UNIT ABBREVIATIONS

ft	feet.
ft^3/d/ft	cubic feet per day per foot (transmissivity). See gpd/ft.
ft^3/d/ft^2	cubic feet per day per square foot (hydraulic conductivity). See gpd/ft^2.
gpd	gallons per day (water use).
gpd/ft	gallons per day per foot (transmissivity).
gpd/ft^2	gallons per day per square foot (hydraulic conductivity).
gpm	gallons per minute (well yield).
gpm/ft	gallons per minute per foot of drawdown (specific capacity).
mgd	million gallons per day (water use).
mg/L	milligrams per liter (chemical concentration). For practical purposes, same as parts per million.

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ABSTRACT

Two-thirds of South Carolina, comprising 28 counties, is in the Atlantic Coastal Plain. Sediments of Cretaceous age and younger thicken from zero at the Fall Line to about 4,000 feet at the State's southern extremity. These sediments, which lie on crystalline bedrock, contain an abundance of ground water. About 200 million gallons per day currently is pumped from wells. Saline water, trapped in the sediments when they were deposited, has been flushed out and replaced by freshwater to a maximum depth of 2,000 feet in an area about 40 miles inland from the southern part of the coastline. Along the coast the base of freshwater is as shallow as sea level on the islands, but as deep as 1,800 feet below sea level in Berkeley County.

Most of the freshwater is in the Cretaceous aquifers and the Floridan aquifer (Eocene). Both systems contain prolific aquifers that support more than 200 wells yielding 1,000 gallons per minute or more. Much larger yields are available in many places, although not all of the area has the same potential.

Many sand aquifers in the Cretaceous section yield water that is soft and remarkably low in mineral content; some of it approaches rainwater in the concentration of dissolved solids. Water from the Floridan aquifer is mostly from limestone; consequently it is hard and more mineralized than water in most of the older aquifers.

The southwestern part of South Carolina appears to have the greatest potential for development of large supplies of good water. The eastern extremity of the State can support much additional development, but less than the other parts of the Coastal Plain. The greatest use of ground water is in the Myrtle Beach and Beaufort areas, and they have been designated as capacity use areas for the purposes of conservation and regulation.

INTRODUCTION

The Coastal Plain of South Carolina occupies two-thirds of the State, and it probably possesses 95 percent of the ground-water resources. About 200 mgd (million gallons per day) is pumped from wells in the Coastal Plain; this water supplies 97-99 percent of South Carolina's entire ground-water usage for public supply, industry, and irrigation. Because of the abundant water resources of the Coastal Plain, South Carolina would be classified as a "water-rich" state. This does not mean that the resource is unlimited, however, nor that problems do not exist. Two regions of heavy ground-water withdrawal on the coast have been designated by the South Carolina Water Resources Commission as "Capacity Use Areas" where water-supply development is regulated and monitored. These are the Waccamaw and Low Country Capacity Use Areas, focused at Myrtle Beach and Beaufort, respectively (Fig. 1). It seems likely that the "Trident Area", between the two just mentioned and comprising Charleston, Berkeley, and Dorchester Counties, would be the next Capacity Use Area.

Any regulation of resource development, in order to be effective, must be based on an understanding of the nature of the resource and an appreciation of the the effects of existing and potential developments. Water is a classic example of a resource that must be intelligently developed and managed or the economic and social effects can be overwhelming. With the foregoing in mind, it is the purpose of this report to provide, under one cover, an overview of the ground-water situation in South Carolina's Coastal Plain, so that those having an interest in the subject can gain a basic insight into the occurrence, quantity, and quality of the resource. The data from which the discussion evolves consist mainly of well records, electric logs, pumping tests, and chemical analyses. Water-use and water-level records and geologic information from various references are also employed, the latter to be listed so that the reader may delve more deeply into the rather complex sedimentary geology of the region as desired. It should be mentioned here that many technical reports on ground water have been published for various parts of the Coastal Plain of South Carolina. Most of them deal with a few counties and have a deeper but narrower scope than this endeavor. Numerous reports were produced in the 1980's by the U.S. Geological Survey's Regional Aquifer-System Analysis program. Each of these reports deals with the entire Coastal Plain area in South Carolina or the part of the multistate region that contains the Southeastern Coastal Plain, and each report covers a specific aspect of the hydrology. Taken together their coverage is fairly comprehensive. The most comprehensive single offering is one by Siple (1957), which it will be the duty of the present author to update.

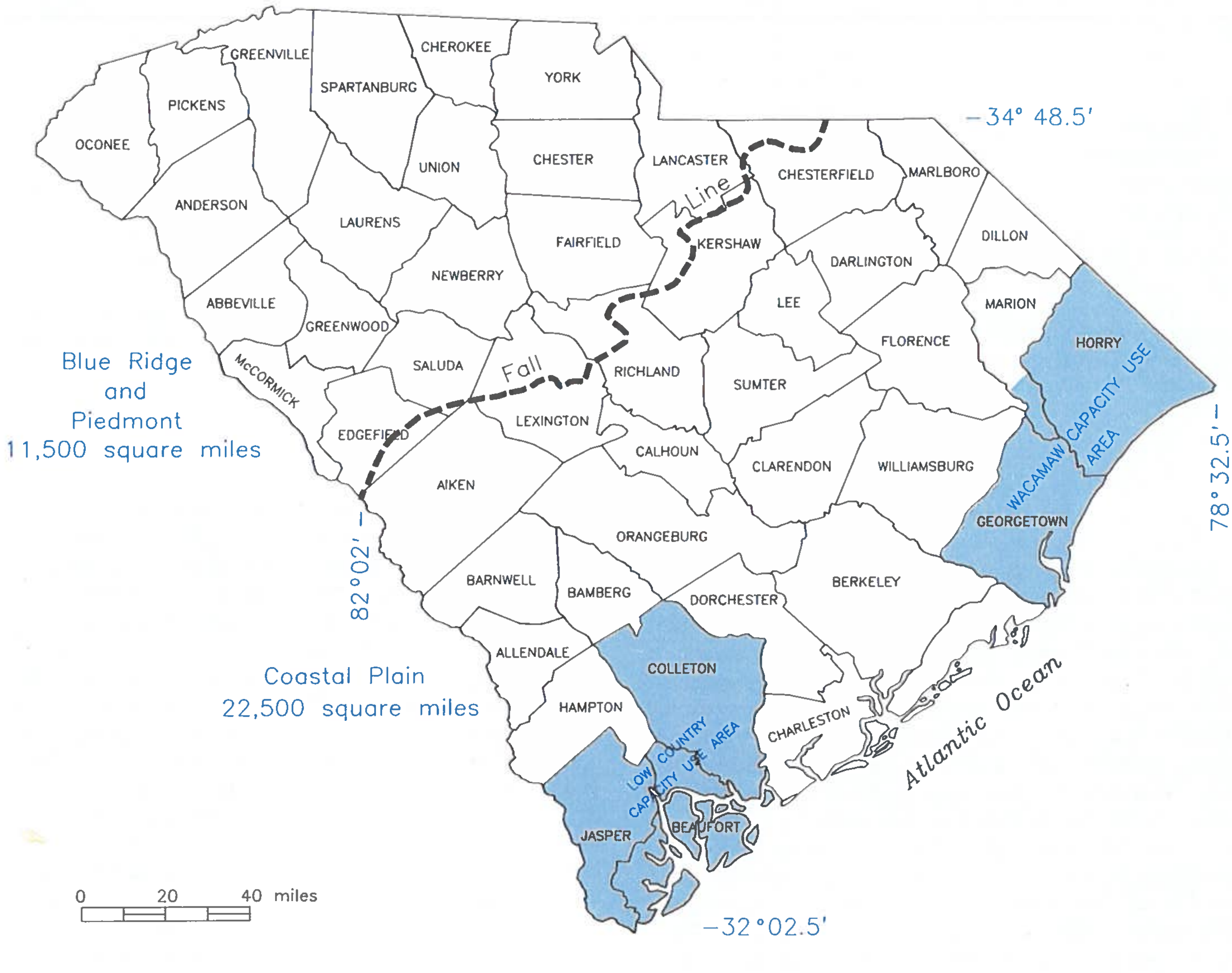

Figure 1. Location of the Coastal Plain in South Carolina and designated capacity use areas.

LOCATION AND GENERAL FEATURES OF THE COASTAL PLAIN

The Coastal Plain lies between the foothills of the Blue Ridge Mountains (Piedmont Plateau) and the Atlantic Ocean. The dividing line for the two physiographic provinces is the Fall Line, an irregular line that marks the landward extent of sedimentary strata (sand, clay, limestone, sandstone). This line, which would be straighter were it not for differential erosion that has resulted in hills and valleys, trends northeasterly across the State from southwestern Edgefield County to northeastern Chesterfield County. Northwest of the Fall Line the Piedmont rocks are igneous (granite, gabbro, diorite) and metamorphic (slate, schist, gneiss). Where the more erodible sedimentary formations on the southeast pinch out, the first waterfalls or rapids occur; hence the term "Fall Line." Columbia is on the Fall Line, as is Augusta, Ga.

The Coastal Plain in South Carolina has an area of about 22,500 square miles and embraces all or most of 28 counties, lying between latitude 32°02 1/2′ and 34°48 1/2′ and between longitude 78°32 1/2′ and 82°02′. Land forms in the Coastal Plain are subdued in comparison with the Piedmont, but some long slopes are noticeable as one travels toward the coast. These usually represent a descent across the half dozen or so remnant terraces that indicate several different levels of the sea during Pleistocene time. The terraced deposits cover the Coastal Plain's bedded formations like a blanket and support the "pineywoods" that are so important in the State's economy.

Elevations in the Coastal Plain range from sea level to 600 ft (feet), the higher elevations being in the counties near the Fall Line.

Extensive watersheds support the large rivers. Major river basins are the Pee Dee, Santee, ACE (Ashley-Cooper, Edisto, Combahee-Coosawhatchie system), and Savannah. Total daily flow to the sea averages 33 billion gallons (South Carolina Water Resources Commission, 1983, p. 1). A substantial part of this flow originates as overland runoff in the Piedmont and Blue Ridge physiographic provinces, but much is picked up in the Coastal Plain from the aquifers across which the streams travel in their routes to the sea. Rainfall that is not required by the aquifers to maintain the water table drains into the stream valleys and sustains the base flow of the creeks and rivers. The two large lakes, Marion and Moultrie, are a prominent feature in the center of the Coastal Plain. They occupy a total of 171,000 acres. Lake Marion, which is mainly in Clarendon County, is fed by the Congaree and Wateree Rivers (through a short reach of the Santee River). Lake Moultrie is in Berkeley County and is fed by outflow from Lake Marion. Most outflow from Moultrie is through the Rediversion Canal to the Santee River, which debouches halfway between Charleston and Myrtle Beach (Fig. 2) A minor outflow from Moultrie is through Pinopolis Dam into the West Branch Cooper River, which flows to the Charleston harbor. The water surfaces of the lakes are at an elevation of about 75 ft above sea level.

CLIMATE

Long warm summers, short mild winters, and very pleasant springs and autumns characterize the weather in the Coastal Plain. Temperatures generally range from near zero to a little more than 100°F, but both extremes are infrequent. Extremes of record are about -10° and 110°. Summer days in the low 90's and winter nights in the high 30's are the rule. The growing season is April through October. Average annual air temperature is 62° along the Fall Line to 66° along the low-country coast, and this dictates the temperature of shallow ground water and the upper end of the thermal gradient (more later on this).

Rainfall averages 46 to 50 inches, being greatest near the coast. The wettest month is July, the driest November; but rainfall is well distributed through the year, with only occasional extended dry or wet spells. Crop irrigation is less extensive than in states farther west. The following historical statement on the Coastal Plain climate in South Carolina was supplied by John C. Purvis, State Climatologist. "During the past 100 years the average temperature in the Coastal Plain has varied from unusually low in the late 1800's to unusually high in the mid-1920's, early 1930's, and the 1950's. Temperature in the 1960's and 1970's averaged 1 to 2 degrees below normal, but in the 1980's it has been 1 to 2 degrees above normal. Rainfall also has varied. It was considerably below normal in the early 1920's and again in the 1950's. In the 1960's and 1970's, however, it averaged several inches higher. Rainfall has been lighter since 1981. It is likely that the weather in the Coastal Plain during the next decade will be, on the average, warmer and drier than it was in the past 30 years."

GROUND-WATER SUPPLY DEVELOPMENT

The 200-mgd pumpage from wells in the Coastal Plain counties, large as it may seem, represents only one-tenth of the water used there for public supply, industry, and irrigation. Abundant surface water of excellent quality is available for the high-volume users for whom well supplies would be inadequate. As water demands have grown, the larger cities and some industries have had to shift to the more prolific surface-water sources. Nevertheless, wells remain the practical source of supply for most towns, small communities, and rural residents, as well as for many industrial plants and irrigators.

A breakdown of ground- and surface-water use by purpose and by county was published by the South Carolina Water Resources Commission (SCWRC) as Report Number 148 (Harrigan, 1985). Data from that report have been updated and plotted as the graph in Figure 3 to provide a ready comparison of use among the counties. The heaviest withdrawal of ground water has been in Horry County, especially along the "Grand Strand" tourist and commercial district. This has led to the designation of the Waccamaw Capacity Use Area. As of mid-1988 the city of Myrtle Beach shifted from ground-water use to a system withdrawing from

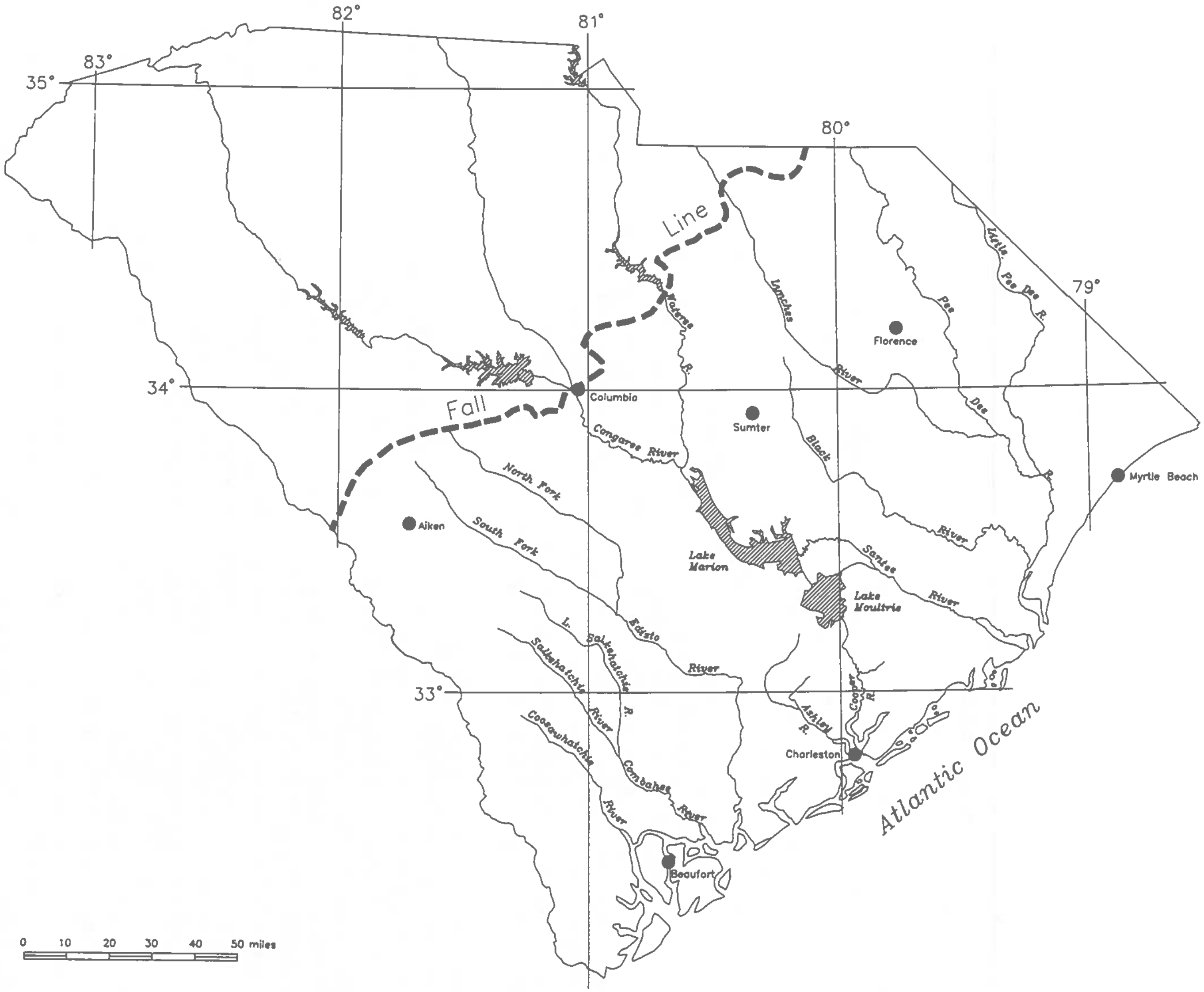

Figure 2. Major drainage features of the Coastal Plain in South Carolina.

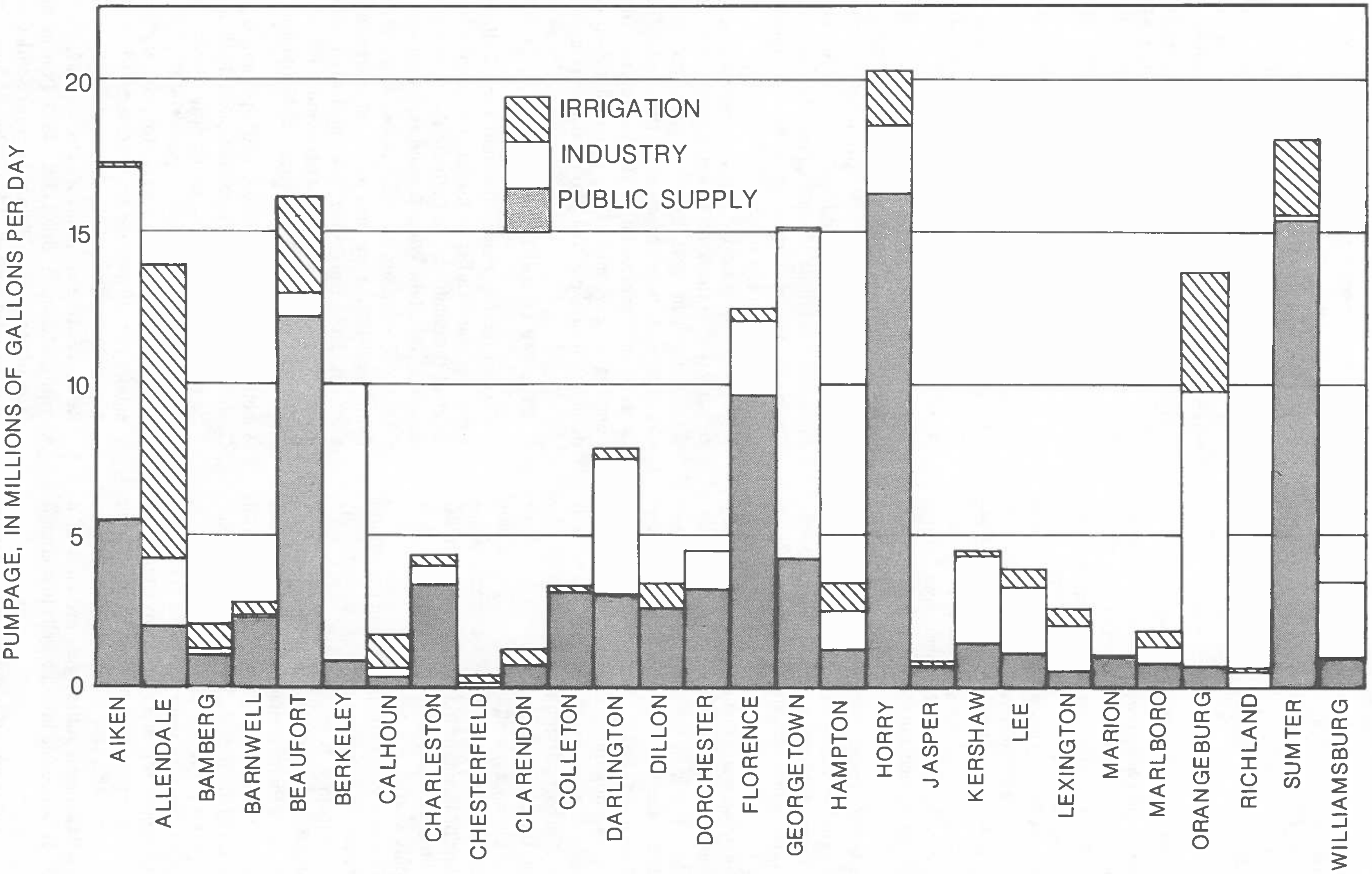

Figure 3. Ground-water use by Coastal Plain counties, 1987.

the Intracoastal Waterway. Another high-use area on the coast is Hilton Head Island, and its withdrawals, in conjunction with the heavy pumpage at nearby Savannah, Ga., have resulted in designation of the Low Country Capacity Use Area. Orangeburg, Sumter, Florence, and Aiken Counties pump a large amount of ground water, but the developments to date have not resulted in serious problems.

GROUND-WATER PROBLEMS

The Coastal Plain is not plagued with ground-water problems; potable water is available nearly everywhere. There are, of course, natural limitations on the amount that can be obtained, and they vary widely from place to place and among the aquifers. Water-quality problems are generally minor and treatable. A notable difference exists between the hard water from the Floridan aquifer's limestone and the soft water from the other systems. On the coast, all the aquifers have greater salinity (mineral content), and fluoride concentrations are high in places in the northeastern coastal counties.

Declining water level (artesian pressure) caused by heavy or concentrated pumping is the principal ground-water problem. Some of the largest declines are in the Myrtle Beach, Georgetown, and Charleston areas, and in these coastal locations a decline of freshwater artesian pressure is conducive to the encroachment of seawater that resides in the downdip reaches of all the bedded formations. The shift to a surface-water supply at Myrtle Beach will permit, over time, a recovery of ground-water levels. Substantial water-level declines have also been recorded in other pumping centers, such as Florence, Lexington, Conway, Sumter, and Beaufort. The chief effect, so far, of declining water levels has been economic (the cost of pumping), although in some places near the sea there has been a slight increase in the salinity. The city of Florence probably is the nearest in time to serious problems related to water-level decline. Solutions to water-level decline problems lie in redistribution of wells, development of alternative aquifers, or conversion to a surface-water supply source.

The most widely observed quality problem in the ground water is excessive iron. Whether naturally occurring in the aquifers or dissolved from well and pump fittings by corrosive water, iron staining and "rusty taste" are common complaints in the Coastal Plain. In many instances this problem can be avoided or remedied fairly simply. More difficult to overcome is the problem of excessive fluoride that, fortunately, occurs in only a few locations. Usually the fluoride can be reduced by mixing with water having a lower concentration. The high salinity of water from many of the deep wells in the Charleston area can be ameliorated by mixing it with better water from other sources or by use of reverse-osmosis apparatus. Hydrogen sulfide gas, producer of a "rotten-egg" odor, is noticeable in some wells in scattered localities.

Lastly, a problem that is not yet widespread but has the potential for serious consequences is that of contamination. As our environment becomes more degraded by the wastes we generate, it is inevitable that some of those wastes will find their way into the ground-water system. We are already hearing of known and potential contamination sites. Aquifers will be even harder to clean than streams or lakes, because all actions are so much slower under the ground, and effects are not easily measured or monitored; indeed, ground-water contamination is often far advanced before it is discovered. There are, at present, several investigations under way to determine the cause, severity, and correction of ground-water contamination in the Coastal Plain. The areas of concern generally are small -- probably the most extensive is at the Savannah River Plant near Aiken, S.C.

CAPACITY USE AREAS

Two parts of the Coastal Plain of South Carolina have been designated capacity use areas by the Water Resources Commission. They are (1) the Waccamaw Capacity Use Area, comprising Georgetown and Horry Counties and the Brittons Neck portion of Marion County, and (2) the Low Country Capacity Use Area, comprising Beaufort, Colleton, and Jasper Counties (Fig. 1). In these areas, a ground-water user must obtain a permit from the Water Resources Commission to withdraw 100,000 gallons or more on any day. The owner of such a supply is required to submit pumpage information to the Commission.

The philosophy behind capacity use areas is, of course, conservation of the State's ground-water resources. Intensive development of wells in the principal aquifer along the Grand Strand, with an accompanying decline in artesian pressure, and the proximity to the Beaufort area of the heavy pumping at Savannah, Ga., provided the incentive for designation of these first two capacity use areas.

PRINCIPAL REFERENCES USED FOR STUDY

This writer has made abundant use of the published reports of many earlier authors and is indebted to them for much of the detail used to flesh out this overview of a large area. The files of the Water Resources Commission provided the basic data that support the conclusions contained herein. Below are listed the principal published references the writer has used. Numerous other references are available, and listings may be obtained from the South Carolina Water Resources Commission and the U.S. Geological Survey.

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----1975, Ground-water resources of Orangeburg County, South Carolina: South Carolina State Development Board, Division of Geology Bulletin No. 36, 59 p.

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----1980, Geochemistry of fluoride in the Black Creek aquifer system of Horry and Georgetown Counties, South Carolina -- and its physiological implications: U.S. Geological Survey Water-Supply Paper 2007, 40 p.

SUMMARY OF THE GEOLOGY

STRATIGRAPHIC SETTING AND NOMENCLATURE

South Carolina's Coastal Plain geology is complex, and the complexity has engendered a multitude of stratigraphic interpretations and counter-interpretations. A newcomer to the region can quickly be overwhelmed by the name changes, facies developments, and contact migrations, to say nothing of the ongoing academic controversies concerning names and age designations. Table 1 presents an attempt to relate the best-established nomenclature with its geographic distribution and hydrologic relevence.

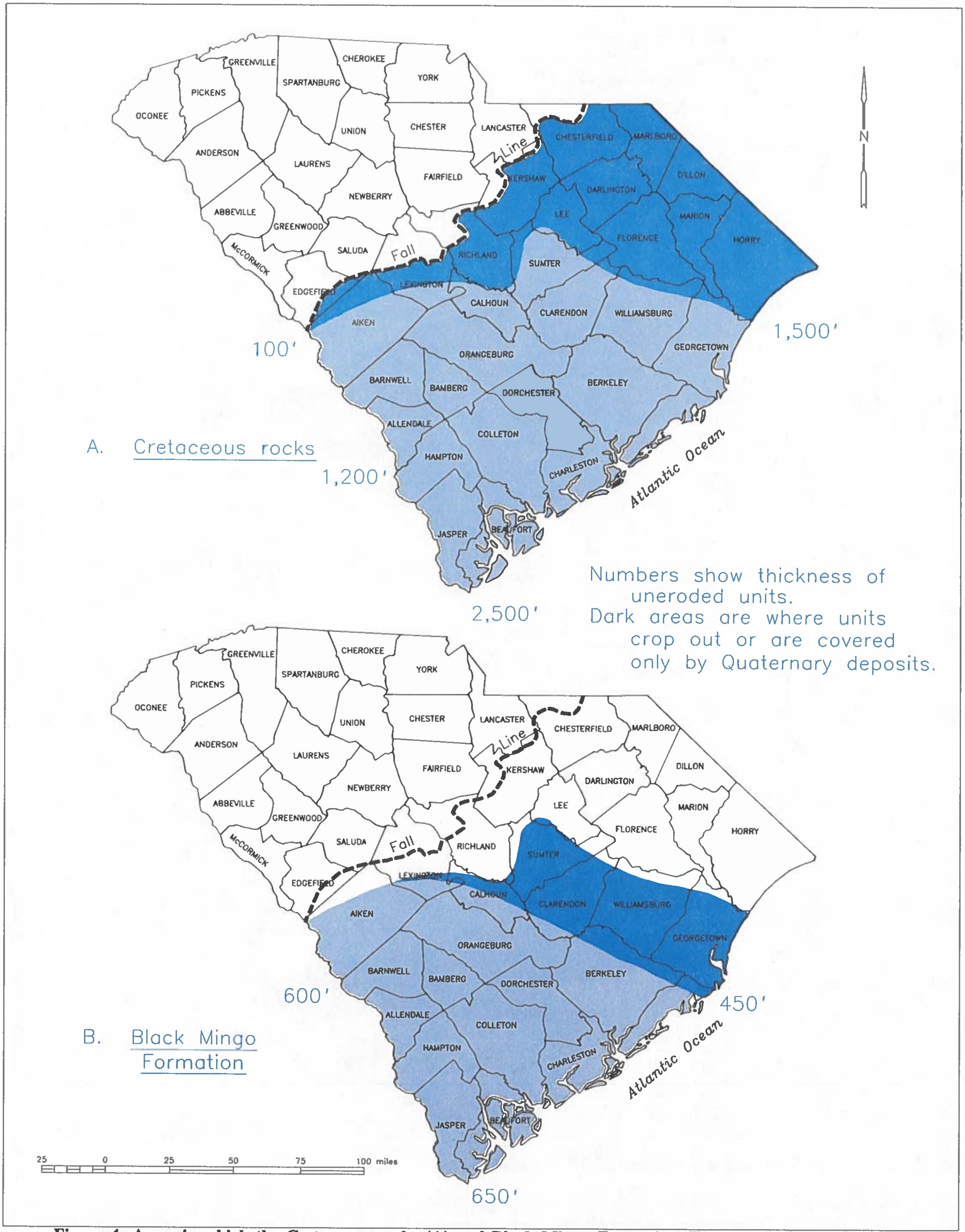
The essential facts of the geology are that we have sand, clay, and limestone in separate formations or as units within formations. These materials represent, among them, the Quaternary, Tertiary, and Cretaceous depositional periods of Earth's history and range in age from the recent past to 100 million years. They lie on Paleozoic and Mesozoic igneous and metamorphic rocks, having accumulated as beds of sedimentary material deposited by streams at the continental margin or chemically precipitated (in the case of limestone) from water in the ocean. Fluctuation in sea level over the ages, along with gradual sinking of the coastal area from the weight of sediment, has resulted in a seaward thickening of the sedimentary mass. Regional structural movements, such as those which resulted in the Cape Fear Arch and Southeast Georgia Embayment, greatly influenced the type and thickness of the sedimentary deposits. Faulting has played a lesser role, but one that is significant in the hydrology of the region. Today, the sediments range in thickness from zero at the Fall Line to about 4,000 ft at the southern tip of South Carolina.

Distribution of the formations of the Coastal Plain can be seen on the maps of Figures 4-6. These maps are generalized and are based largely on information that appears on the geologic sections and structure maps in the report by Colquhoun and others (1983) and on geologic maps of South Carolina published by the U.S. Department of Agriculture, Soil Conservation Service.

Table 1. Formations of the South Carolina Coastal Plain

SERIES		FORMATION Southwest Northeast	
Holocene and Pleistocene		Alluvium and terrace deposits	
Pliocene (?)		Waccamaw	
Miocene		Hawthorn	Eroded or never deposited
Oligocene			
Eocene	Floridan aquifer	Cooper	
		Barnwell (updip) Ocala Limestone (downdip)	
		Huber, McBean, Aiken, and Congaree (updip) Santee Limestone (downdip)	
Paleocene		Black Mingo	
Upper Cretaceous	Cretaceous aquifers	Peedee	
		Black Creek	
		Middendorf and Cape Fear (formerly considered part of Tuscaloosa Group)	
Crystalline rocks of the basement complex (Paleozoic and Mesozoic ages)			

Note: Not all formations named by all workers are listed above. Only those having hydrologic significance and commonly used in the literature are included.

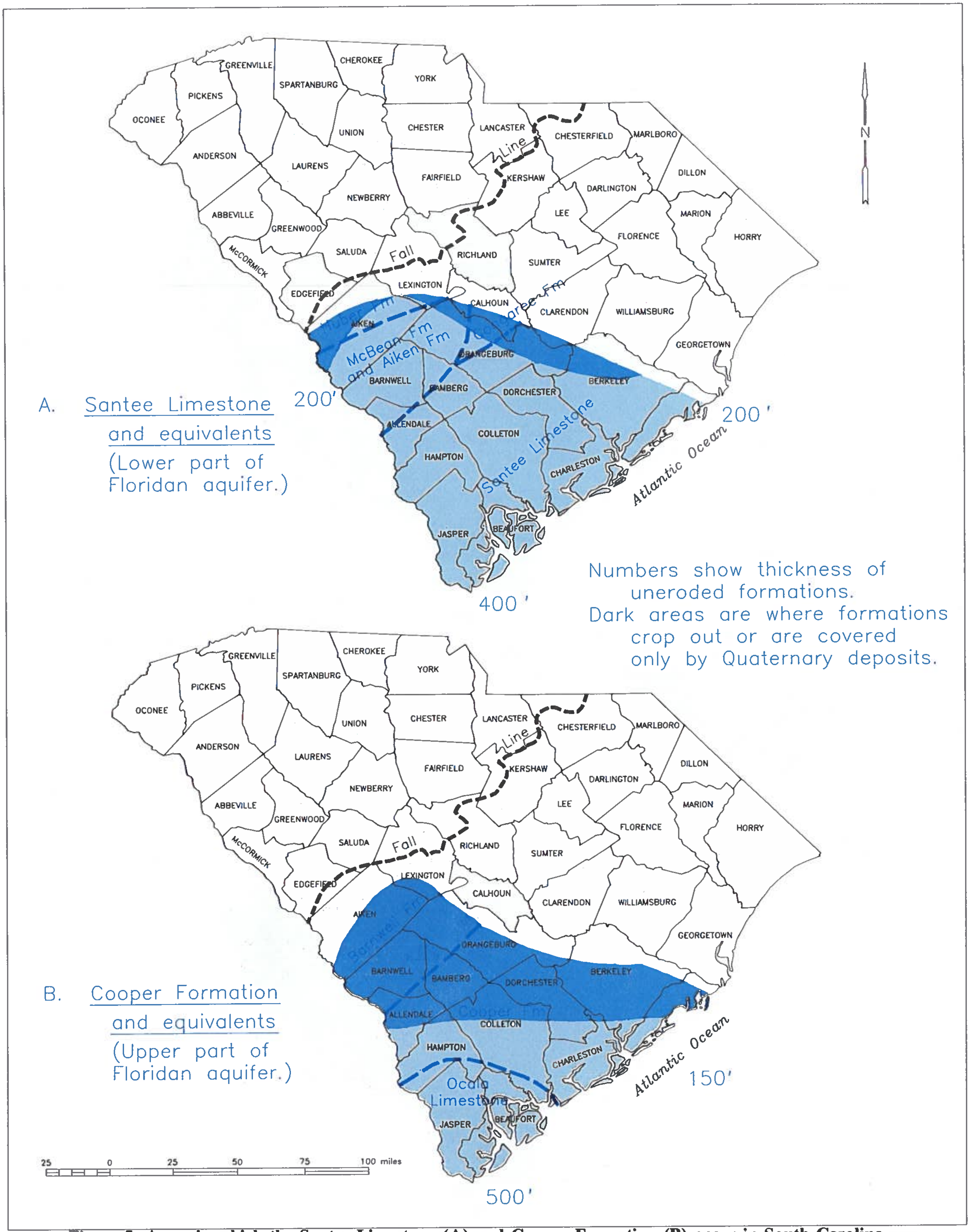


A. Cretaceous rocks

B. Black Mingo Formation

Numbers show thickness of uneroded units.
Dark areas are where units crop out or are covered only by Quaternary deposits.

Figure 4. Areas in which the Cretaceous rocks (A) and Black Mingo Formation (B) occur in South Carolina.


A. Santee Limestone and equivalents (Lower part of Floridan aquifer.)

B. Cooper Formation and equivalents (Upper part of Floridan aquifer.)

Numbers show thickness of uneroded formations. Dark areas are where formations crop out or are covered only by Quaternary deposits.

Figure 5. Areas in which the Santee Limestone (A) and Cooper Formation (B) occur in South Carolina.

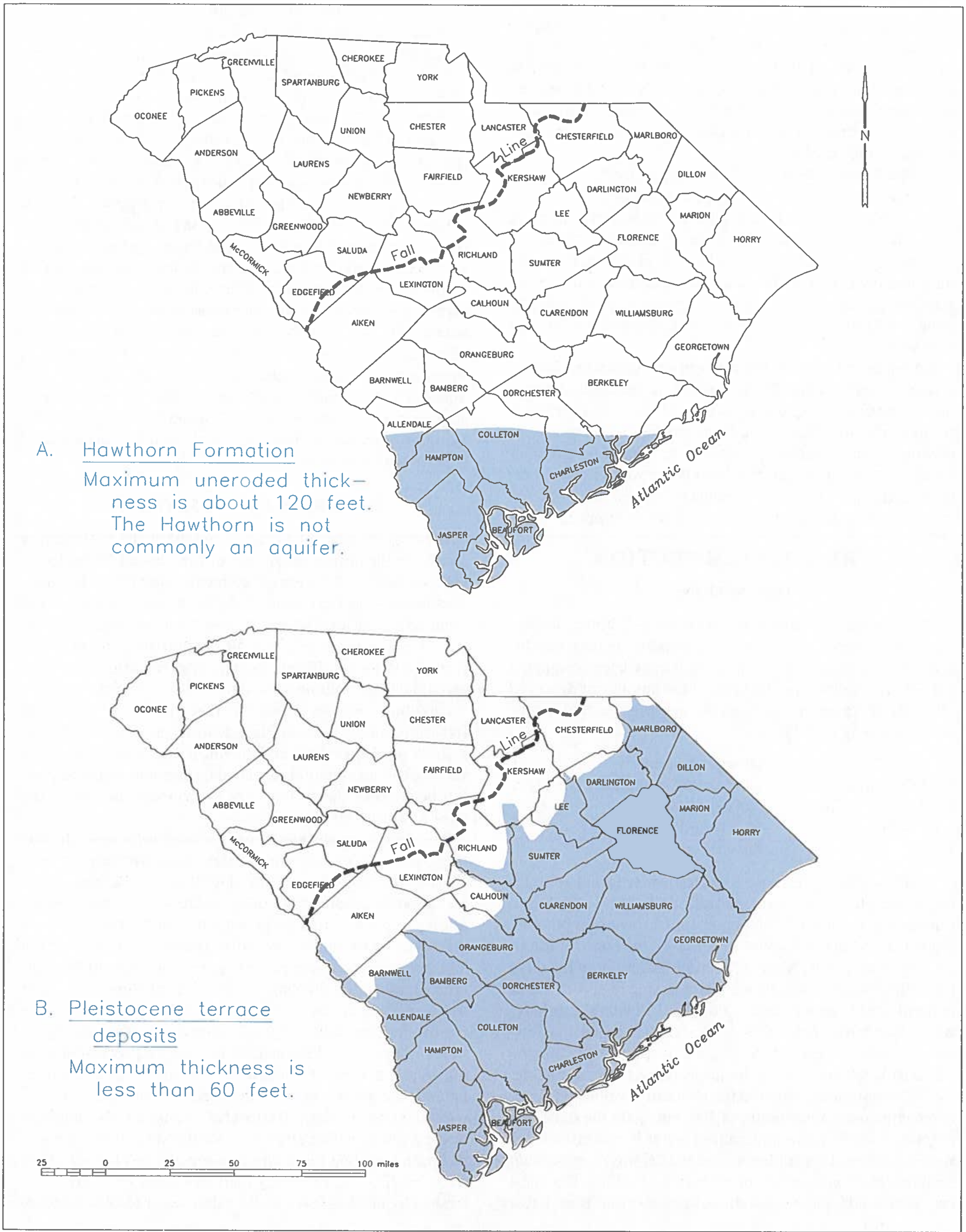


Figure 6. Areas in which the Hawthorn Formation (A) and Pleistocene terrace deposits (B) occur in South Carolina.

HYDROLOGIC RELATIONSHIPS

The physical composition of the Coastal Plain formations determines whether or not they are water yielding. Several of them contain sufficient sand or permeable limestone to constitute important aquifers. Other units are relatively impermeable because of their clayey or solid-rock nature. They fulfill the function of confining beds, creating artesian conditions in the aquifers.

Ground water derives its chemical character from the materials through which it flows or in which it is trapped. The longer the water is in contact with its container the more opportunity it has to dissolve minerals from the container. This activity is greatly influenced by the acidity of the water and, to a lesser extent, by temperature and pressure. Aquifers that contain an abundance of a specific mineral or element are likely to produce water with elevated amounts of that substance.

An important relationship between geology and hydrology is that of permeability. Obviously, the larger and better connected the openings are in aquifers, the easier it is for water to move through them. The Coastal Plain aquifers are exceedingly varied in their permeability, thickness, and continuity; although certain formations are well known as extensive and prolific water producers, others have little or only local importance as sources of water supplies.

FRESHWATER SECTION

DEFINITIONS

"Freshwater" is defined in several ways. Without describing them all here, it is necessary to explain the term for this area and this report. Water has historically been designated "fresh" or "saline" on the basis of the amount of dissolved minerals contained in it. A widely accepted breakdown of saline water is as follows:

	Dissolved Solids
Slightly saline	1,000-3,000 milligrams per liter
Moderately saline	3,000-10,000
Very saline	10,000-35,000
Brine	More than 35,000

It follows from the above that freshwater is that containing dissolved solids in concentrations below 1,000 mg/L (milligrams per liter). Whether or not freshwater is potable, from a chemical standpoint, depends on the constitution of the dissolved solids. Many communities and individuals in the United States routinely use water having dissolved-solids concentrations greater than 1,000 mg/L. Federal drinking-water standards, for many years, recommended that dissolved solids not exceed 500 mg/L but specifically approved up to 1,000 mg/L if the better water were not available. In 1962 the standards deleted the alternative value and simply recommended a maximum of 500, but again the standards permitted use of more mineralized water if no better water were available. This applies also to the 250-mg/L maximum each that is recommended for chloride and sulfate. Chemical standards aside, people will drink the water that is available and, ordinarily, if they can stand the taste the water will not hurt them; however, some good-tasting water can contain harmful substances. All this is in addition to the occasional conclusions by medical science that what was thought to be beneficial is instead harmful, and the reverse. The State of South Carolina follows the standards set by the Federal Government for water quality of public supplies.

Electrical conductivity is a property of water that is frequently measured in water samples because it is a reflection of mineralization (dissloved solids). Electric logs of wells use the electrical resistance of water (an inverse reflection of dissolved solids) in the formations to define the zones of sand, clay, and limestone. Log traces opposite aquifers have as their major influence the dissolved-solids content of the water in the aquifers. Chloride, sulfate, sodium, and bicarbonate are often the major constituents of the dissolved solids, but individually they are just ions in the overall chemical character of the water, along with fluoride, potassium, calcium, magnesium, iron, manganese, nitrate, and any rarer elements and compounds that may be present. Any one of these may serve as an indicator of an existing or potential problem or merely as a characteristic of a particular aquifer.

THICKNESS AND COMPOSTION

Fresh ground water occurs throughout the sedimentary section in the northwestern half of the Coastal Plain. In the southeastern half the lower sediments contain saline water. Freshwater exists to unknown depths in the crystalline basement rocks, at least where the overlying sediments are entirely fresh. It is unlikely that the quantity of water available from the latter is sufficient to make it an important resource, given the large volume of water available from the younger formations. Figure 7 shows the maximum depth of freshwater in the Coastal Plain deposits, as interpreted from a study of electric logs and chemical analyses. The map is subject to modification as new data become available, but it is believed by the author to be a reasonable picture of the base of freshwater.

The deepest freshwater in each aquifer represents the farthest seaward extent to which saline water has been flushed. Most of the sedimentary beds older than the Pleistocene terrace deposits originally contained saline or near-saline water, as they were deposited in the sea, bays, and lagoons. As sea level fell, or the land mass rose, freshwater from rainfall and streams entered the permeable units in their upland outcrop areas and, achieving hydrostatic pressure as a result of confinement by overlying impermeable beds, the freshwater forced the original saline water down the dip of the aquifers toward the sea. This flushing proceeded until the greater density of saline water was sufficient to counterbalance the greater head of the lighter freshwater. In most coastal regions, deep freshwater occurs in the aquifers beyond the coastline and for some distance under the sea. In South Carolina this is the case for part but not all of the coastline (Fig. 8). Evidently there has never been sufficient freshwater head to force all the saline water to the coastline.

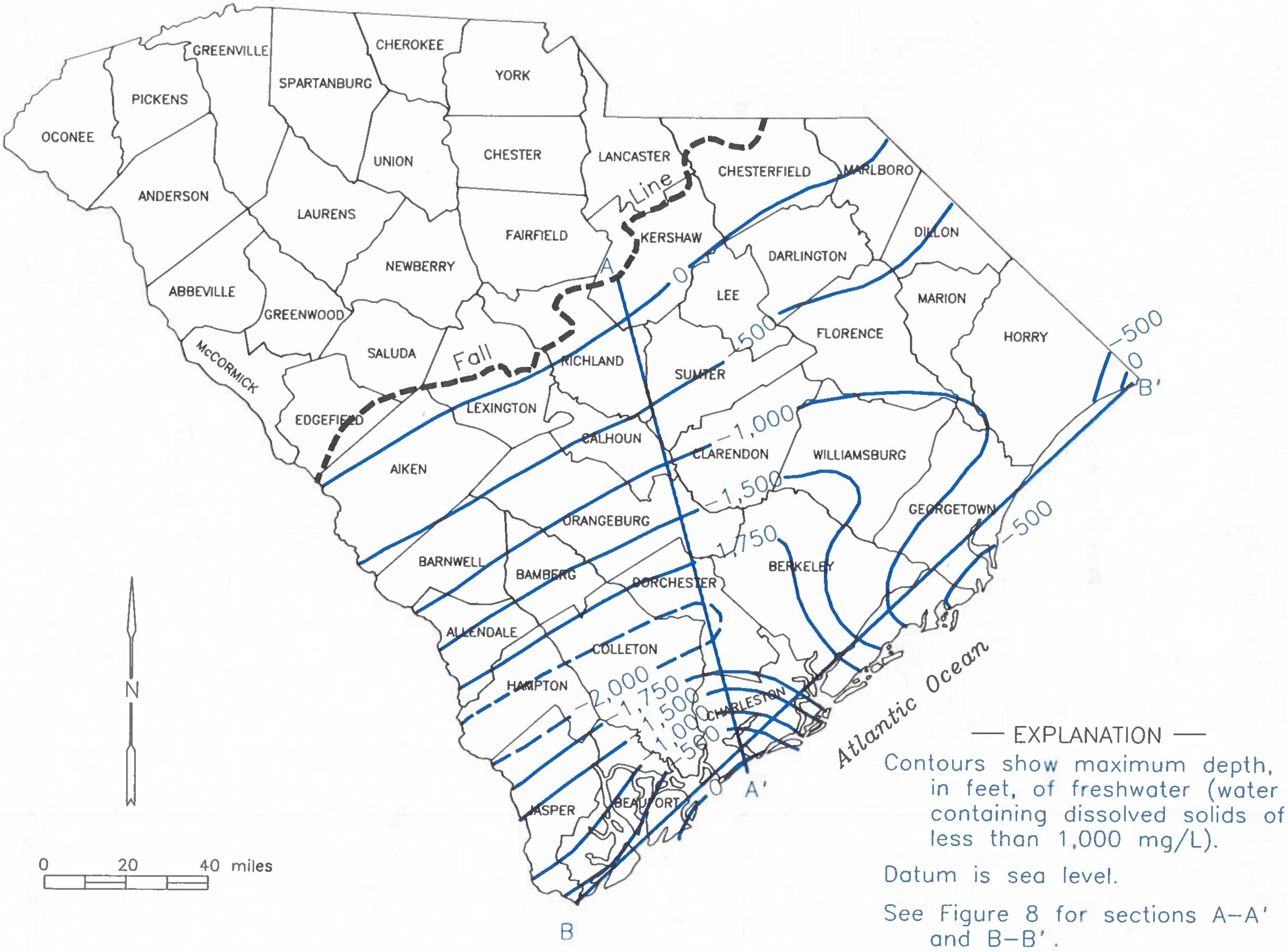
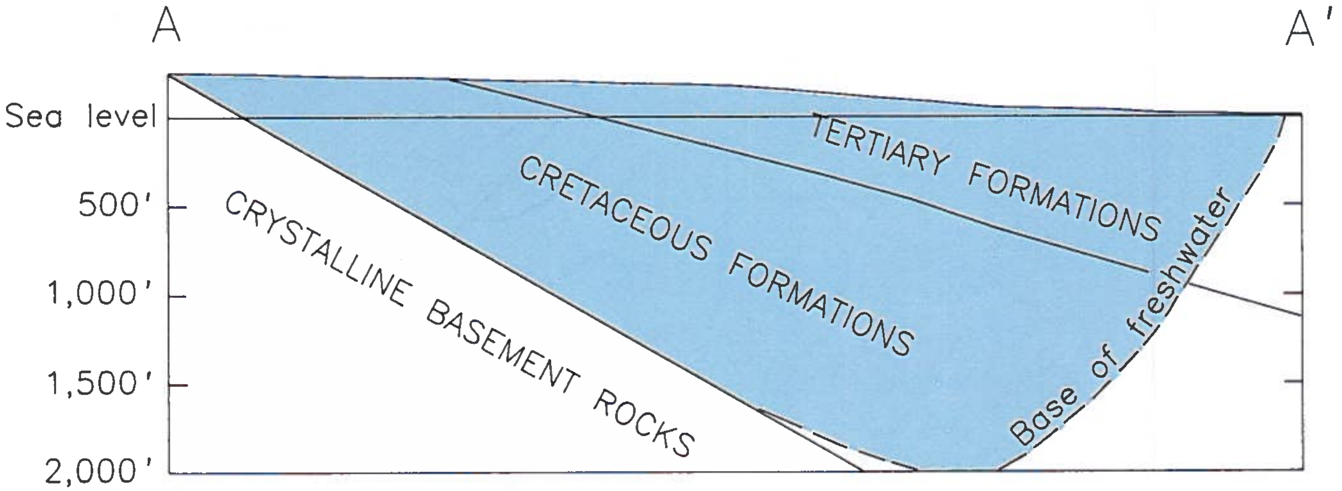
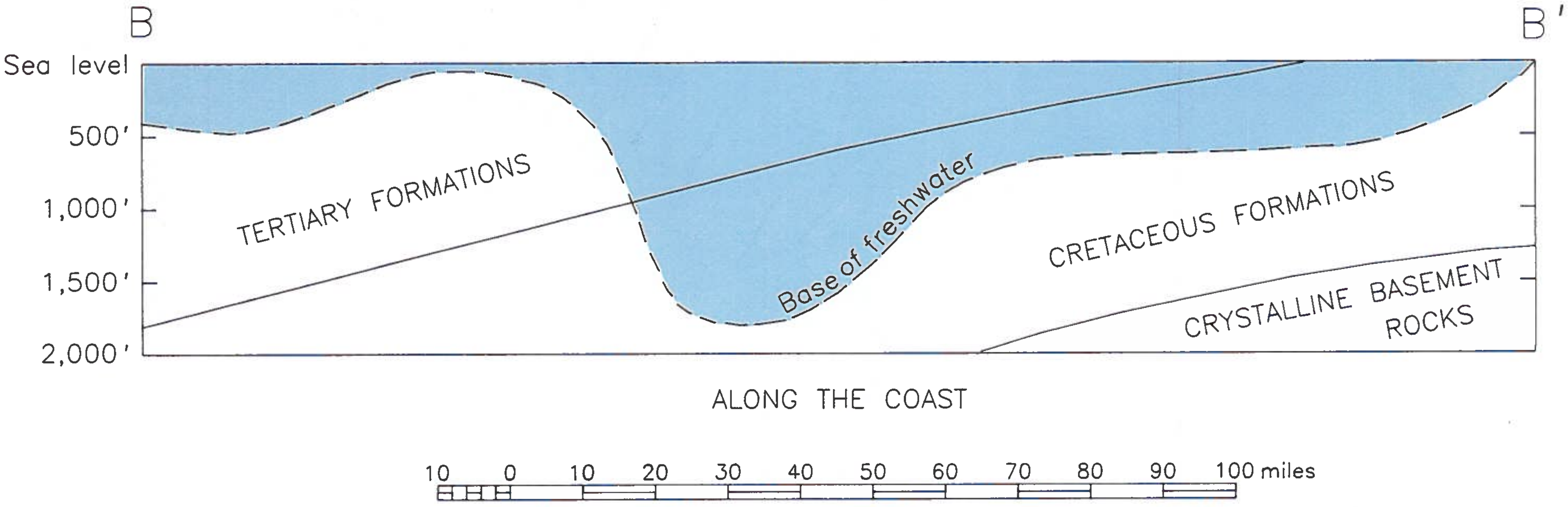


Figure 7. Contours on the base of freshwater in the Coastal Plain formations.

See Figure 7 for location of sections.



FROM THE FALL LINE TO THE SEA



ALONG THE COAST

Figure 8. Position of the base of freshwater relative to the formations in South Carolina's Coastal Plain.

This may be a result of low elevations in the recharge areas of the aquifers. It may, in part, be a result of lost head caused by leakage upward--through poorly confining beds---from the deep aquifers to shallower ones. There is no evidence that pumping from wells has had a significant influence on the depth of freshwater, although such an effect is a technical possibility. The greatest potential for this exists in the area near Savannah, Ga., where prolonged heavy withdrawal from the Floridan aquifer has greatly lowered the natural hydrostatic pressure.

The composition of the freshwater section in the Coastal Plain sediments is basically sand, clay, and limestone, as indicated earlier. Some formations are composed only of sand, clay, and minor amounts of gravel; others are almost entirely composed of clay; and still others have substantial amounts of limestone. In the last, even the clay and sand are likely to be intermixed with limy material. There are no formations that are exclusively sand or exclusively limestone.

AQUIFER CONDITIONS

Each of the formations is recharged by rainfall and runoff in its area of outcrop. Most of the water that infiltrates the outcrop soon seeps into the beds of streams that traverse the outcrop or is taken up by vegetation, but part of it--probably no more than 10 percent of the annual rainfall--remains in the ground. The amount retained is determined by the relation between the water table and stream levels, for these are water-table conditions in the outcrop area. No pressure, other than atmospheric, is involved, and the water table generally follows a subdued land contour, being somewhat deeper under hills than under valleys. Under water-table conditions, water does not rise in wells and is likely to fluctuate seasonally with periods of rainfall and dryness.

As the formations dip toward the coast the permeable units become covered, and therefore confined, by relatively impermeable beds, usually clay. Along the line where an outcropping sand bed becomes covered by a clay or rock bed, the aquifer conditions convert to confined (artesian). Here, the water is under pressure, as in a full pipe, and will rise when the aquifer is penetrated by a well. The level to which water rises in the well is the elevation at which the aquifer became confined, minus some head (pressure) loss owing to friction between the water and the aquifer materials as the water flows slowly down the dip of the aquifer.

Several aquifers in a formation, and even those in adjacent formations, may be hydraulically connected by discontinuities in the confining beds or by leakage through confining beds. Wherever there is a head difference there will be a tendency for flow to occur. Typically the deeper aquifers at a site will have the higher water levels, because they received their recharge farther updip where land elevations are usually higher. This is not always the case, however, and at many sites the deep aquifer has a lower water level than a shallower one. Local pumping also can influence the relative water-level situation. Stream valleys may penetrate a confining bed and become incised in the aquifer, thereby creating local water-table conditions and tending to drain the aquifer.

In summary then: The Coastal Plain aquifers are under confined conditions except in their outcrop areas, and water movement is generally coastward. Some water movement very likely occurs upward through confining beds as a result of head differential.

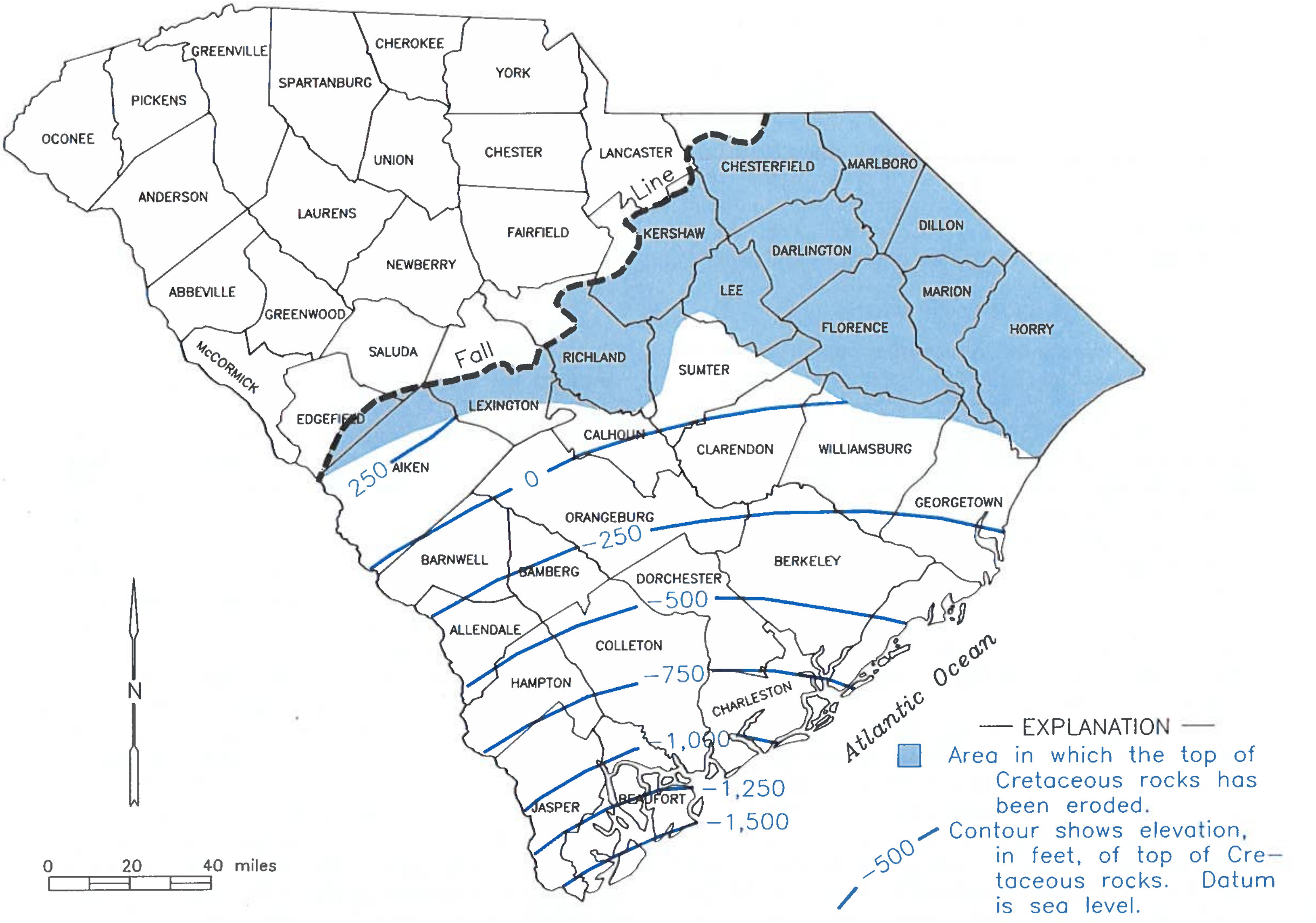
AQUIFER-BEARING FORMATIONS

Cretaceous Formations

The oldest (and deepest) aquifer-bearing units in the freshwater section of the Coastal Plain are of Late Cretaceous age and comprise sediments that have been subdivided into four formations: Cape Fear, Middendorf, Black Creek, and Peedee, from older to younger. The Cape Fear Formation probably correlates with part of the Tuscaloosa Group, which is extensive in the Gulf Coastal Plain. The Middendorf Formation was considered, until recent years, to be a part of the Tuscaloosa Group but is now believed to be younger. The Black Creek Formation very likely represents the Selma Group, also extensive in the Gulf Coastal Plain. The Peedee Formation, youngest of the Cretaceous units, is a confining unit more often than an aquifer, but it contains significant water-bearing sand beds in a few localities. The top of Cretaceous rocks, as represented by the top of the Peedee Formation, is contoured in Figure 9. The four units are not readily differentiated in the subsurface, and the writer's efforts to correlate the contacts of previous workers on a large-area basis have been singularly unrewarding. There are no diagnostic differences in the ground-water types nor in the hydraulic properties of the aquifers. Consequently, there seems little hydrologic reason to persist in differentiating the mass of sediments, and they will be referred to herein simply as the Cretaceous aquifers. These aquifers are the most extensively developed source of water supplies in South Carolina. One reason for this is the fact that they contain freshwater almost throughout the Coastal Plain--from the Fall Line to the coast. Only in small parts of the coastal area is all water saline (dissolved-mineral concentration more than 1,000 milligrams per liter) in the Cretaceous aquifers.

The Cretaceous aquifers primarily are sand, usually fine to medium in grain size, in beds of greatly varying thickness and extent; many are lenticular. A notable feature of the Cretaceous section is the wide diversity, from place to place, in sandiness. Some deep wells penetrate few or no substantial sand beds, whereas other wells seem to be sandy through most of their depth. Clay, often mixed with silt, separates the sand beds or lenses. Although it is difficult to verify, it is generally held that a degree of hydraulic connection exists among the sand bodies in a locality, so that several sandy zones may respond as a unit when a well tapping them is pumped. In favor of this is the similarity of water levels and of water quality.

The thickness of the Cretaceous freshwater-bearing formations ranges from zero at the Fall Line to about 1,500



Modified from Colquhoun and others (1983).

Figure 9. Elevation of the top of Cretaceous rocks in South Carolina, as represented by the top of the Peedee Formation.

ft in Dorchester County. It would be greater but for the shallowing of the base of freshwater near the coast (Figs. 7 and 8).

Black Mingo Formation

The Black Mingo Formation, of Paleocene and Eocene age, is the equivalent of a portion of the Wilcox Group of the states to the west as far as Texas. The Wilcox contains oil reservoirs in its downdip reaches in the western Gulf states, but it also has important aquifers in its freshwater section in those states (Mississippi, Louisiana, Texas).

The Black Mingo, in South Carolina, is present south of an irregular line trending from Aiken County to southern Horry County (Fig. 4). The formation has been partly eroded in a wedge that includes Georgetown, Williamsburg, Clarendon, and much of Sumter and Calhoun Counties. Its uneroded thickness is 450 to 650 ft, the general direction of thickening being southwestward.

Several public water supplies are obtained from the Black Mingo, but the unit is not a prolific aquifer in the class of the Cretaceous formations. In places, such as Moncks Corner in Berkeley County, it is tapped along with the Santee Limestone (Floridan aquifer) to provide adequate quantities of water.

The formation is a mixture of limestone, sand, and clay, the limestone usually being sandy or silty. It contains no thick aquifers, but the water is fresh except in the southern coastal area from Charleston to Savannah. There the base of freshwater rises sharply just inland from the sea and all but the shallow aquifers are saline.

Santee Limestone

A true limestone formation, the Santee corresponds in age and position with a clayey formation of the Claiborne Group farther to the west. The Santee and its clastic equivalents (Table 1) occupy no more than half of the Coastal Plain (Fig. 5). The equivalents, which are in the western part of the area, bear the names Huber, McBean, Aiken, and Congaree Formations and contain significant aquifers in their areas of occurrence. In thickness the Santee ranges from 200 to 400 ft, and it is an important aquifer in the Coastal Plain. It contains freshwater throughout its area of occurrence on the mainland, except in the vicinity of Charleston. Elsewhere between Charleston and Savannah the freshwater-saltwater contact in the formation appears to be immediately offshore.

The Santee Limestone constitutes, in South Carolina, the lower part of the Floridan aquifer, the regional aquifer of great importance to Florida, southeastern Georgia, and southern South Carolina.

Cooper Formation

The Cooper Formation, with its equivalents, the Barnwell Formation and Ocala Limestone (Table 1), has only a little less area of occurrence (Fig. 5) than the Santee Limestone and its equivalents. The Cooper correlates with the Vicksburg and Jackson Groups of the eastern Gulf Coastal Plain (west to the Mississippi River) and is primarily a formation of limy clay and sand. It is relatively unimportant as a source of water supplies. Only the Ocala limestone, in the southern extremity of the State, is a good source of water. It is the upper part of the Floridan aquifer in South Carolina. The Ocala, in its Florida area of occurrence, is one of the Nation's best aquifers.

Terrace and Alluvial Deposits

Extremely important sources of rural domestic water supply, the Quaternary terrace and alluvial materials blanket most of the Coastal Plain (Fig. 6). Significant alluvial deposits are confined to the large rivers and their major tributaries. The terraces are everywhere else except the row of counties just southeast of the Fall Line. All of these deposits are thin, but parts of them are highly permeable sand. The best aquifers are in the lower reaches of the large streams but sufficiently inland to escape saltwater contamination by the estuaries. The terrace deposits contain highly permeable material in places; however, they are likely to be subject to draining by the streams that traverse them, so the available saturated thickness may vary greatly, depending on the drainage density.

RECHARGE AND DISCHARGE

Aquifers of the Coastal Plain are replenished by rainfall on their outcrops, by seepage through overlying and underlying formations, and, in a few places at certain times, by seepage from streams and lakes. Rain, falling on porous soil, percolates downward and then moves laterally toward stream valleys. The ground retains the amount of water required to maintain the water table, some water is taken up by plants, and the rest seeps into the streams. Probably only 6 inches or less of the annual rainfall goes to recharge the ground-water reservoir.

When streams or lake levels are higher than the adjacent water table there is movement of water into the ground; but this ordinarily is a special situation, such as the large lakes, Marion and Moultrie, or a short-duration effect after periods of high rainfall. The usual condition in the Coastal Plain is for the ground to lose water to the streams; this is the way the base flow of the streams is maintained.

The blanket deposits of Pleistocene material that cover most of the Coastal Plain are important in the recharge process. In the broad interstream areas they can soak up a great amount of rainfall and feed it slowly to the streams and underlying less-permeable formations. Without the blanket material, much more of the rain would run off rapidly to the streams.

Coastal Plain aquifers commonly possess sufficient hydrostatic head to force freshwater out past the shoreline and beneath the sea for some distance. This applies to most of South Carolina's coastline but not to all formations. Sections A-A ′ and B-B ′ on Figure 8 show that in much of the inland area the Cretaceous formations contain freshwater throughout their thickness, but along the coast these formations contain more saline water than freshwater. From the Charleston area northeastward to the North Carolina line, water is fresh in the Tertiary formations and the upper part of the Cretaceous beds. How far out under the sea this freshwater extends is not known, nor are the mechanics of discharge known. Unless the freshwater is able to discharge into the ocean bed (which could occur if the aquifer dip is reversed somewhere offshore, or if a fault provides a conduit), it is reasonable to believe that discharge takes place by upward leakage, through imperfectly confining beds, into shallower aquifers. The more head difference there is between aquifers, the more readily can leakage take place.

The most familiar method of ground-water discharge is by withdrawal from wells. As stated at the beginning of this report, about 200 mgd is pumped from wells in the Coastal Plain. If only half a foot of the annual rainfall of about 4 ft goes into the ground-water reservoir, it is more than 30 times the annual withdrawal from wells. It follows then that there is no likelihood of discharge from wells exceeding recharge in the Coastal Plain. This does not mean that there are no local effects of pumping that require attention, because it obviously is possible to withdraw water at a point faster than it can be replenished.

WATER LEVELS AND MOVEMENT

NATURAL WATER LEVELS

The Pleistocene and younger deposits that blanket most of the Coastal Plain have a water table a few feet below the land surface. The water table is under only atmospheric pressure, and the movement of ground water from higher areas to lower ones is controlled by gravity only. Water does not rise in wells.

The Tertiary and Cretaceous aquifers that dip toward the coast have a water table in their outcrop areas and where they are covered by permeable blanket deposits. As these aquifers dip beneath relatively impermeable clay or rock beds, however, the water in them becomes confined under pressure, as in a pipe. It then becomes "artesian water" because it rises in wells that penetrate the aquifers. A contour map that is constructed from the pressure levels for an aquifer is termed a potentiometric (formerly piezometric) map and can be used to determine the direction and gradient of water movement in that aquifer.

Natural water movement in the Cretaceous aquifers is toward the southeast in the upper part of the Coastal Plain, where these aquifers crop out, but more toward the east in the confined section. The gradient of the easterly movement averages about 1½ ft per mile. Ordinarily, ground water would be expected to flow down the dip of the aquifers. In the South Carolina Coastal Plain a combination of circumstances has caused the flow to occur generally along the strike to the east, or at a 90-degree angle to the dip. A reasonable explanation was presented by Aucott and Speiran (1985). In essence, they ascribed the eastward flow to (1) less effective confining beds in the east, which results in the aquifers leaking upward into younger beds and losing head in the process, and (2) shallower dip in the east, which puts aquifers closer to the surface where some are drained by river valleys, thereby losing head. A ready explanation also lies in the difference in elevation of the recharge areas. Average land elevations in the western counties are 100 to 200 ft higher than in the eastern counties. Therefore it is natural to assume that some component of water movement would be easterly. It seems likely that all of the above, and possibly some explanations that have not been proposed, are involved in the eastward flow.

Water movement in the Floridan aquifer is down the dip toward the south. The factors that account for the eastward flow in the Cretaceous aquifers are not present in the Floridan, because the latter does not exist in the eastern counties. The southward flow gradient ranges from about 7 ft per mile in Barnwell County to 1½ ft per mile near the coast.

DECLINES CAUSED BY PUMPING

Pumping from wells in this century has lowered water levels substantially in the Cretaceous aquifers in a large part of eastern South Carolina. The counties involved are Darlington, Dillon, Florence, Horry, Georgetown, Marion, and Williamsburg. Declines have been as great as 190 ft, but an average over the area of those counties is nearer 50 ft. In a much smaller area around Charleston there has been as much as 125 ft of decline for the Cretaceous aquifers.

The other heavily pumped aquifer, the Ocala Limestone (part of the regional Floridan aquifer) has been drawn down about 120 ft at the southern tip of South Carolina (adjacent to Savannah, Ga.) and 50 ft in the Charleston area.

Table 2 summarizes the major effects of pumping since 1900. From the table and the discussion above it can readily be seen why the Myrtle Beach (Waccamaw) and Beaufort (Low Country) areas have been designated capacity use areas and which other areas are candidates for that designation.

AQUIFER AND WELL HYDRAULICS

SUMMARY OF CONCEPTS

Practically all the water pumped from wells in the South Carolina Coastal Plain is from confined aquifers. This is mainly because the shallow water-table aquifers generally are not thick enough to provide the available drawdown necessary to support large well discharges. Consequently this discussion will be restricted to the confined conditions found throughout the study area.

Water in confined aquifers moves in response to differences in hydrostatic pressure, or head. The rate of water movement is determined by aquifer transmissivity and head. Aquifers differ greatly in transmissivity, and even the same aquifer may vary widely in transmissivity from place to place, because this parameter is a function of aquifer thickness and hydraulic conductivity. Transmissivity ordinarily is measured by means of a pumping test, in which

Table 2. Comparison of predevelopment and recent ground-water levels in the Coastal Plain

Locality	Aquifer	Water level, in feet, above (+) or below (-) sea level About 1900	1980-85	1988
Aiken	Cretaceous	+315	+315	+300
Beaufort	Floridan	+ 15	+ 5	+ 5
Charleston	Cretaceous	+125	+ 75	0
Conway	Cretaceous	+ 40	- 15	- 15
Florence	Cretaceous	+105	- 25	- 60
Georgetown	Cretaceous	+ 35	- 60	- 40
Moncks Corner	Black Mingo and Floridan	+ 30	- 20	- 10
Myrtle Beach	Cretaceous	+ 30	- 85	-160
Savannah, Ga.	Floridan	+ 30	- 90	-110
Sumter	Cretaceous	+160	+120	+115
Walterboro	Cretaceous	+155	+140	+135

Note: The city of Myrtle Beach ceased pumping from wells in July 1988 when its surface-water pumping plant was put into operation.

a well is pumped and the resulting drawdown effects in the well, and possibly in nearby wells, are observed.

Inasmuch as well discharge is traditionally stated in "gallons per minute," and water use in "million gallons per day," it is reasonable to use the units "gallons per day per foot" in speaking of transmissivity and "gallons per day per square foot" in speaking of hydraulic conductivity. Gallons per day per foot can be converted to cubic feet per day per foot (or feet squared per day) by dividing by 7.48, the number of gallons in a cubic foot. The same relation applies in converting gallons per day per square foot to cubic feet per day per square foot (or feet per day).

The practical applications of aquifer transmissivity are in well production and pumping effects. A well's specific capacity is a direct reflection of the aquifer transmissivity. As a rule of thumb, dividing the transmissivity, in gallons per day per foot, by 2,000 will provide a good approximation of the specific capacity, in gallons per minute per foot of drawdown. Specific capacity is commonly calculated or projected for a 1-day period to provide comparative values. The specific capacity commensurate with a given transmissivity is not always obtained, owing to well losses (reduced well efficiency). In a fully efficient well, the water level in the well while it is being pumped will be the same as the water level in the aquifer outside the well. This means that the water lost none of its head because of friction as it passed through the screen (and possibly also through a gravel envelope) and into the well. Most wells are less than fully efficient, however, and the degree of efficiency is reflected in the specific capacity. A 50-percent efficient well will require twice the drawdown to produce a given discharge as a fully (100-percent) efficient well, for example. This is an important consideration in decisions involving cost of pumping. It is important also in situations where the available drawdown (distance between the static water level and the well intake) is limited.

Well interference, or the effect that wells have on one another, can be estimated when the transmissivity is known. Variables of pumping rate, time, and distance can be selected and effects predicted for purposes of cost control, efficiency of operations, conservaton of the resource, and space use.

Hydrologic boundaries, which may be either sources of recharge or barriers to flow, produce effects on water levels. The size and importance of such effects depend on the proximity and type of boundary. In contemplating the potential effects of boundaries, it is helpful to bear in mind that most of the drawdown a well undergoes takes place in the first hour or so of pumping, since the drawdown curve is logarithmic, and that any boundary condition will be reflected only in the part of the drawdown after the boundary is encountered by the spreading cone of pumping depression. Of course, a boundary that is encountered within a short time after pumping begins can have a profound effect on water levels and must be considered in well-field planning.

RELATIONSHIPS OF WELLS TO AQUIFERS

Wells in the Coastal Plain are of two basic types, screened and open-hole. The screened type, used in sand aquifers, involves a column of casing with a length of screen or perforated pipe attached to the bottom. The attachment may be either screwed on as an extension of the casing or telescoped through the casing and sealed to it. It is very common in South Carolina to set screens opposite several sand beds in order to obtain the maximum quantity of water or to insure an acceptable mixture of water of differing chemical quality. It is also common to install gravel around the screen for the purpose of increasing the effective size of the well.

Open-hole wells are used in rock aquifers (usually limestone) and consist simply of casing set to a point above the desired water zone and cemented in place. Water from one or more intervals in the open part of the well below the casing is then free to flow into the well whose rock wall remains stable. This type of well is almost always used to tap the prolific Floridan aquifer in the Low Country.

The proportion of an aquifer that is screened determines the percentage of available water that is obtained. Nearly all the production of an aquifer can be obtained by screening 80 percent or more of the sand interval. In a thick aquifer, setting several short lengths of screen is usually cost efficient. To be avoided is setting screen only in the top part or only in the bottom part of an aquifer unless there is a specific reason for doing so, such as water-quality considerations or reduced permeability. Also to be avoided is setting screen opposite nonproducing intervals such as clay or impermeable rock of significant thickness. An electric log, when available, is useful in indicating the best intervals for producing water.

PUMPING TESTS

Data from more than 300 pumping tests made at wells in the Coastal Plain are available in the files of the Water Resources Commission. These tests, made by public agencies and private contractors, vary greatly in their length and reliability. Most are one-well tests in which both discharge and water-level effects were measured in a single well, but there are several multiple-well tests in which one well was pumped and observation wells were measured. The two types of tests are equally useful for determining aquifer transmissivity, but observation wells are required for calculation of the storage coefficient. Generally, the latter can be estimated reasonably for use in predicting pumping effects.

The great majority of pumping tests deemed by the author to provide usable values for transmissivity were made at wells screened in the Cretaceous aquifers. These tests (nearly 250) produced a range in transmissivity from 200 to 200,000 gpd/ft, with a median value of about 10,000 gpd/ft for the upper part, known generally as the Black Creek Formation, and about 20,000 gpd/ft for the lower part, or Middendorf Formation (Fig. 10). Obviously the wide range in values reflects the different thickness screened in the many wells tested. It also reflects the differing hydraulic conductivity among the Cretaceous beds and of the same bed from place to place. Since transmissivity is equal to hydraulic conductivity, in gallons per day per square foot, times aquifer thickness, in feet, it is apparent that with either or both of these parameters varying widely a great range in transmissivity is to be expected.

Only about 30 pumping tests are available for the Floridan aquifer, half of them in Beaufort County. The transmissivity values obtained range from 3,700 to 600,000 gpd/ft. The median of nearly 70,000 gpd/ft is skewed toward the upper end of the range by the preponderance of tests in Beaufort County where the aquifer is thickest (and probably most permeable). It can be seen on Figure 10 that the maximum and median values of transmissivity for the Floridan are greater, by far, than for any other aquifer.

So few tests are available for the shallow deposits above the Floridan aquifer and the Black Mingo Formation that it probably is presumptuous to include the ranges and median values in Figure 10; however, the number of tests is given for each aquifer and the reader can judge the worth of the reported values. It is interesting to note that the median transmissivity values indicated for all aquifers but the Floridan do not differ greatly.

Hydraulic conductivity was calculated for only one-third of the pumping tests of aquifers younger than Cretaceous, either because many of the wells are of the open-hole type in rock aquifers--in which the water-producing intervals are indeterminate--or because reliable logs were unavailable to show sand thickness. For tests of Cretaceous aquifers, the thickness figures are much more available. Hydraulic conductivity can be calculated for nearly three-quarters (175) of the tests. This permits a reasonable analysis of the findings for the Cretaceous aquifers. The range in hydraulic conductivity, in gallons per day per square foot, was from about 50 to 2,500. Median values were 120 for the upper part of the Cretaceous section and 300 for the lower part.

Median values are reported separately above for the upper and lower parts of the Cretaceous section because many workers consider the section to comprise two or more formations. Strangely enough, the only counties in which both

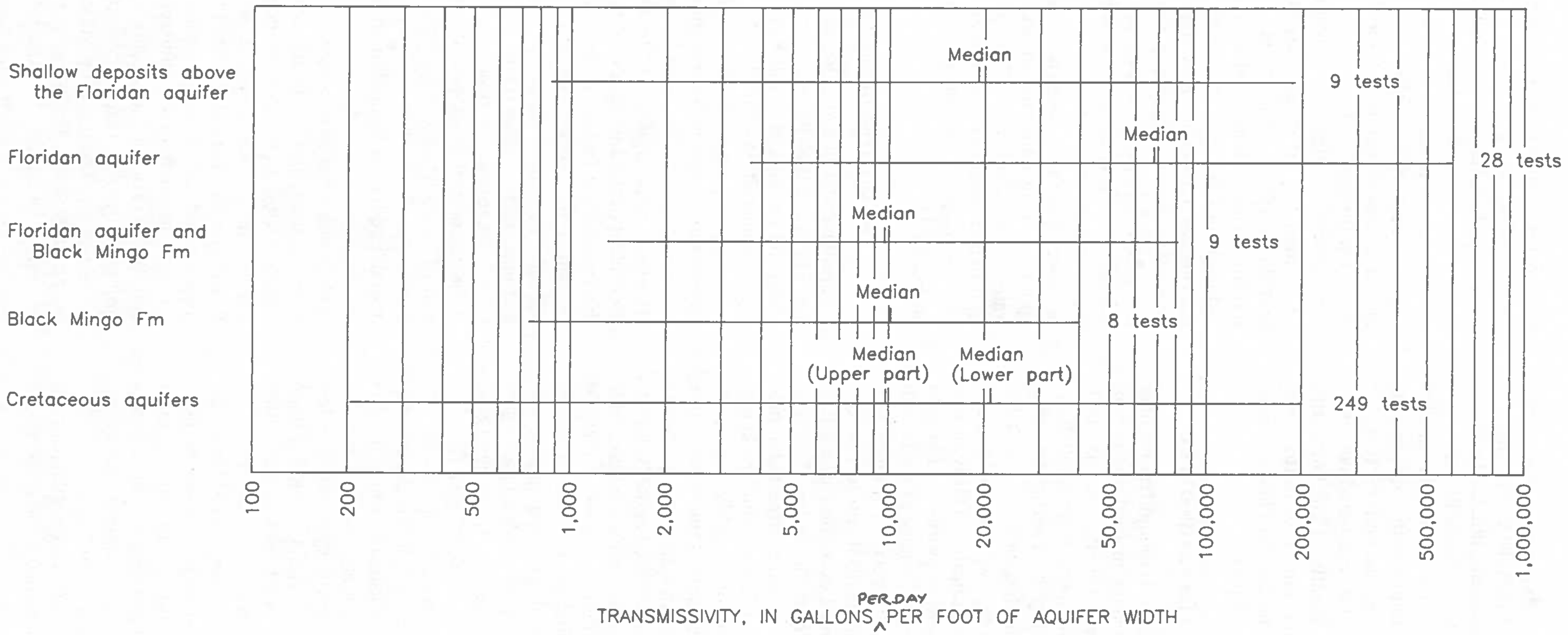


Figure 10. Comparison of transmissivity among the principal water-bearing units of the South Carolina Coastal Plain.

parts are well represented by pumping tests, Florence and Sumter, have the higher median hydraulic conductivity in the upper part; in fact the numbers are not far from the reverse of the overall median values. Admittedly, the county values are less reliable as an indicator because the number of tests is small (only 22). In summary, the picture that emerges is one of a thick sequence of sand and clay in which the proportions are extremely variable. Individual sand beds are difficult to trace and vary greatly in thickness and hydraulic conductivity. In general, sand beds in the lower part of the Cretaceous section in the Coastal Plain are more permeable than those in the upper part.

AREAL VARIATION IN TRANSMISSIVITY

The limited number of pumping tests of aquifers younger than the Cretaceous formations makes an areal comparison less than meaningful. A few general findings may be worth reporting, but their reliability definitely is questionable.

Probably the most prolific aquifers in the surficial deposits (materials younger than the Floridan aquifer) are in the Beaufort-Jasper Counties area, where an average transmissivity of 75,000 gpd/ft is indicated. This is an area in which the deposits under discussion overlie the Floridan aquifer and probably have some interchange of water with that aquifer. Much lower but still respectable transmissivity values have been obtained for surficial aquifers in Kershaw County (river alluvium) and Lexington County (terrace deposits). Along the coast from Charleston County to Horry County the surficial material can be expected to provide moderate yields, the limiting factor being thickness.

The Floridan aquifer, whose most prolific components are the Ocala Limestone and the Santee Limestone, is one of the world's great aquifers. South Carolina is fortunate in having the Ocala and Santee represented in the Beaufort-Jasper Counties area where little or no freshwater is available from the deep aquifers. Transmissivity as great as 600,000 gpd/ft has been determined, and an average of nearly 300,000 gpd/ft is indicated for about a dozen pumping tests in those two counties. Elsewhere in the southern part of the State the transmissivity is much lower but still of significant magnitude--in the range of 6,000 to 50,000 gpd/ft.

Aquifers in the Black Mingo Formation are locally important but represent a minor resource in the general picture. The highest transmissivity indicated by pumping tests is 40,000 gpd/ft, in Calhoun County. Several tests in Berkeley County indicate transmissivities ranging from less than 1,000 to more than 30,000 gpd/ft. Black Mingo aquifers often are screened in combination with other aquifers. The Moncks Corner area is an example--Black Mingo and Santee Limestone aquifers are screened in several wells. The Black Mingo is also known to be screened along with other parts of the Floridan aquifer and with the upper part of the Cretaceous section. In pumping tests at wells producing from two or more aquifers, it is almost impossible to ascribe the proportionate parts of the yield.

Pumping tests of Cretaceous aquifers are available in sufficient numbers to provide a credible pattern of transmissivity, and this is illustrated in Figure 11. That map helps in understanding a few ground-water facts of the Coastal Plain. Note that the Grand Strand and the Florence area are in the region of lowest transmissivity. This, in combination with the heavy pumping in those areas, has produced the greatest water-level drawdowns in the Coastal Plain, which has resulted in designation of the Waccamaw Capacity Use Area. On the other side of the State, the region of highest transmissivity contains the Savannah River Plant, where heavy pumping for many years has produced only minor drawdown effects. The region labeled "Probable high transmissivity" is one in which few large wells have been installed and few pumping tests are available, but the thickness of individual freshwater-bearing sand beds (as indicated by electric logs) and the total thickness of the Cretaceous freshwater section (1,000 ft in places) suggest strongly that the composite transmissivity is high. Elsewhere the transmissivity for the Cretaceous aquifers can generally be expected to fall between the values of 20,000 and 50,000 gpd/ft. Bear in mind that in practically no place is every water-bearing sand tapped. The transmissivity values recorded usually represent the best intervals, however, and probably are reliable indicators of the relative standings shown on Figure 11.

PREDICTED EFFECTS OF PUMPING

Aquifer and well hydraulics dictate the effects of pumping. The transmissivity and storage coefficient control the effects on the aquifer, while well efficiency and degree of aquifer penetration control the effects on the well.

The aquifer responds to the withdrawal of water by feeding more water into the withdrawal point. This results in drawdown of the water level (or artesian pressure) elsewhere in the aquifer. If the transmissivity and storage coefficient of the aquifer are known (or can be estimated), the drawdown effects at various distances and times can be calculated for selected withdrawal rates. The time- and distance-drawdown graph of Figure 12 illustrates the hydraulic relationships involved. Such a graph is of great value in locating wells so as to insure tolerable interference. A shortcoming of the graph is that it is based on the assumption of no hydrologic boundaries (sources of recharge or barriers to flow). For this reason, among others, it is desirable to have information on the subsurface geology of the locality.

Hydrologic boundaries can be identified and located by pumping tests, and it is highly desirable to make pumping tests of such duration that boundaries within a reasonable distance have time enough to show up in the test data. Drawdown rates are steepened by a discharging boundry (barrier) and flattened by a recharging boundary (source); however, it should be remembered that a boundary affects only the drawdown that occurs after the boundary is encountered by the spreading cone of water-level depression. Since the overwhelming proportion of the drawdown occurs in the early hours (even minutes in many situations) of pumping, the effects of boundries are often of little conse-

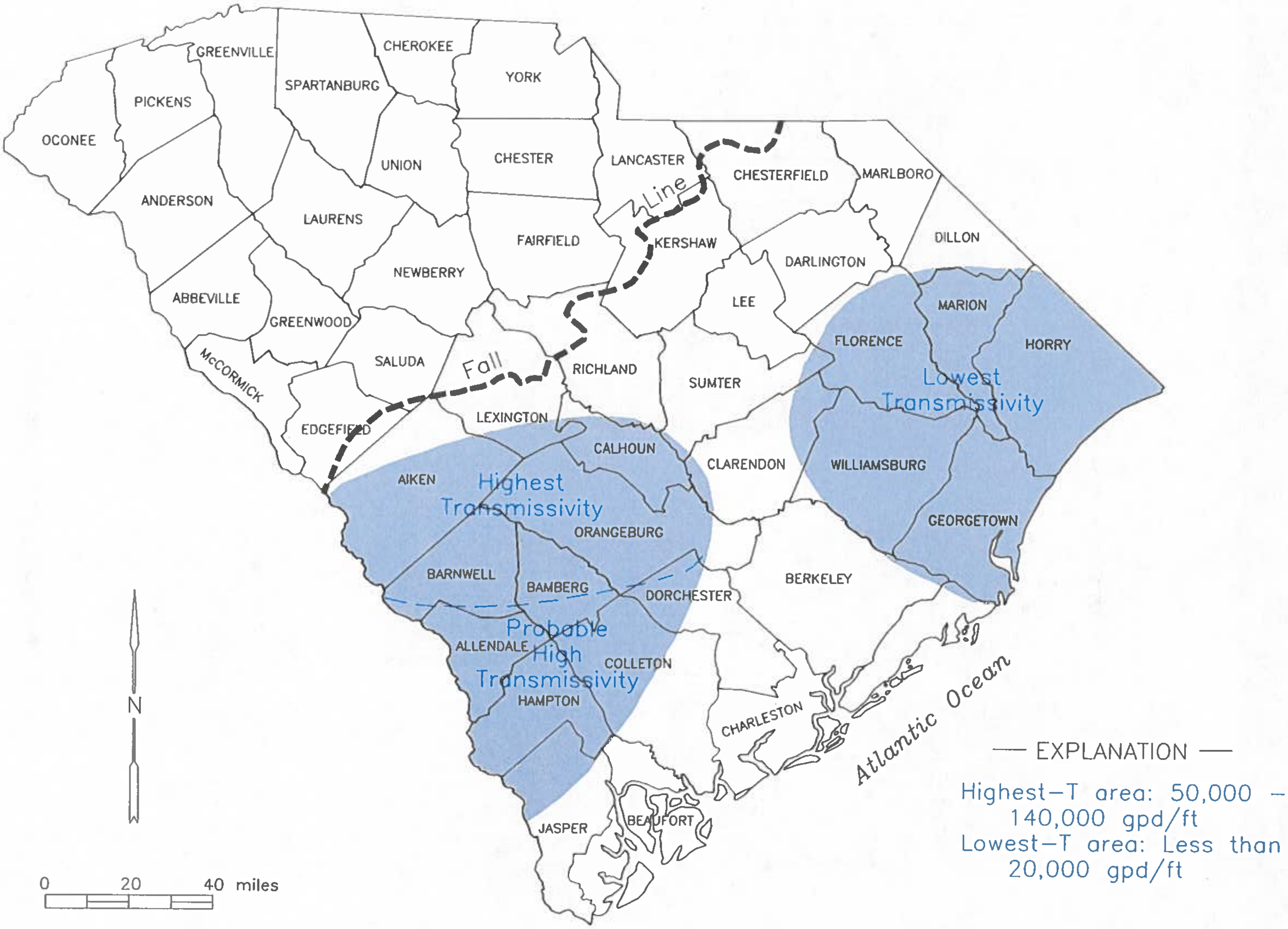
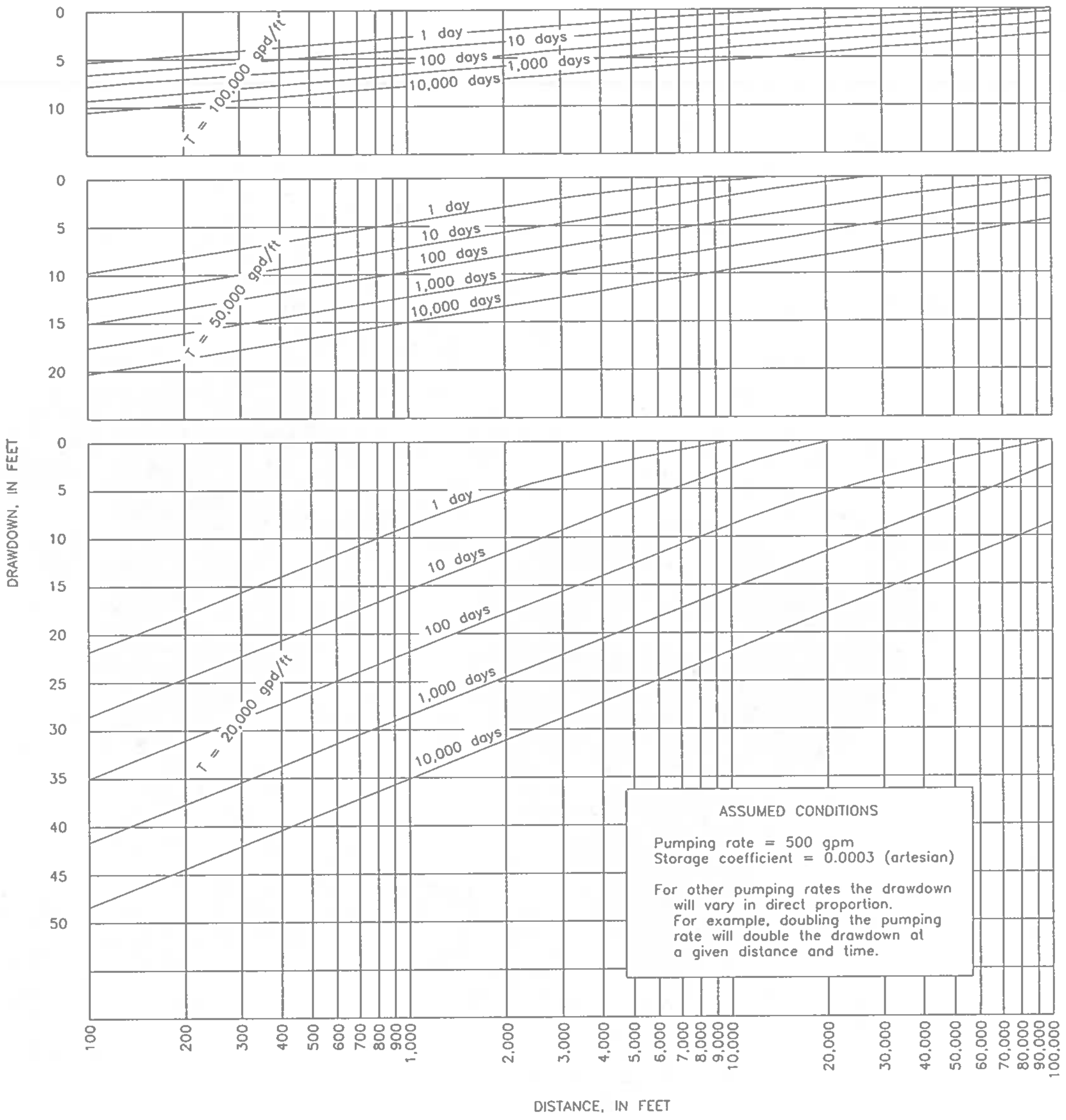


Figure 11. Areal variation in transmissivity for Cretaceous aquifers, as indicated by pumping tests.



ASSUMED CONDITIONS

Pumping rate = 500 gpm
Storage coefficient = 0.0003 (artesian)

For other pumping rates the drawdown will vary in direct proportion. For example, doubling the pumping rate will double the drawdown at a given distance and time.

Figure 12. Predicted pumping effects for selected combinations of time, distance, aquifer conditions, and pumping rate.

quence from a practical viewpoint. A judgment has to made in each situation, of course, and must consider total water needs, pumping schedules, and pumping costs.

The storage coefficient used for the time- and distance-drawdown graph (0.0003) is believed to be a reasonable one for all the artesian aquifers of the Coastal Plain. Definitive values are not available by area or by aquifer, and it is likely that they never will be. A range between 0.0001 and 0.0006 probably would contain nearly all of the values that sophisticated pumping tests could reveal for the artesian aquifers. Examples of the effect of differing storage coefficients on drawdown are given in the following table.

Storage coefficient	Transmissivity (gpd/ft)	Time (days)	Distance (feet)	Drawdown (feet) caused by pumping at 500 gpm
0.0001	20,000	10	1,000	18.4
.0003				15.2
.0006				13.2
.0001	100,000	10	1,000	4.6
.0003				4.0
.0006				3.6

Predicting the drawdown in a pumping well can be done if the well's specific capacity is known. To repeat a little of what has been said before--the specific capacity is the yield, in gallons per minute, for each foot of drawdown; it is usually calculated for a 24-hour period. If a well is fully efficient (no head loss as water enters the well), the specific capacity, in gallons per minute per foot of drawdown, will be about one two-thousandth of the transmissivity, in gallons per day per foot of aquifer width. The degree to which a well is less than fully efficient will produce a corresponding decrease in specific capacity. This is illustrated in Figure 13, where the cost of pumping will be substantially higher for the inefficient well because the water must be lifted nearly twice as far. The cause of well inefficiency usually is head loss owing to friction as the water flows through aquifer material that is partially plugged by drilling mud and through inadequate-size well screen. Thorough well development enhances efficiency.

Not all wells are constructed to tap the entire thickness of the aquifer; however, the effective thickness tapped is usually considerably more than the actual screen length. For example, screening 60 percent of the aquifer might provide 80 percent of the water obtainable by screening the entire thickness. This is a variable relation that depends on the degree of homogeneity of the aquifer material and the difference between horizontal and vertical permeability. The point to be made is that it is rarely necessary to screen an entire aquifer in order to take nearly full advantage of the resource. Where only a fraction of the aquifer is screened, however, the specific capacity to be expected is less than the full aquifer transmissivity would support. To obtain the most water with the least expenditure for well screen, it is worth considering the use of several short sections of screen in a thick aquifer.

MAJOR WELLS

Many wells in the South Carolina Coastal Plain yield more than 1,000 gpm, and several yield more than 2,000 gpm. The largest yield known to this writer is 3,000 gpm, from a well owned by the Westinghouse Electric Corporation in Hampton County. Hundreds of wells in the Coastal Plain yield more than 500 gpm, so it would be cumbersome to include them all in a listing here, but it may be of some service to the reader to describe the wells that yield, or have in the past yielded, 1,000 gpm or more. Table 3 provides this listing, by county, to include the pertinent data on location, producing interval, and yield as they are available in the files of the Water Resources Commission.

More revealing of a well's potential than the stated yield is the specific capacity. Many of the wells are capable of producing much more than the listed yield. To ascertain the true potential yield, the specific capacity should be multiplied by the available drawdown. The latter is the difference, in feet, between the static (non-pumping) water level and the deepest practical pump setting. The deep aquifers have a great amount of available drawdown, and even with moderate specific capacity the wells can have high yields. For example, a well with a specific capacity of 10 gpm/ft will yield 1,000 gpm when drawn down 100 ft.

GROUND-WATER QUALITY

GENERAL QUALITY FOR THE AQUIFERS

Freshwater--water containing less than 1,000 mg/L in dissolved mineral solids.

Soft water--water having hardness of 60 mg/L or less (expressed as calcium carbonate).

Ground water used in the South Carolina Coastal Plain ranges in chemical quality from near rainwater to slightly saline. Representative chemical analyses are given in Table 4 (back of report). Water in all of the aquifer systems becomes more mineralized with approach to the coastline. Figures 14 and 15 illustrate this for the Cretaceous aquifers and the Floridan aquifer. The very low mineralization and extreme softness of water in much of the Cretaceous section is a reflection of the chemical inertness of the aquifer materials. In short, the water-bearing sand contains low concentrations of the major ions that make up the common minerals in ground water; consequently they are sparsely

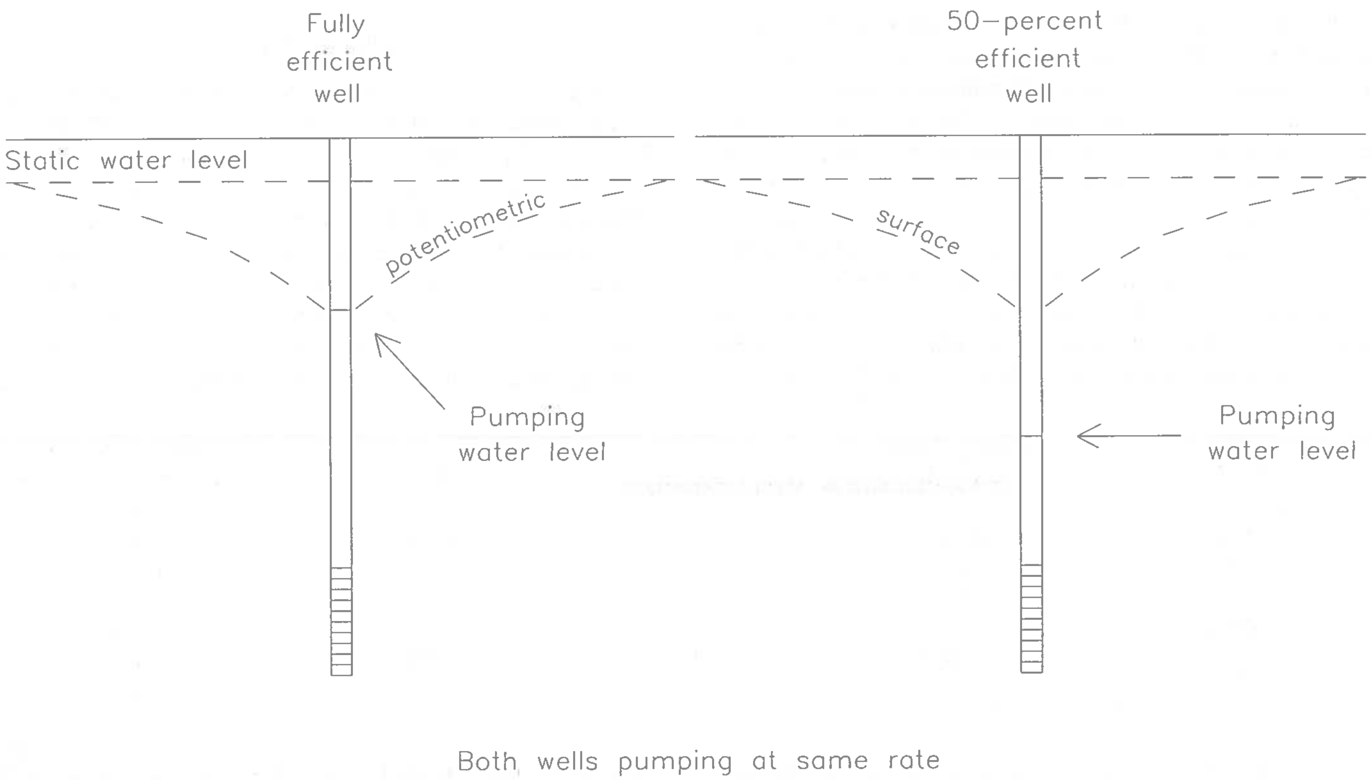


Figure 13. Illustration of effect of well inefficiency.

available for dissolution by the water. In deep zones near the coast, where the water has more storage time in the aquifers and mingles with incompletely flushed connate water (water trapped in the sediments at the time of their deposition), the mineralization is more advanced. Saline water is common in these aquifers in the coastal counties.

Water quality information for the Black Mingo Formation (Paleocene age) is inadequate for illustration by a map. Scattered data suggest the same pattern as for the Cretaceous aquifers and a general range in dissolved solids from nearly 100 to about 500 mg/L, except for the southernmost counties where it probably is greater than 1,000 mg/L. Hardness ranges from near zero to nearly 200 mg/L.

Water in the Floridan aquifer has, in general, a narrower range of mineralization than that in the older aquifers, but near the estuaries brackish surface water contaminates the aquifer in places, resulting in very high mineralization. Dissolved-solids concentrations usually are less than 500 mg/L, but the water most often has a hardness between 100 and 200 mg/L.

TROUBLESOME CONSTITUENTS

Iron

Objectionable iron concentration probably is the most common ground-water quality problem, here and elsewhere. Iron is dissolved from various minerals that make up the aquifers and confining beds. Water that is naturally acidic (pH below 7.0) may corrode the metal parts of water systems and hold iron in solution or suspension, to later stain fixtures and clothing and impart its taste to drinking water. It is often difficult to determine whether the source of iron is minerals, water system parts, or even iron-fixing bacteria which are common in some parts of the United States. Iron is removed from water supplies by chemical treatment or by aeration and filtration.

The most notable iron problems are in water from the Cretaceous aquifers of Florence County and its vicinity. Elsewhere the iron concentration is variable or consistently low in all aquifer systems.

Fluoride

High fluoride concentrations are a concern in the aquifers, especially but not exclusively Cretaceous, of the coastal counties and, generally, the second tier of counties inland. Water from many wells contains fluoride exceeding the 4.0 mg/L maximum contaminant level acceptable under the Federal Safe Drinking Water Act, and many more wells exceed the 2.0 mg/L recommended maximum. Effects of a high fluoride concentration in drinking water can be skeletal or dental fluorosis, depending on the concentration of the ion and the quantity ingested.

The source of the fluoride has not been established for certain. The mineral fluorapatite, common in phosphate

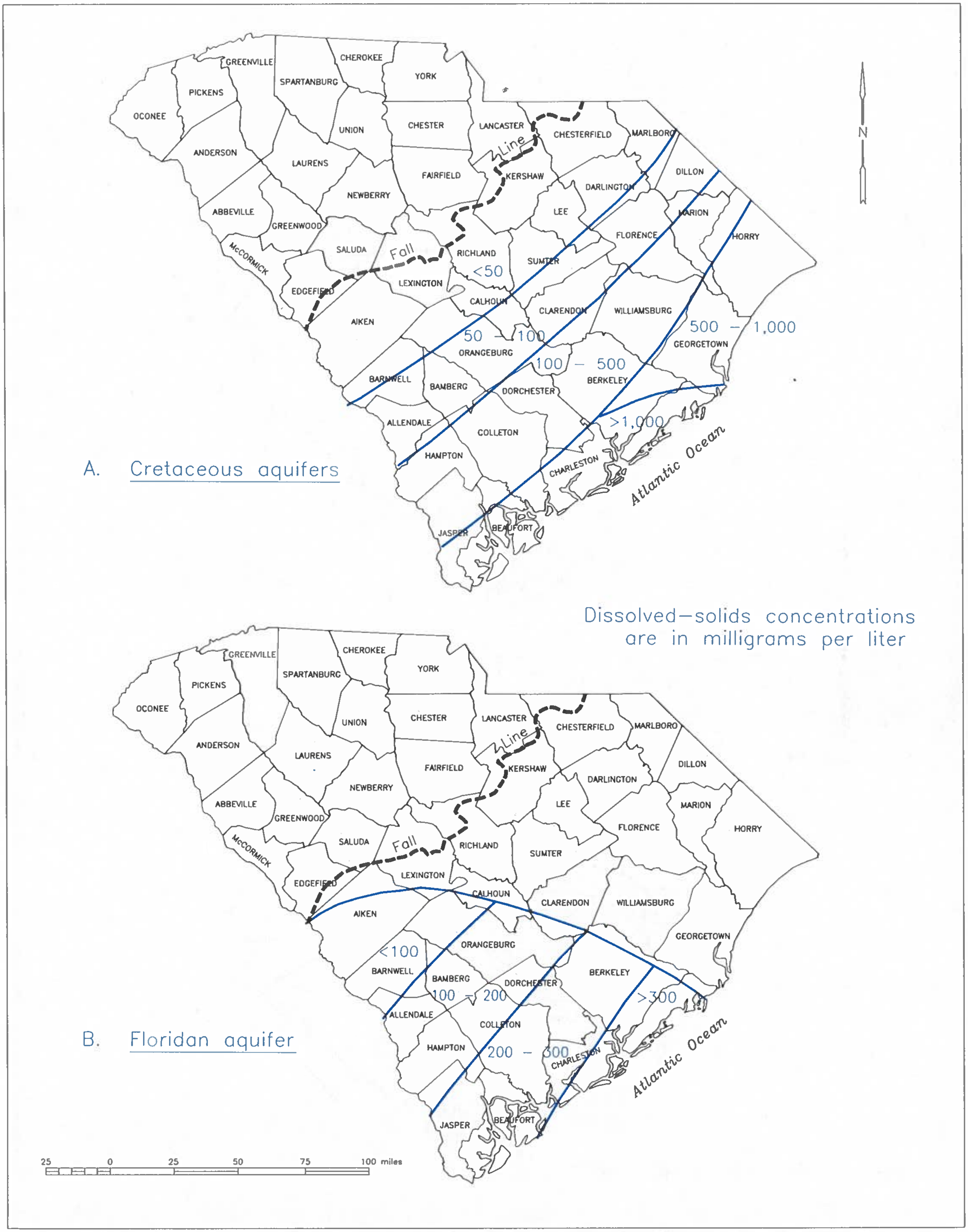
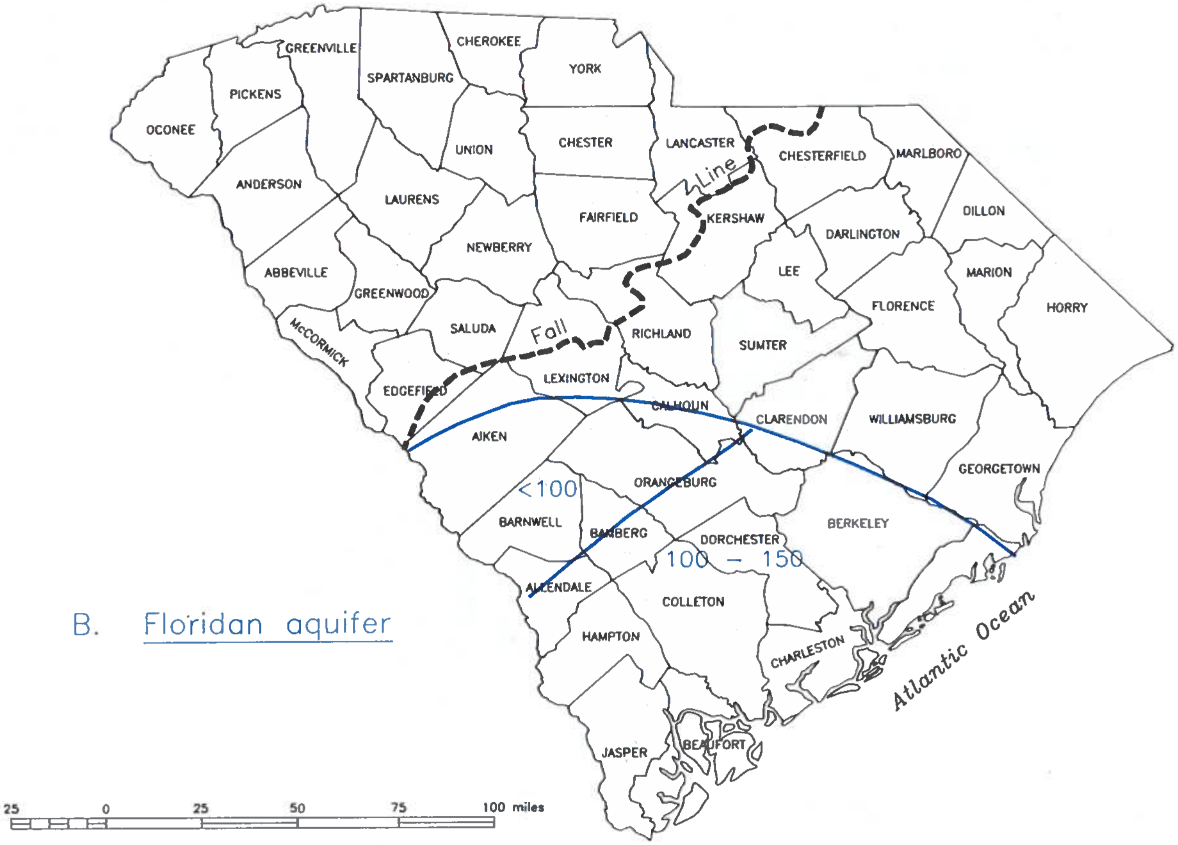


Figure 14. Median dissolved-solids concentration in the Cretaceous aquifers and the Floridan aquifer.

A. Cretaceous rocks

Hardness is in milligrams per liter



B. Floridan aquifer

Figure 15. Median hardness of water in the Cretaceous aquifers and the Floridan aquifer.

deposits, is frequently a source of fluoride in ground water. Zack (1980) postulated a source in the abundant shark teeth in a part of the Cretaceous section. The most economical method for reducing the fluoride in a water supply is to mix the sources of supply and thereby obtain a dilute composite. Reverse osmosis can be used where a diluting supply is not available.

WATER TYPES AND COMPARISONS

Chemical analyses of water can be reproduced in graph form to provide comparisons of aquifers and areas and to illustrate water types. The bar graphs of Figure 16 utilize the equivalent combining weights of the ions to show how the various constituents are combined in the water. For each aquifer in each county, where sufficient data are available, a median mineralization was selected for illustration. Thus, for each analysis illustrated half the analyses available for that county showed greater total mineralization and half showed less. The median is a better indicator of conditions than a simple average, as it is not distorted by extreme high or low values.

It is apparent from Figure 16 that, although few water types are represented, there is a great variation in degree of mineralization among the aquifers and among the counties of the Coastal Plain. As related earlier, the mineralization increases coastward; this is strikingly evident on the figure. Also notable on the graphs is the much greater hardness of the water in the Floridan aquifer than that in the Cretaceous aquifers. Hardness can be measured on the graphs by multiplying the sum of the calcium and magnesium cations by 50 (the result is in milligrams per liter).

Water from the Cretaceous aquifers is primarily a sodium bicarbonate type in the inland counties and a combination of sodium bicarbonate and sodium chloride types in the coastal counties. It is good drinking water and suitable for most industrial processes, except where the sodium chloride is excessive. In places it would not be a desirable water for irrigation uses, as the sodium would tend to replace calcium and magnesium in the soil and thereby reduce the tilth, especially in poorly drained soils.

Water from the Black Mingo Formation does not seem to have a consistency in type, being calcium, magnesium bicarbonate in some places and sodium bicarbonate in others. Probably the water type reflects the part of the formation yielding the water to a specific well. Limestone beds would contain the harder (calcium, magnesium bicarbonate) water. The sand beds would contain the sodium bicarbonate type.

Water from the Floridan aquifer is almost exclusively of the calcium, magnesium bicarbonate type. This implies hard water. The water does not exhibit the extremes of total mineralization of the Cretaceous aquifers and the Black Mingo Formation.

SALTWATER ENCROACHMENT

Saltwater encroachment has not materially degraded the ground-water quality. In the coastal counties, saltwater contamination is common, but it is probably a product of unflushed seawater or estuarine water trapped in the sediments during their deposition. The shallowest coastal aquifers are contaminated as mentioned earlier, by inflow from the estuaries. The potential for saltwater encroachment is always there, of course. Heavy pumping of wells near the coast or near the downdip limit of freshwater in any aquifer could induce the inflow of saltwater by reducing the hydrostatic head of the freshwater. Since Charleston and Myrtle Beach have converted to surface-water sources of supply, the most vulnerable site for saltwater intrusion is Hilton Head Island.

GROUND-WATER TEMPERATURE

The temperature of shallow ground water is very near the annual average air temperature, 62°F on the Fall Line to 66°F along the coast below Charleston. With increase in depth, the temperature rises 1 degree every 60 to 70 ft. The thermal gradient differs somewhat from place to place for various reasons, some not understood; but probably the largest variation is caused by differences in depth and/or temperature of deeply buried igneous rocks, or plutons. As examples, the temperature of ground water at 1,000 ft at Myrtle Beach is near 85°F, and at 2,000 ft at Charleston it is 100°F. See the graph in Figure 17.

Deep-well temperatures are difficult to measure in a reliable manner. In pumping wells, even at high rates of discharge the water cools significantly in its travel to the surface through an increasingly cooler environment. Many of the electronic measurements of temperature at depth are subject to question, by this writer at least, because he has seen many unrealistic or contradictory readings made by temperature probes in water wells and oil tests.

The practical effects of temperature are seldom of great consequence; however, there are situations in which they have to be considered. Some industrial processes have temperature requirements, and public water supplies may need to be cooled before treatment or distribution. It is not pleasant to live with 90° tapwater, as has been the experience of at least one major city in the southern United States.

AREAS OF MAJOR POTENTIAL FOR DEVELOPMENT OF GROUND-WATER SUPPLIES

Aquifers in the southwestern part of the Coastal Plain of South Carolina offer the best prospect for major water supply development. This is the area in which the Cretaceous aquifers have the highest transmissivity (see Fig. 11) and where the water has a low mineral content.

The high transmissivity results from a generally thick freshwater section (500-2,000 ft) and the thick and numerous individual beds of permeable sand within it.

About 40 percent of the large wells of the Coastal Plain (yielding more than 1,000 gpm) are in the area being discussed. Prominent among these are the wells supplying

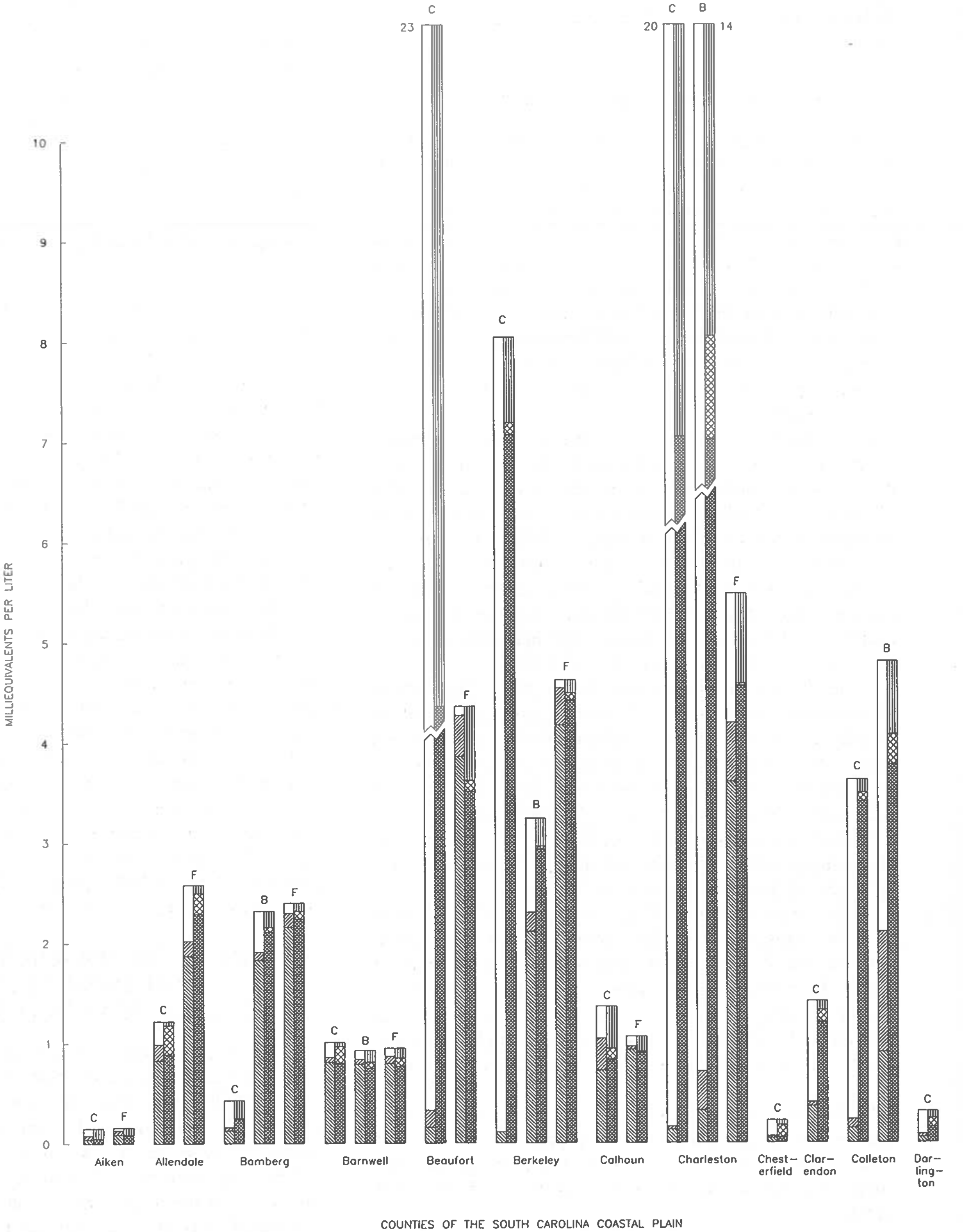
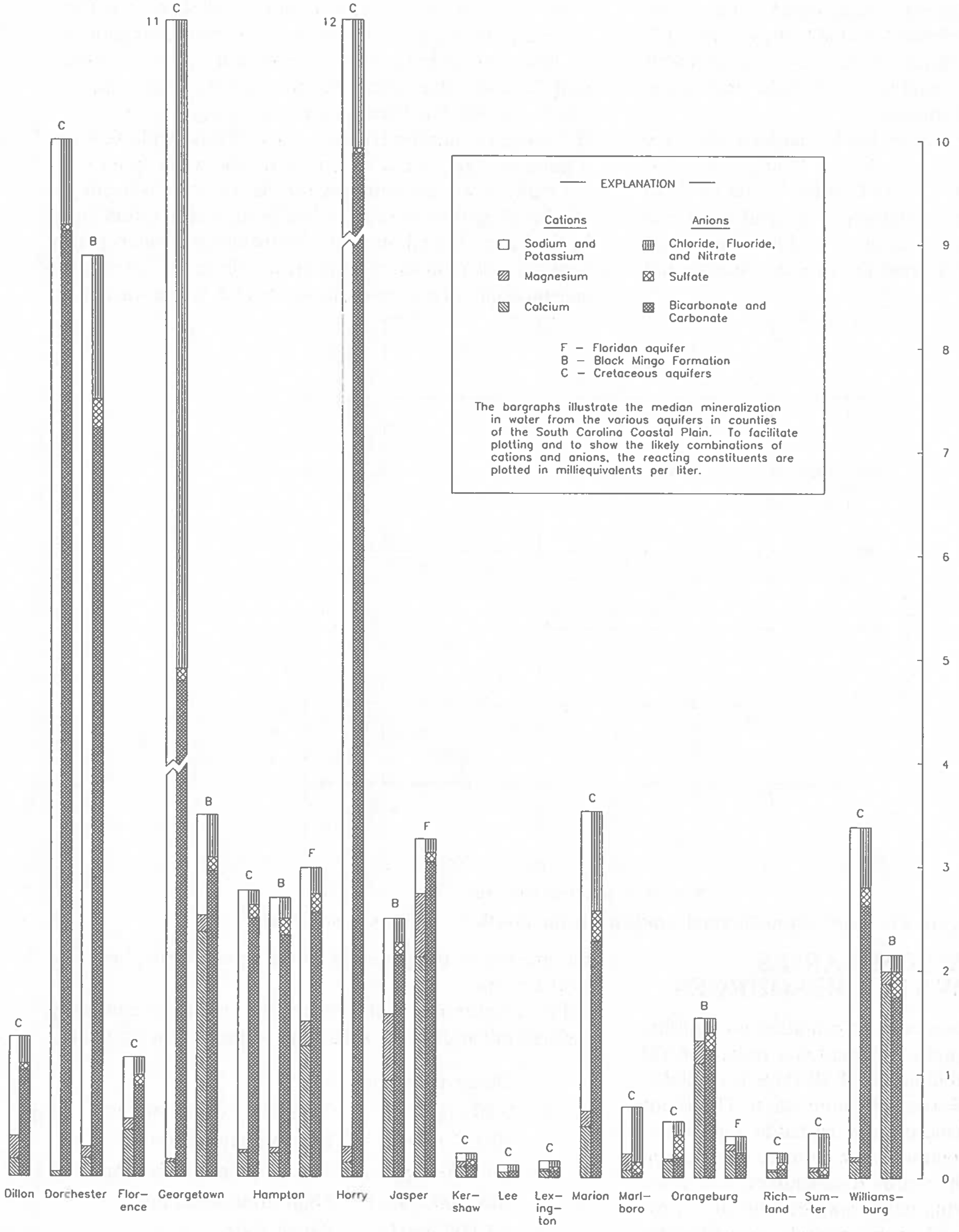


Figure 16. Comparsion of ground-water quality, by aquifer and county.


EXPLANATION
Cations
Anions
Sodium and Potassium
Magnesium
Calcium
Chloride, Fluoride, and Nitrate
Sulfate
Bicarbonate and Carbonate
F – Floridan aquifer
B – Black Mingo Formation
C – Cretaceous aquifers
The bargraphs illustrate the median mineralization in water from the various aquifers in counties of the South Carolina Coastal Plain. To facilitate plotting and to show the likely combinations of cations and anions, the reacting constituents are plotted in milliequivalents per liter.
0
1
2
3
4
5
6
7
8
9
10
11
12
C
B
F
Dillon
Dorchester
Flor–ence
Georgetown
Hampton
Horry
Jasper
Ker–shaw
Lee
Lex–ing–ton
Marion
Marl–boro
Orangeburg
Rich–land
Sum–ter
Williams–burg

the Savannah River Plant (U.S. Department of Energy) in Aiken and Barnwell Counties.

The area of Beaufort and southern Jasper Counties has the potential for a great amount of additional development in the Floridan aquifer. This aquifer has the highest transmissivity of any in the State. It is limited by its smaller area of occurrence, its restricted available drawdown (it is not a deep aquifer), and its hard water (Fig. 15). Increased pumping from the aquifer near the coast could increase the potential for saltwater intrusion.

None of the above is meant to imply that large wells are not obtainable elsewhere in the Coastal Plain; many exist at present (Table 3). In fact, South Carolina's Coastal Plain is very rich in ground water. Between its ground-water and surface-water resources, the region should be able to support the water needs of a great increase in industry and population.

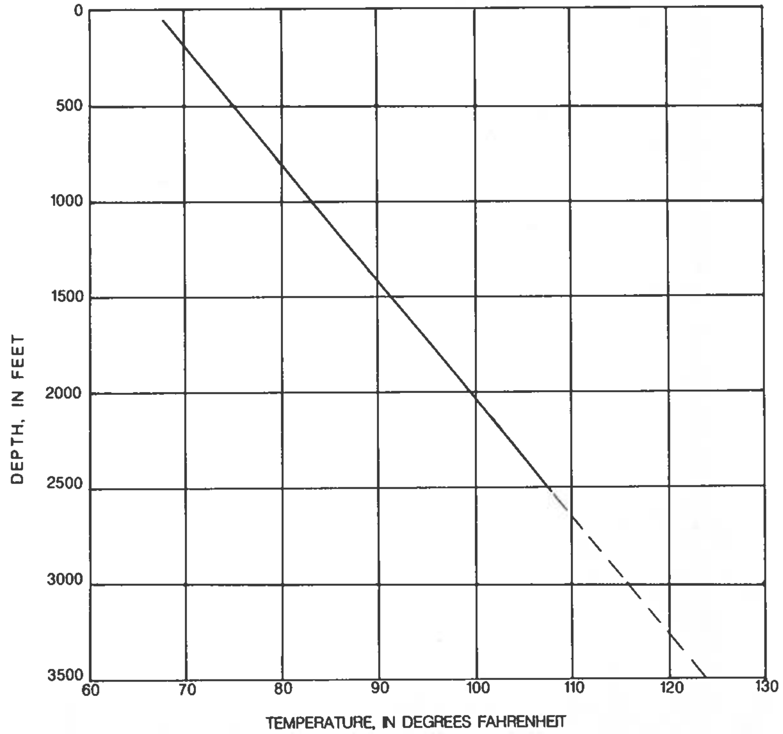


Figure 17. Generalized thermal gradient in the South Carolina Coastal Plain.

COUNTY SUMMARIES OF GROUND-WATER RESOURCES

The most revealing sources of information on aquifers are (1) electric logs of wells, (2) pumping tests, and (3) chemical analyses. An abundance of all three is available in the files of the Water Resources Commission. This is not to say that the specific kind of data needed at a given site is always available, but commonly the required information can be extrapolated from nearby data sources. The short summaries in the following pages may be helpful in providing a general view of each county's ground-water resource. This would constitute a narrowing of the emphasis that has been exercised in the report to this point.

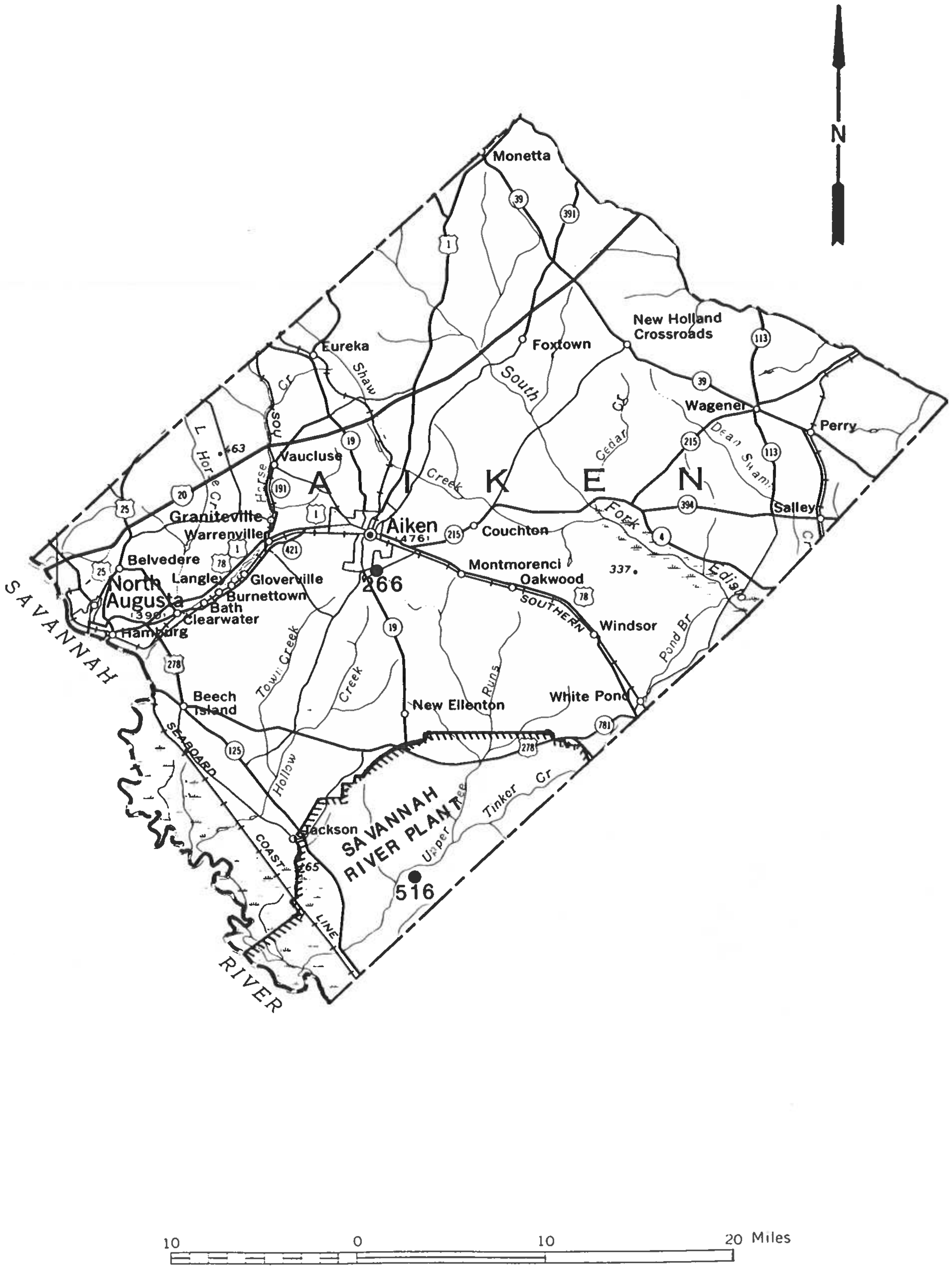
For each county of the Coastal Plain, one or more representative electric logs were used as the source of substantial freshwater aquifer intervals, according to the writer's interpretation of the logs. Above each well is given its county number in the Commission files, its location, and its elevation with respect to sea level. Screened intervals for the wells described are shown, as well as the contacts between successive aquifer systems at the well sites. Only three major aquifer designations are used: (1) Cretaceous aquifers; (2) Black Mingo Formation; (3) Floridan aquifer. For each well there are given the yield, which is the highest rate at which the well has been pumped for a significant period, if known; the aquifer transmissivity, if it is available from a pumping test; and a statement on the water quality.

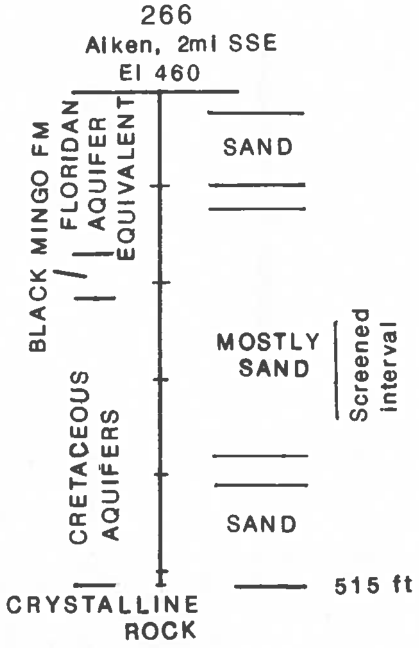
Finally, a written summary for the county tells the depth to which freshwater occurs, which is an interpretation made by the writer through study of electric logs and water-quality analyses; the number of large-yield wells in the county; the general chemical quality of the water; and, where warranted, an opinion on the potential of the ground-water resource in the county.

For the purposes of this report, the writer has arbitrarily defined mineralization according to the following scale:

Dissolved solids	
0-50 mg/L	Very low mineralization
50-150 mg/L	Low mineralization
150-500 mg/L	Moderate mineralization
500-1,000 mg/L	High mineralization
>1,000 mg/L	Saline water

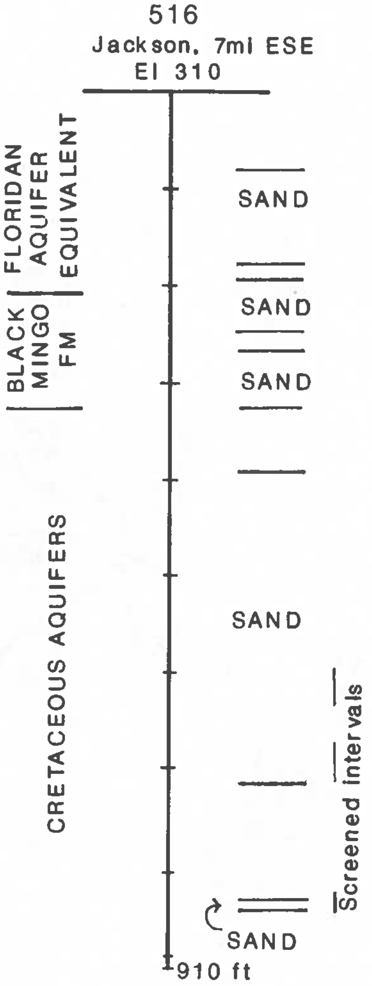
The county maps opposite the resource descriptions are from the U.S. Geological Survey map of the State of South Carolina, 1970.


N
Monetta
39
391
1
New Holland
Crossroads
113
Foxtown
Eureka
Shaw
South
39
Wagener
Perry
Cr
Horse
463
L Horse Cr
Vaucluse
19
215
Cedar Cr
Dean Swamp
113
191
A I K E N
Creek
20
25
Graniteville
1
Warrenville
1
Aiken
476
215
Couchton
Fork
394
Salley
4
Edisto
Cr
25
Belvedere
78
421
Montmorenci
337
North
Augusta
390
Langley
Gloverville
266
Oakwood
78
Burnettown
Bath
Clearwater
Hamburg
SOUTHERN
Windsor
Pond Br
19
278
Town Creek
Creek
Runs
SAVANNAH
Beech
Island
New Ellenton
White Pond
781
SEABOARD
125
278
Hollow
Upper Tree
Tinker Cr
Jackson
SAVANNAH
RIVER PLANT
COAST LINE
265
516
RIVER
10
0
10
20 Miles



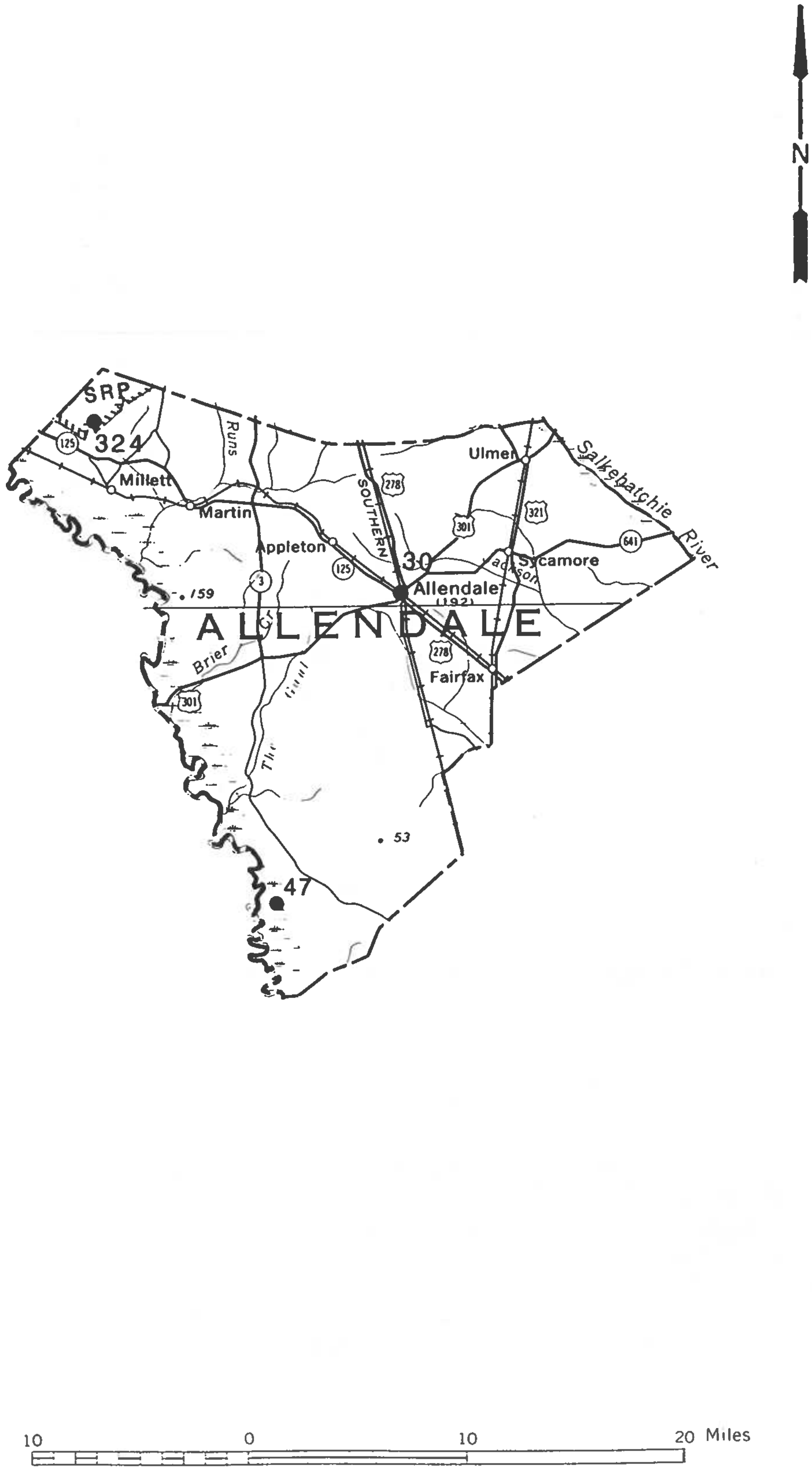
Well yield: 350 gpm
Water quality: Very soft, acidic water of very low mineralization; see Table 4

Vertical scale is 200 ft to the inch

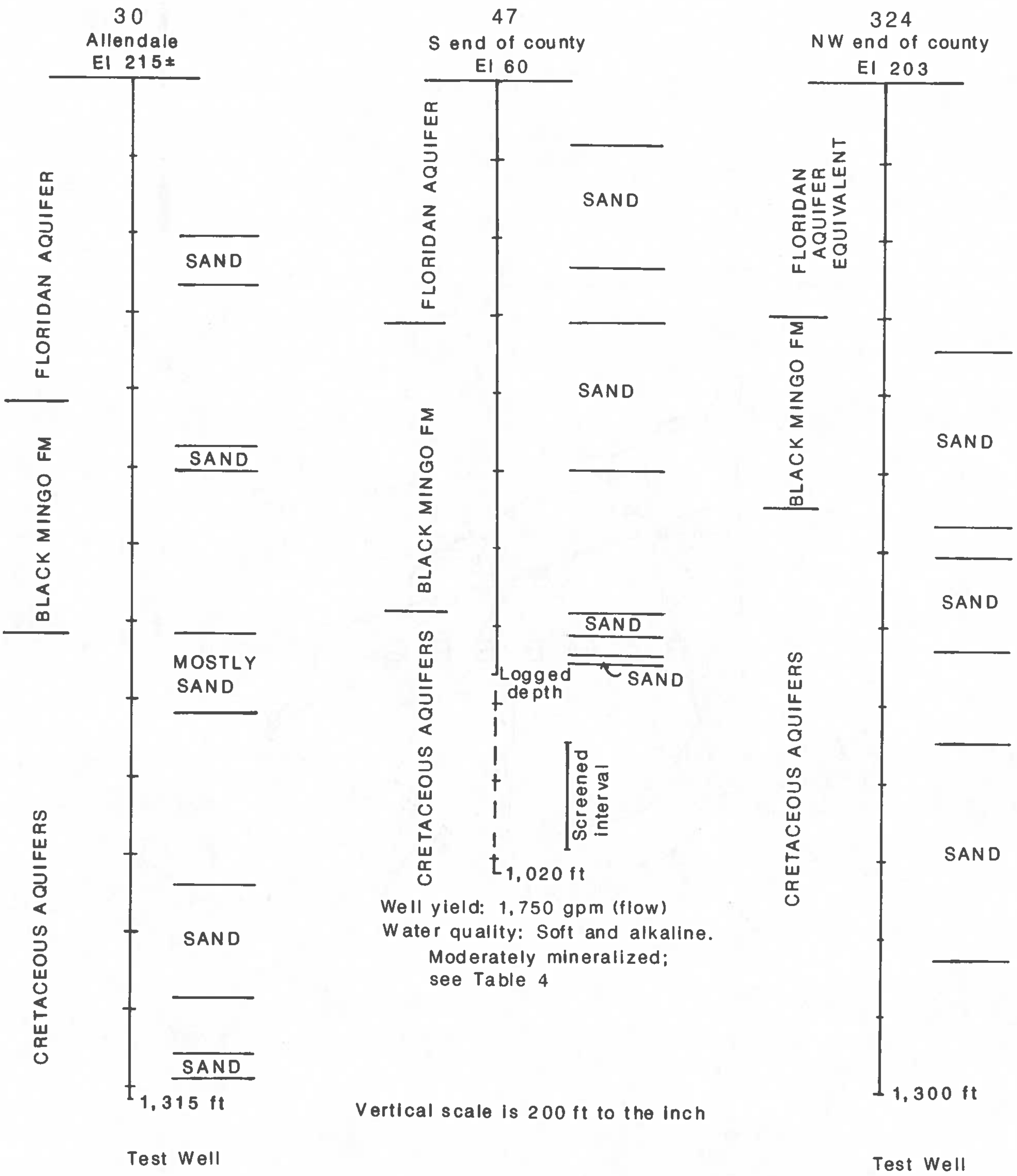


Well yield: 1,400 gpm
Aquifer transmissivity: Near 100,000 gpd/ft
Water quality: Very low mineralization and low pH.

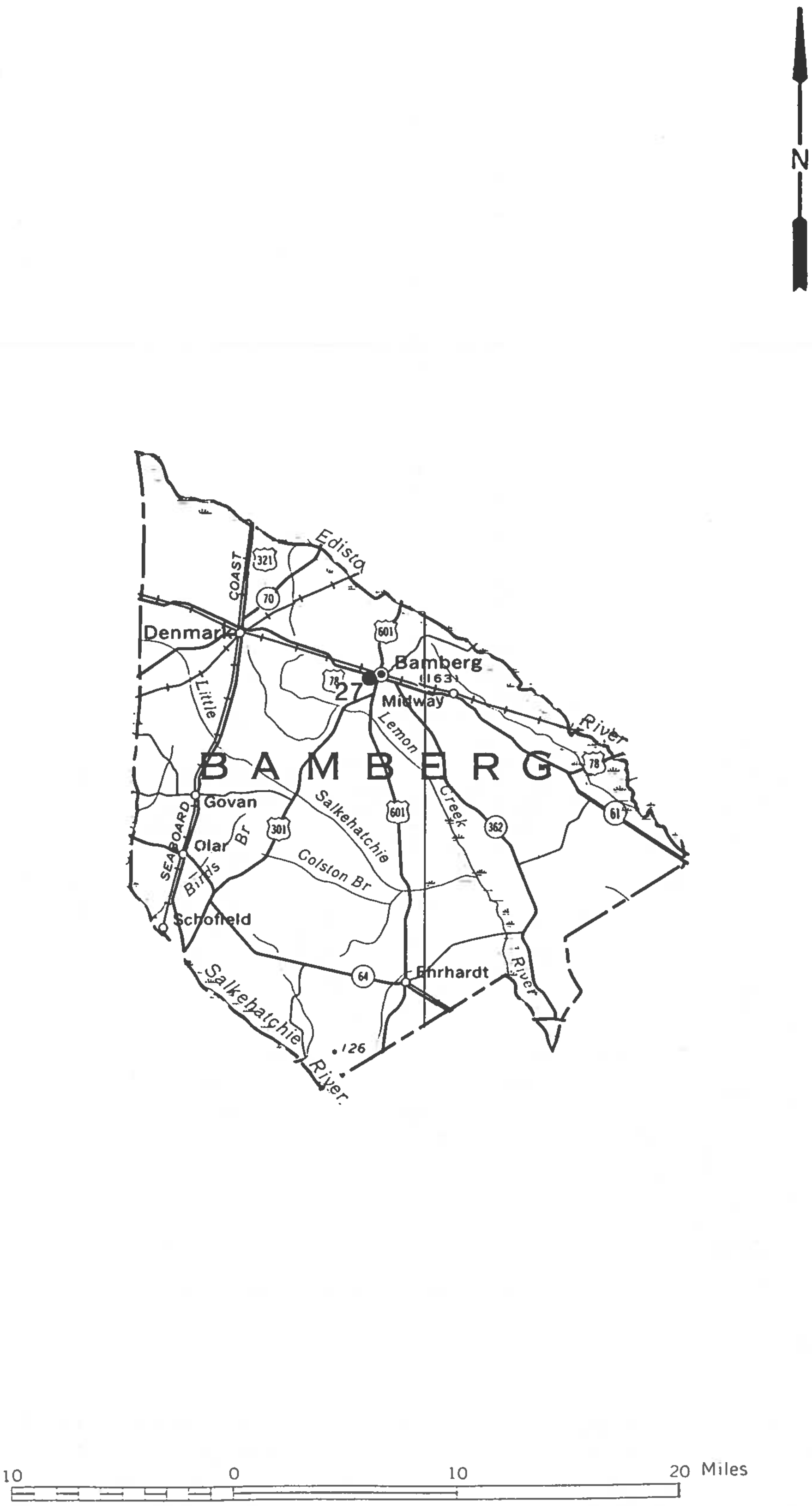
The base of freshwater in the sedimentary formations of Aiken County ranges from about +200 ft msl at the Fall Line to -600 ft msl at the county's southwest corner. About 20 wells yield 1,000 gpm or more in the county; the greatest yield is 2,200 gpm. Nearly all of these are at the Savannah River Plant. The water typically is very low in dissolved solids, is soft, and has a low to neutral pH. Pumping tests indicate transmissivities from 3,400 to 200,000 gpd/ft. A specific capacity of 60 gpm/ft was measured in one test.


N
SRP
324
125
Millett
Martin
Runs
Appleton
3
125
SOUTHERN
278
Ulmer
301
321
Salkehatchie River
641
Sycamore
Jackson
30
Allendale
(192)
ALLENDALE
278
Fairfax
Brier
301
159
53
47
10
0
10
20 Miles

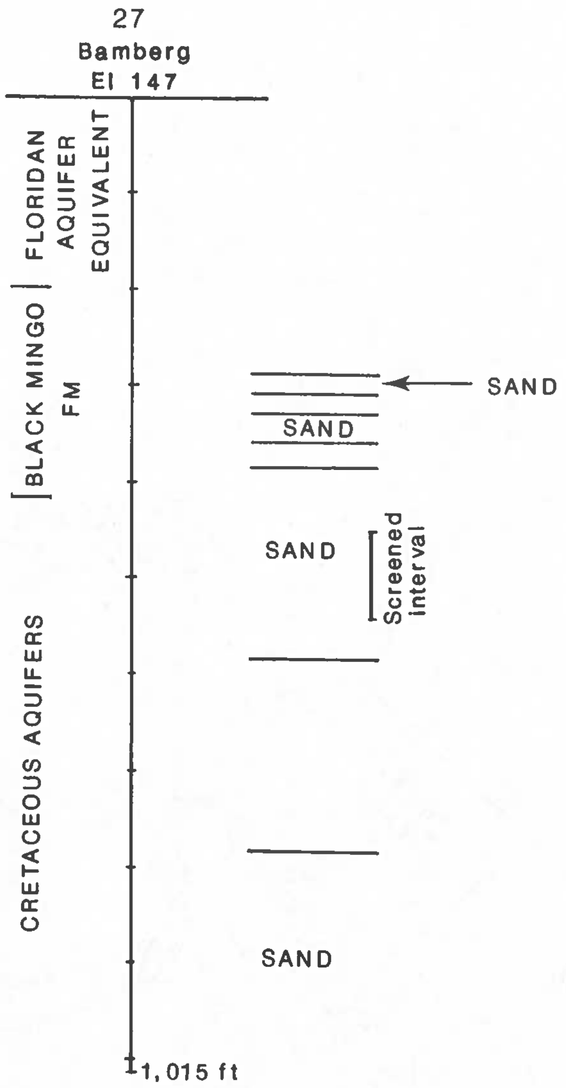
ALLENDALE COUNTY



The base of freshwater in Allendale County ranges from about -1,000 ft msl at the north tip of the county to nearly -2,000 ft at the south tip. At least 15 wells are recorded with yields greater than 1,000 gpm; the largest yield is 2,700 gpm. Water from the Cretaceous aquifers is of excellent quality; that from the Floridan aquifer is of good quality but generally is hard. Pumping tests reveal transmissivity ranges of 1,400 to 50,000 gpd/ft for the Cretaceous and 3,700 to 38,000 for the Floridan.


N
Edisto
River
COAST
321
70
601
Denmark
Bamberg
163
78
27
Midway
Little
Lemon
Creek
BAMBERG
78
61
Govan
SEABOARD
Olar
Br
Binns
301
601
Salkehatchie
Colston Br
362
Schofield
64
Ehrhardt
River
Salkehatchie
River
126
10
0
10
20 Miles

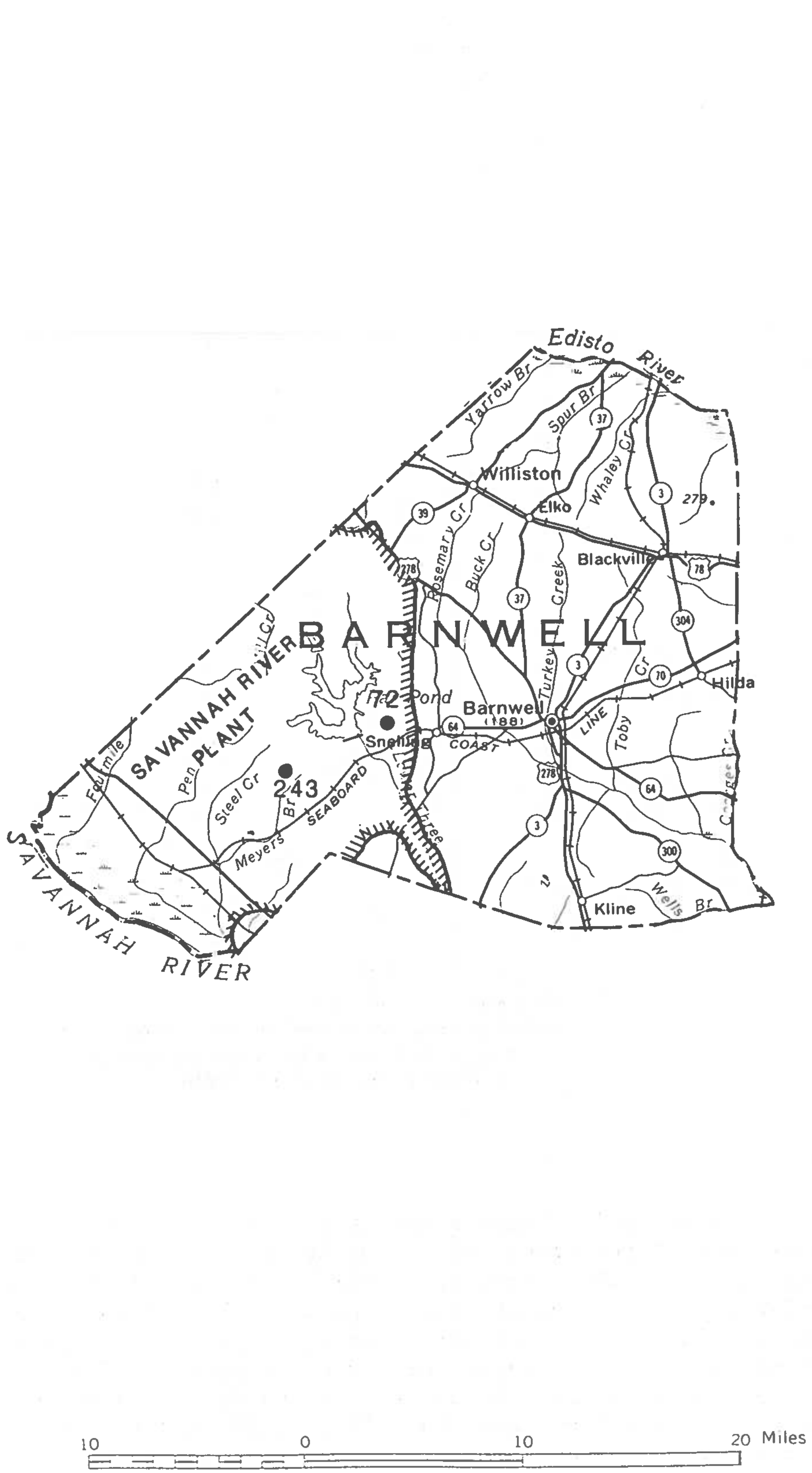
BAMBERG COUNTY



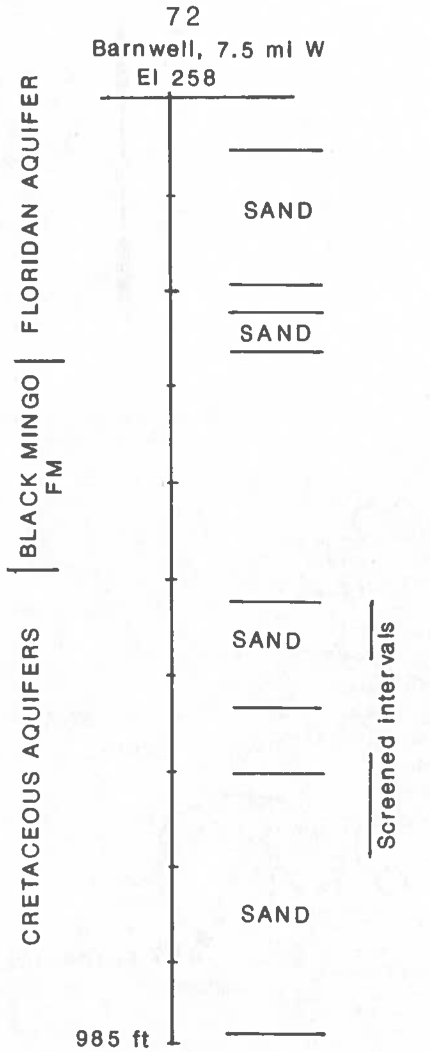
Vertical scale is 200 ft to the inch

Well yield: 1,500 gpm
Water quality: Very low mineralization. See well 6 in Table 4 for chemical analysis of nearby well at same depth

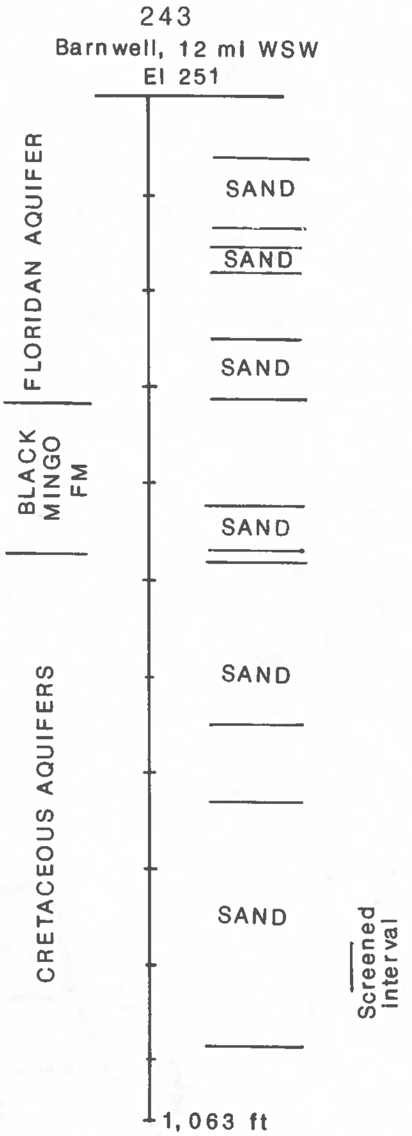
The base of freshwater in Bamberg County ranges from about -700 ft msl at the northwest end of the county to -1,700 ft at the southeast corner. Despite the thickness of the freshwater section and the multitude of aquifers available for development, few large wells have been installed. Only four are recorded as yielding more than 1,000 gpm, the largest 1,550 gpm. No pumping tests are available for the Cretaceous aquifers. A few tests of wells screened in the Floridan aquifer and/or the Black Mingo Fm indicate transmissivities from less than 500 to 5,500 gpd/ft. Water from the Cretaceous aquifers is low in mineralization and soft. Nearly all wells are in the Floridan aquifer or the Black Mingo Fm, or both, and the water is low in mineralization but hard.


N
Edisto River
Yarrow Br
Spur Br
37
Whaley Cr
Williston
Elko
3
279
39
Blackville
78
278
Rosemary Cr
Buck Cr
37
Turkey Creek
304
BARNWELL
3
Cr
70
Hilda
Par Pond
72
Barnwell
(188)
64
Snelling
COAST
LINE
Toby Cr
278
64
SAVANNAH RIVER PLANT
Fourmile
Pen Br
Steel Cr
243
Br
SEABOARD
Meyers Br
Lower Three Runs
3
300
Wells Br
Kline
SAVANNAH RIVER
10
0
10
20 Miles

BARNWELL COUNTY



Well yield: 2,000 gpm
Aquifer transmissivity: 140,000 gpd/ft
indicated by 60-day test
Water quality: Soft, acidic water of very
low mineralization



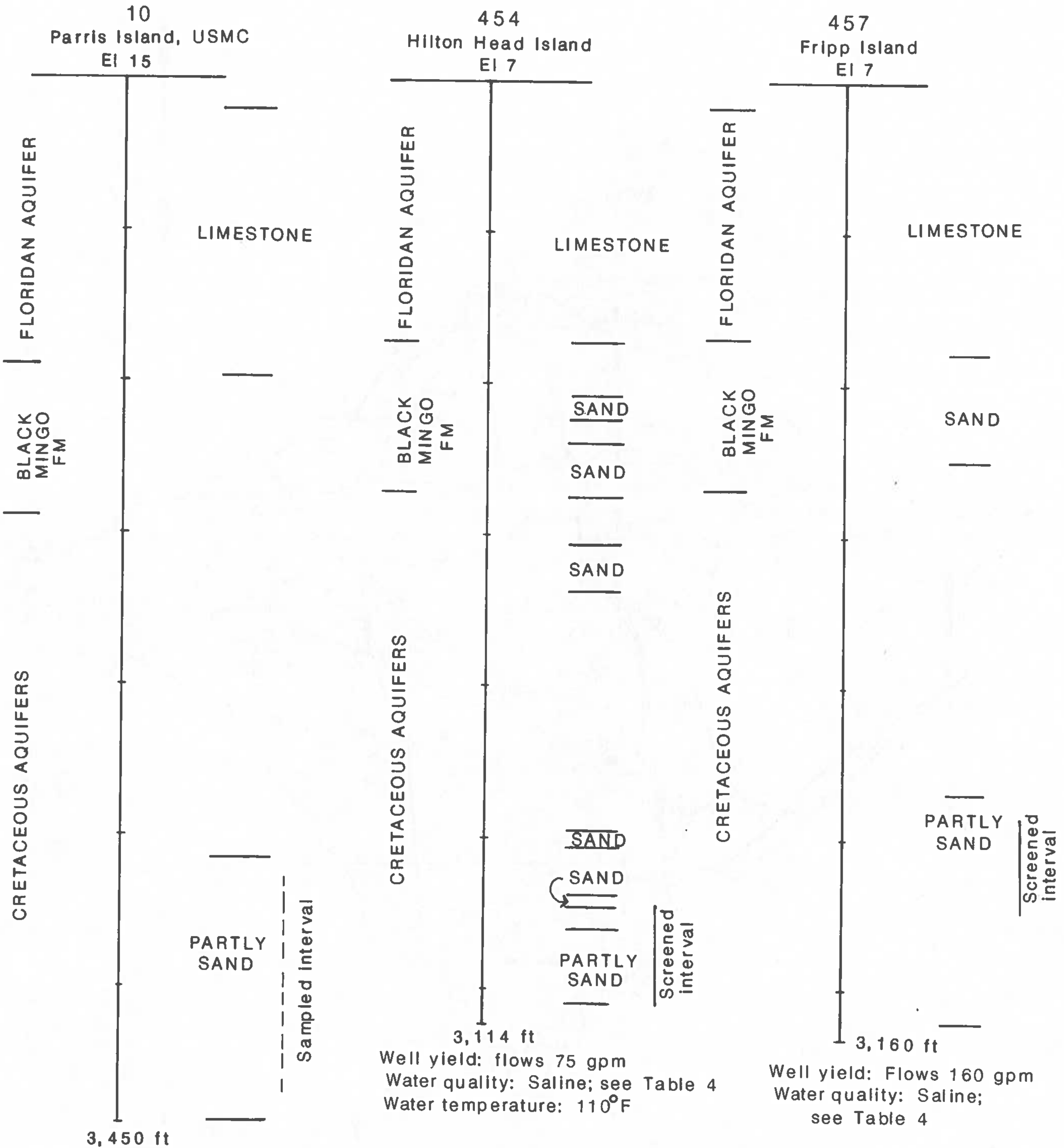
Completed as observation well

Vertical scale is 200 ft to the inch

The base of freshwater in Barnwell County ranges from -500 ft msl at the north extremity to -1,500 ft at the southeast extremity. Ten wells are recorded as yielding 1,000 gpm or more. the largest, 2,330 gpm, is an irrigation well at Kline. Half of the large wells are at the Savannah River Plant. Nearly all the large wells produce from the Cretaceous aquifers, but most wells in the county are completed in the Floridan aquifer or its equivalents or in the Black Mingo Fm. All the ground water is low in mineralization, and most of it is soft. Great thickness of water-bearing sand are revealed by electric logs of deep wells.


N
Yemassee
21
Pocotaligo
17
21
Sheldon
21
COMBAHEE RIVER
Dale
Whale Br
Seabrook
Grays Hill
COOSAW RIVER
Wilkins
802
Coosaw Island
Morgan Island
ST HELENA SOUND
PORT ROYAL
Laurel Bay
116
ISLAND
LADIES ISLAND
MORGAN RIVER
Burton
Beaufort
BROAD
Cr
280
281
BEAUFORT RIVER
ST HELENA
21
Frogmore
ISLAND
170
Port Royal
BEAUFORT
Hunting Island
Spring I
Parris Island
Daws I
RIVER
10
Fripp Inlet
457 FRIPP ISLAND
Story R
Skull Inlet
COLLETON RIVER
Fort Fremont
PORT ROYAL
SOUND
Bull Pt
Trenchards Inlet
170
278
Pritchardville
46
Bluffton
WATERWAY
454
Brighton Beach
Hilton Head Island
MAY R
Bull Island
HILTON HEAD ISLAND
Folly Field
278
New River
INTRACOASTAL
Forest Beach
Sea Pines
Daufuskie Landing
Bloody Pt
10
0
10
20
Miles

BEAUFORT COUNTY



Well not completed for use.
Water quality: All samples saline;
see Table 4

Well yield: flows 75 gpm
Water quality: Saline; see Table 4
Water temperature: 110°F

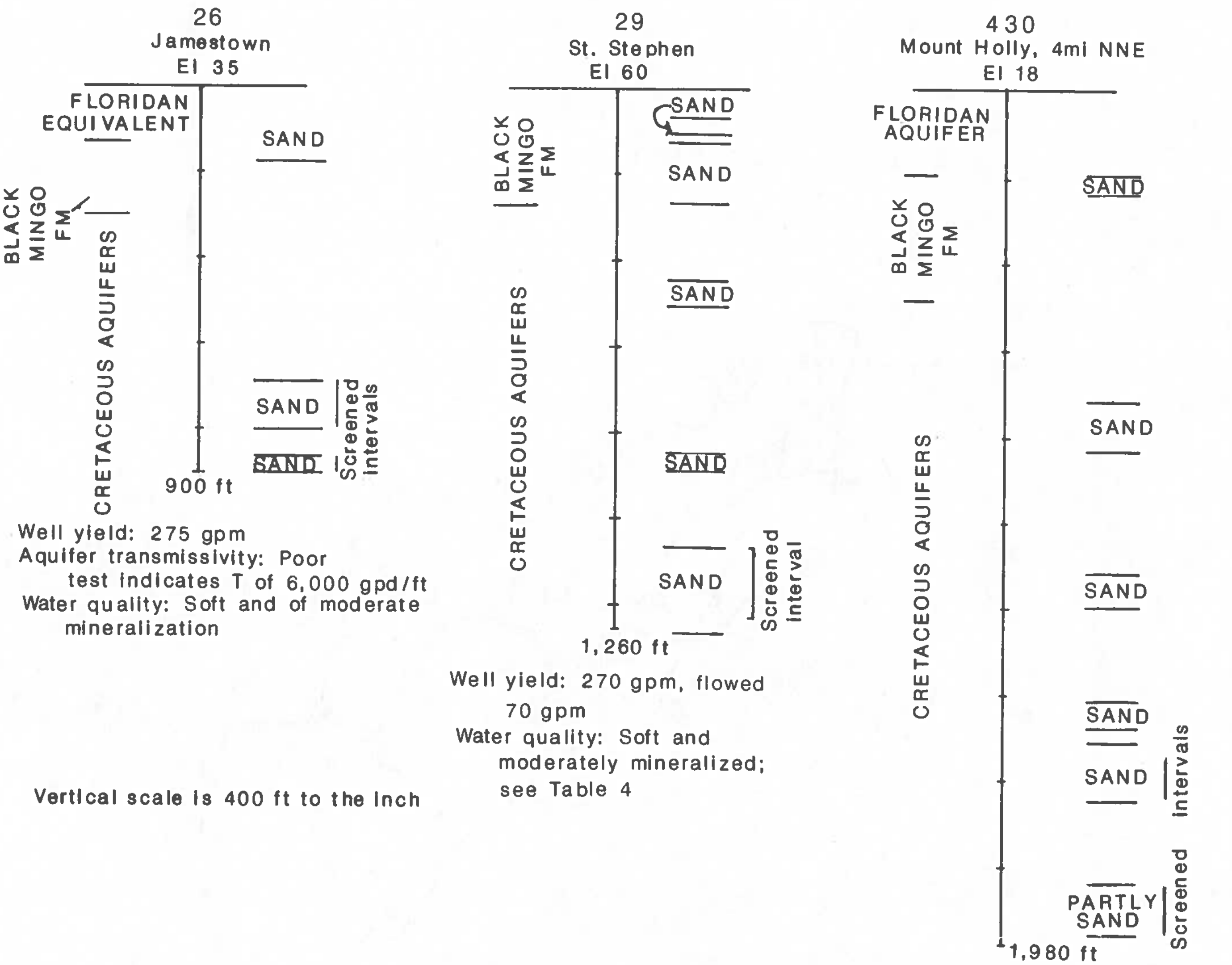
Well yield: Flows 160 gpm
Water quality: Saline;
see Table 4

Vertical scale is 500 ft to the inch

The base of freshwater in Beaufort County rises from -1,750 ft msl at the north end of the county to sea level at Fripp Island. At the city of Beaufort the deepest freshwater is a little above -1,000 ft msl; on Hilton Head Island it is generally shallower then -500 ft. It is likely that substantial freshwater aquifers are available in the Cretaceous section in northern Beaufort County. These would be expected to contain soft water, probably of low mineralization. The Floridan aquifer currently is the main sources of water supplies throughout the county. More than 40 wells currently yield 1,000 gpm or more. The aquifer has a very large transmissivity, but in places the available drawdown is limited. The water is hard, but mineralization is low to moderate.


N
Pineville
Eadytown
Russellville
29
St Stephen
SANTEE
RIVER
SEABOARD
Alvin
Prioleau
Cross
LAKE
MOULTRIE
75
PINOPOLIS DAM
Bonneau
Jamestown
26
38
Hellhole Bay
SANTEE NATIONAL WILDLIFE REFUGE
96
Swamp
Macbeth
Pinopolis
Santee Circle
Wadboo Swamp
Moncks Corner
(56)
Bethera
Shulerville
Honey Hill
Echaw Cr
Wambaw Cr
B E R K E L E Y
Witherbee
FRANCIS MARION NATIONAL
COAST LINE
Turkey Cr
Cordesville
Oakley
WEST BR
Huger
430
Kittredge
EAST BR
Quinby Cr
Mount Holly
BACK R
COOPER RIVER
Goose Creek
Goose Creek Res
39
Cainhoy
Wando
WANDO
Yeamans Hall
Hanahan
Remleys
311
6
27
176
17
52
402
41
45
ALT 17
10
0
10
20 Miles

BERKELEY COUNTY



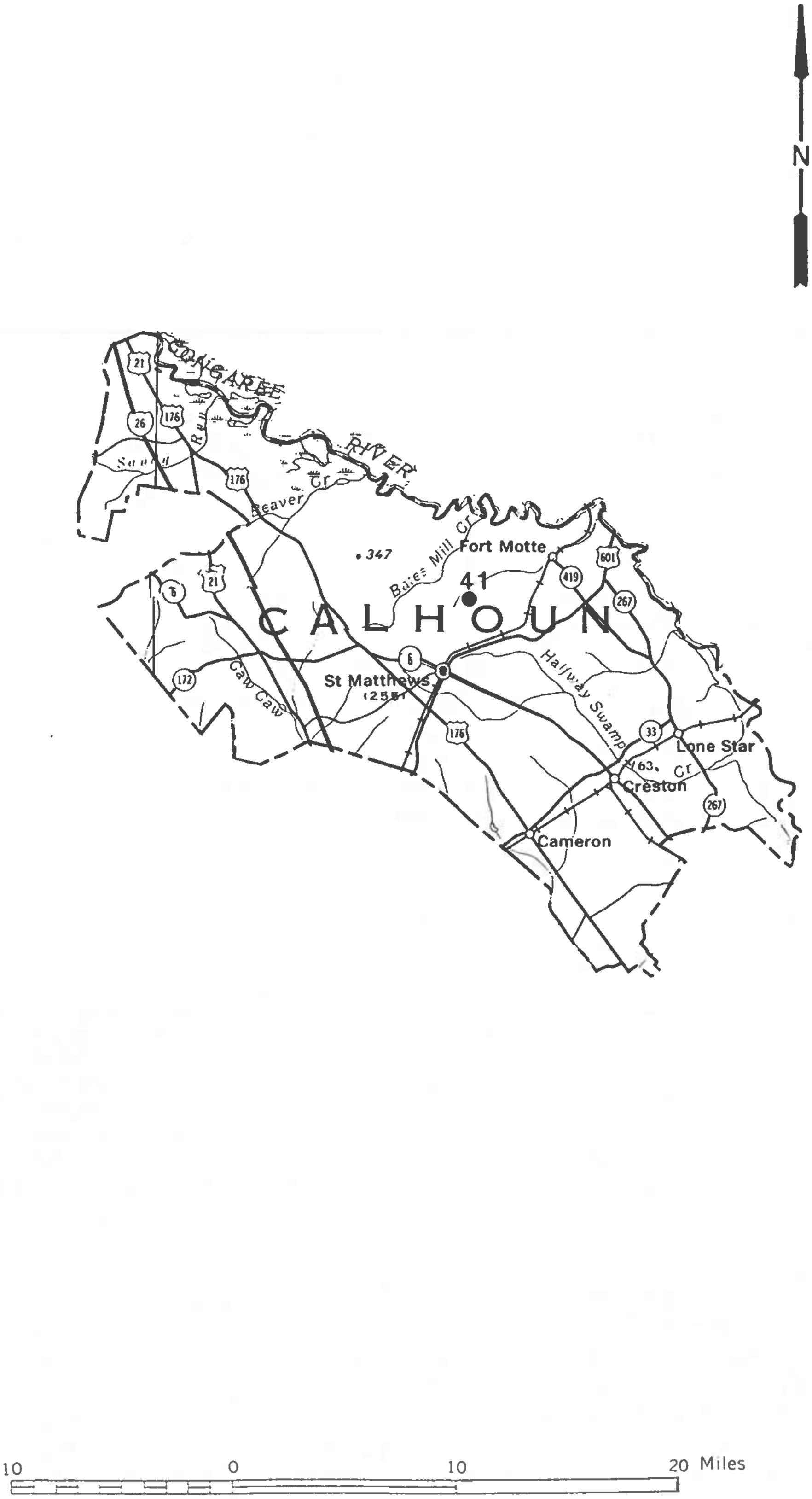
Well yield: 275 gpm
Aquifer transmissivity: Poor test indicates T of 6,000 gpd/ft
Water quality: Soft and of moderate mineralization

Vertical scale is 400 ft to the inch

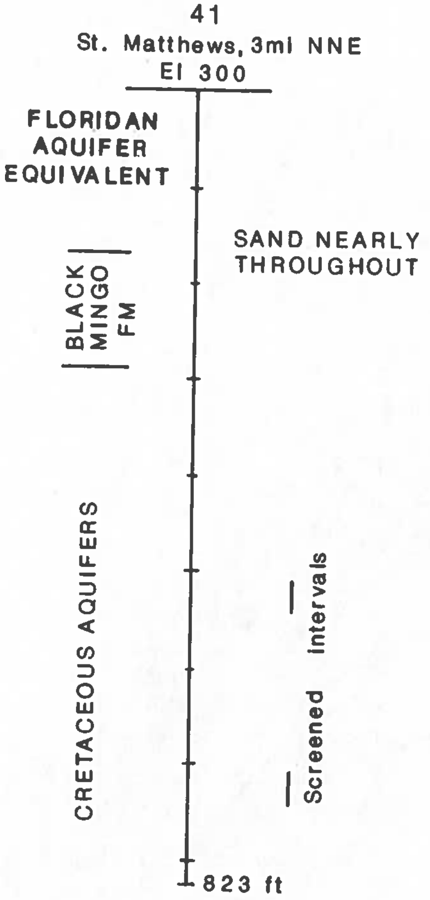
Well yield: 270 gpm, flowed 70 gpm
Water quality: Soft and moderately mineralized; see Table 4

Well yield: 135 gpm
Aquifer transmissivity: Test of nearby well screened at 1,530-1,642 ft showed a T of 31,000 gpd/ft
Water quality: Upper screened interval soft and of moderate mineralization. Lower screened interval saline. The two are mixed; see Table 4

The base of freshwater in Berkeley County may be as deep as -2,000 ft msl in the western part of the county; it is near -750 ft msl at the eastern extremity. Only two wells yielding more than 1,000 gpm have been recorded. One is completed in the Floridan aquifer and Black Mingo Fm, the other in deep Cretaceous aquifers. Large well yields probably can be obtained from the deep Cretaceous aquifers. Water from those aquifers is soft and of moderate to high mineralization. That from the Black Mingo Fm and Floridan aquifer is hard but of low mineralization. Limestone beds of the Floridan aquifer are present mainly in the southeastern half of the county.


N
CONGAREE RIVER
21
26
176
Beaver Cr
• 347
Bates Mill Cr
Fort Motte
601
419
267
41
CALHOUN
6
21
172
Caw Caw
St Matthews
(255)
Halfway Swamp
176
33
Lone Star
163
Cr
Creston
267
Cameron
10
0
10
20 Miles

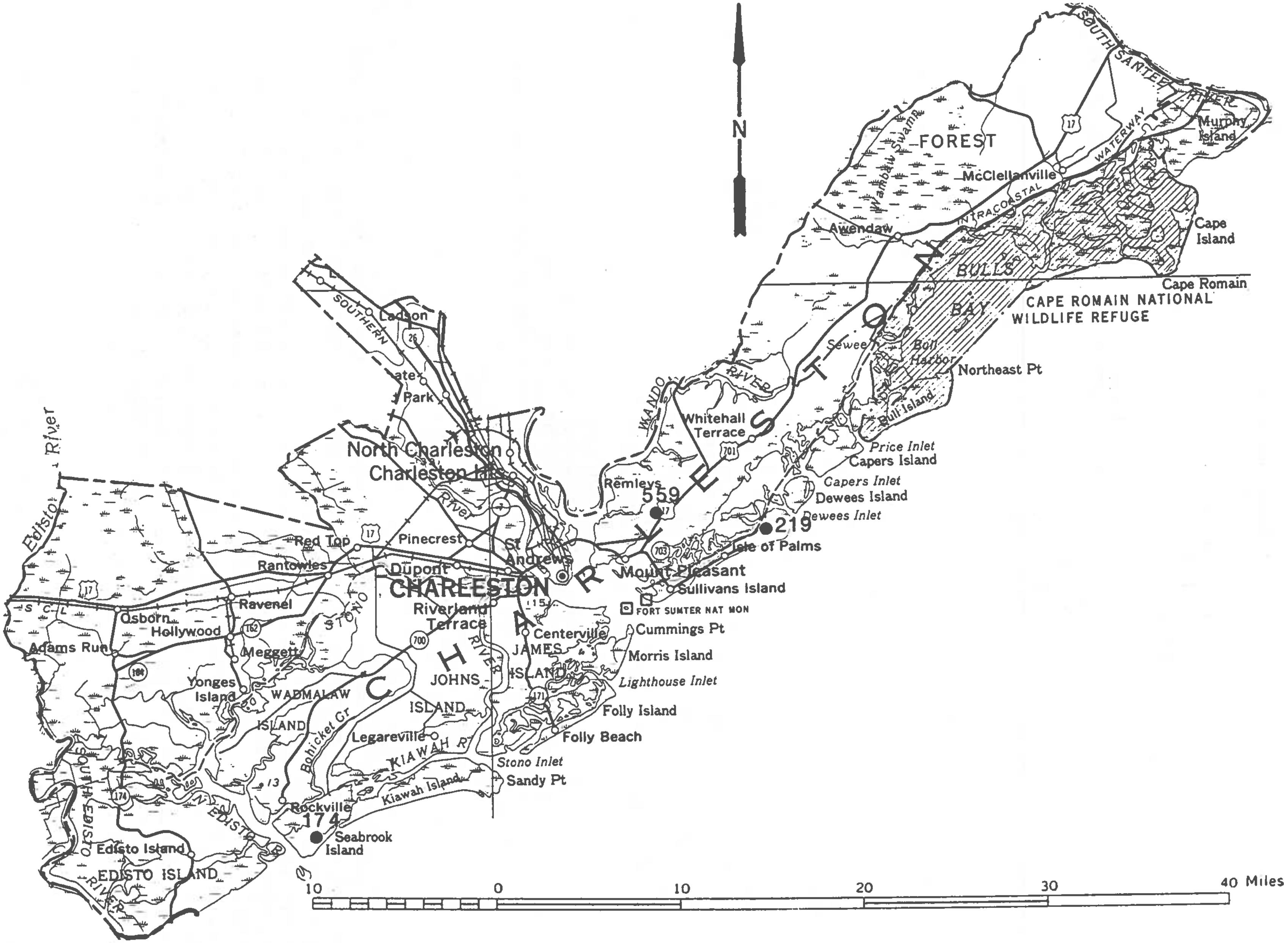
CALHOUN COUNTY



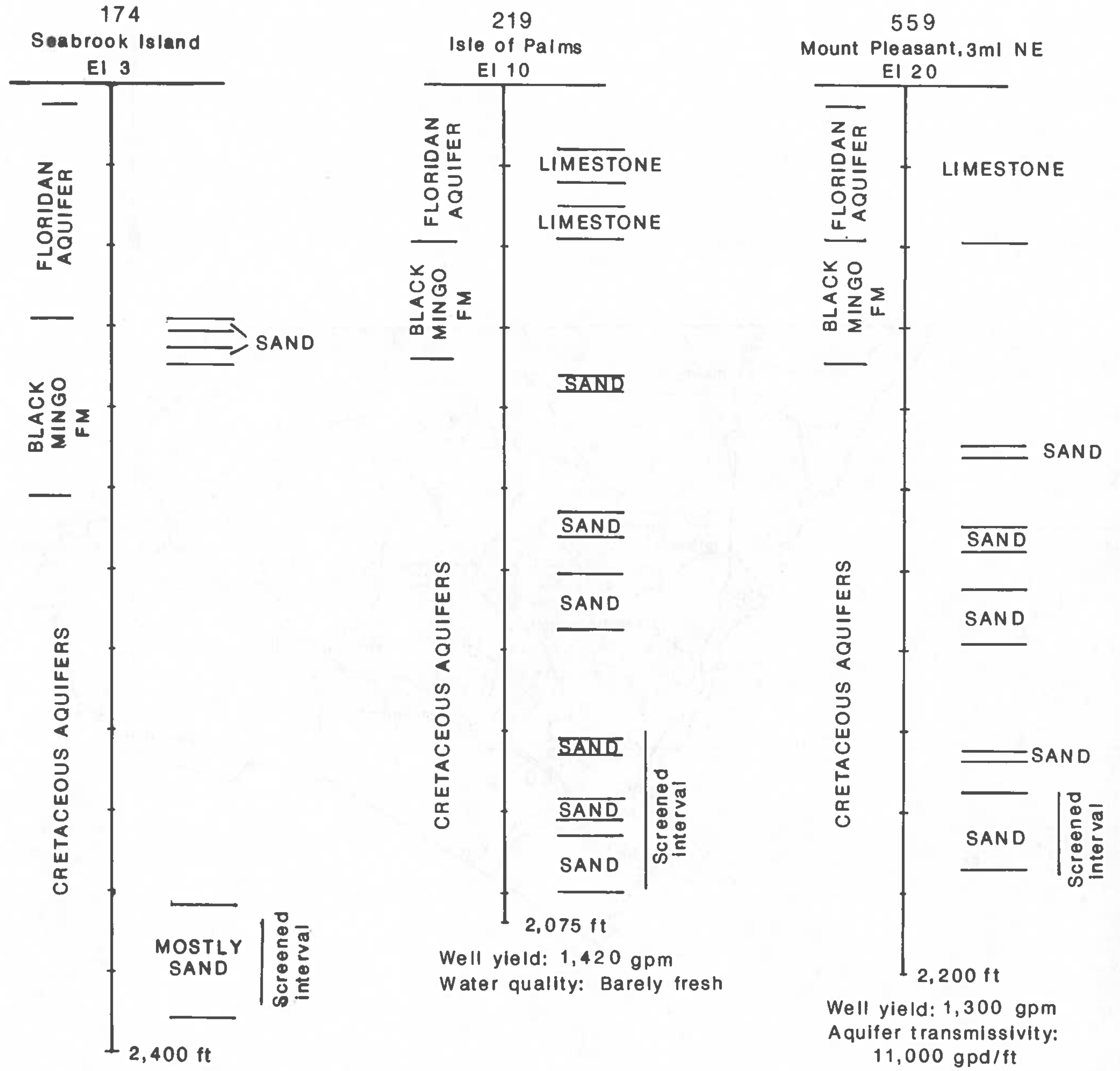
Well yield: 1,120 gpm
Aquifer transmissivity: Pumping test showed T of 42,000 gpd/ft, but interval tested represents only a small portion of the sand interval

The base of freshwater ranges from near sea level at the northwest end of the county to about -1,200 ft msl at the southeast end. Few wells penetrate a large part of the freshwater section. Only two wells are known to yield more than 1,000 gpm; both are screened in Cretaceous aquifers. Aquifers are available in the just-named section, in the Black Mingo Fm, and in the Floridan equivalents. Chemical analyses indicate that all the ground water is very low in mineralization; no sample in the files contained more than 100 mg/L. All analyses indicate soft water.

Although data are rather sparse from Calhoun County, the available logs, pumping tests, and chemical analyses suggest that this is an area of good potential for large ground-water developments.


N
SOUTH SANTEE RIVER
Murphy Island
FOREST
Wambaw Swamp
McClellanville
INTRACOASTAL WATERWAY
17
Awendaw
Cape Island
BULLS BAY
Cape Romain
CAPE ROMAIN NATIONAL WILDLIFE REFUGE
Sewee
Bull Harbor
Northeast Pt
Bull Island
SOUTHERN
Ladson
26
Park
WANDO RIVER
Whitehall Terrace
701
Price Inlet
Capers Island
Capers Inlet
Dewees Island
Dewees Inlet
North Charleston
Charleston Hts
River
Remleys
559
219
Isle of Palms
Edisto River
Red Top
17
Pinecrest
7
St Andrews
703
Rantowles
Dupont
Mount Pleasant
Sullivans Island
CHARLESTON
S C L
Osborn
Ravenel
Riverland Terrace
FORT SUMTER NAT MON
Hollywood
162
STONO
RIVER
Centerville
Cummings Pt
Adams Run
Meggett
700
JAMES ISLAND
Morris Island
164
Yonges Island
WADMALAW ISLAND
JOHNS ISLAND
Lighthouse Inlet
171
Folly Island
Folly Beach
Bohicket Cr
Legareville
KIAWAH R
Stono Inlet
Sandy Pt
Kiawah Island
174
Rockville
174
Seabrook Island
SOUTH EDISTO RIVER
N EDISTO R
Edisto Island
EDISTO ISLAND
CHARLESTON
10
0
10
20
30
40 Miles

CHARLESTON COUNTY



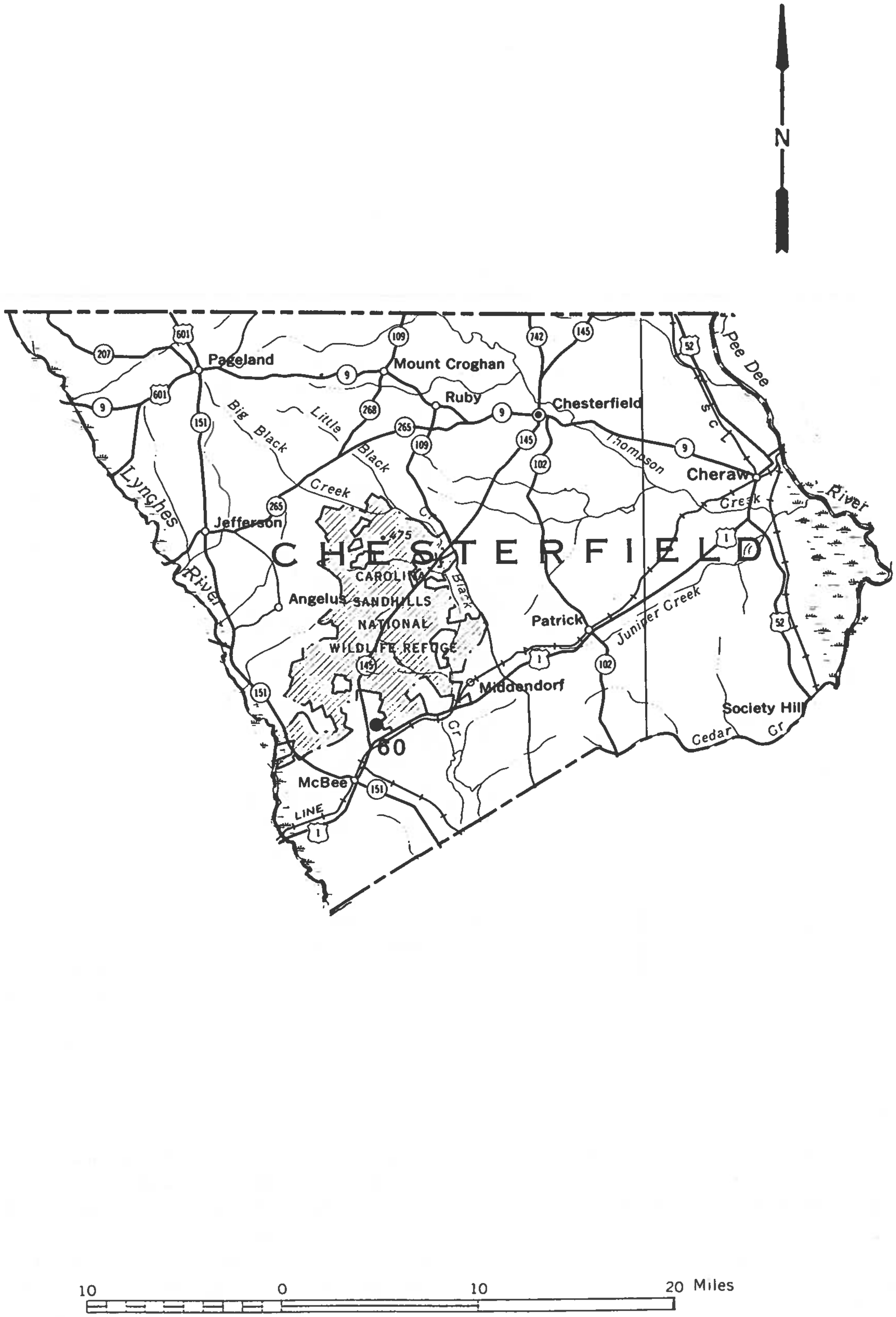
174 Seabrook Island:
Well yield: 1,610 gpm
Aquifer transmissivity: Poor test indicated T of 7,400 gpd/ft
Water quality: Barely saline

219 Isle of Palms:
Well yield: 1,420 gpm
Water quality: Barely fresh

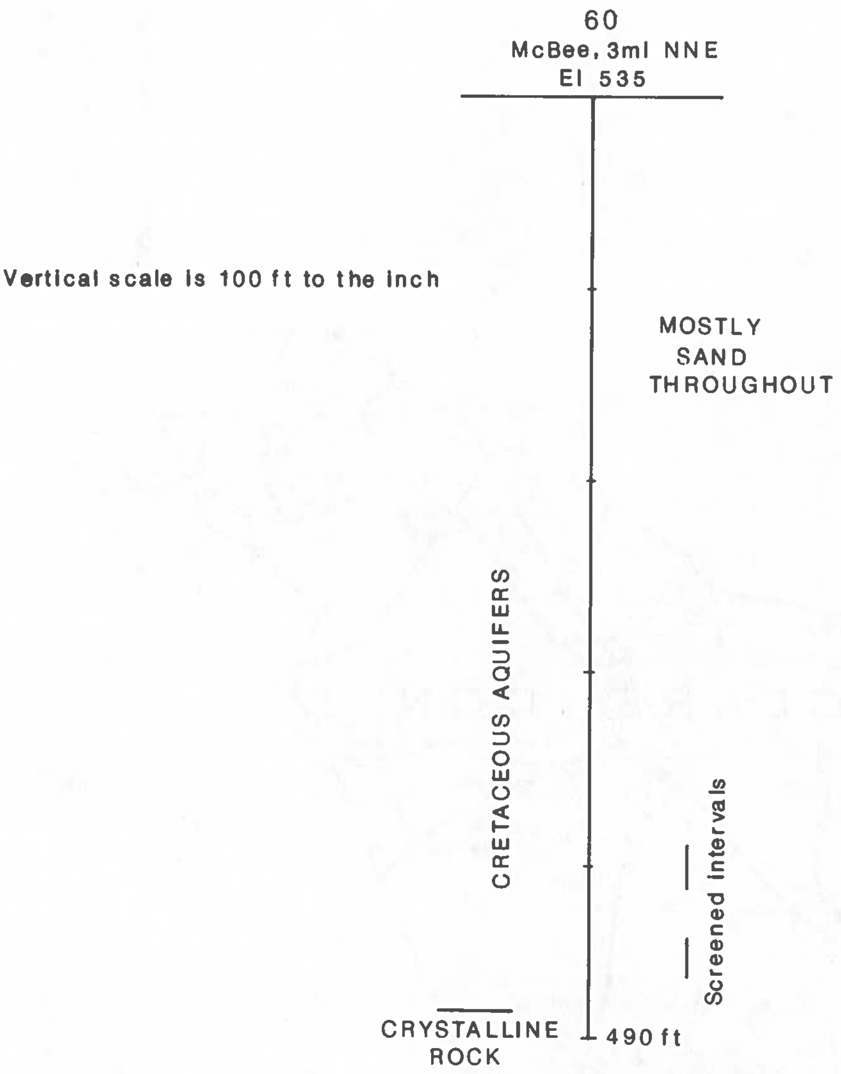
559 Mount Pleasant, 3mi NE:
Well yield: 1,300 gpm
Aquifer transmissivity: 11,000 gpd/ft
Water quality: Barely fresh

Vertical scale is 400 ft to the inch

Charleston County has the most irregular base of freshwater of any county in the Coastal Plain. In most of the county, freshwater is available to -1,000 ft or more, but along the southwest coastal islands there is little or no freshwater. At the northeast end of the county, freshwater extends to -500 ft. Refer to Figure 7 for a clearer picture. There are few large wells wells in Charleston County, and those that yield more than 1,000 gpm have large drawdowns. There is more potential for large wells in the interior of the county, and the water quality is better there. Many wells produce moderate yields of hard water from the Floridan aquifer. Large supplies of soft water will have to come from the Cretaceous aquifers some distance from the coast.

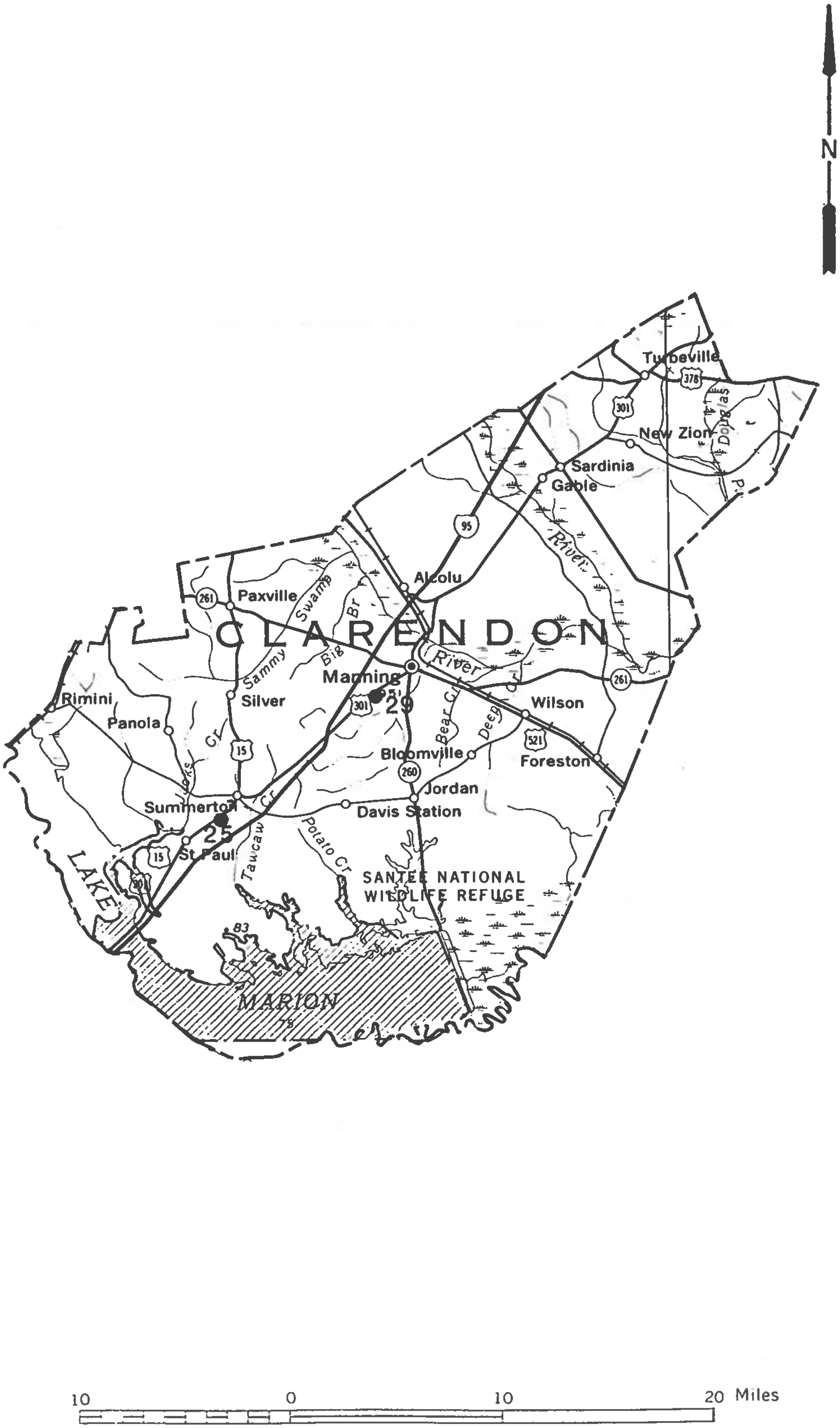

N
Pageland
Mount Croghan
Ruby
Chesterfield
Cheraw
Jefferson
Angelus
Patrick
Middendorf
Society Hill
McBee
60
CHESTERFIELD
CAROLINA SANDHILLS NATIONAL WILDLIFE REFUGE
Lynches River
Big Black Creek
Little Black Cr
Black
Thompson Creek
Juniper Creek
Cedar Cr
Cr
Pee Dee River
S C L
LINE
601
207
9
151
109
268
265
742
145
102
52
475
1
10
0
10
20 Miles

CHESTERFIELD COUNTY

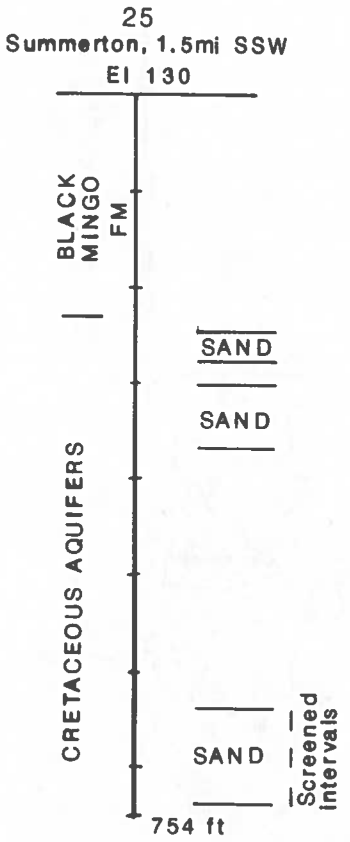


Well yield: 600 gpm
Water quality: Nearby wells yield water of very low mineralization

All water above the crystalline rocks is fresh in Chesterfield County. The deepest extent of the Cretaceous aquifers is sea level, along the southern boundary of the county. The well shown here probably is the largest one in the county, but there is the potential for wells yielding more than 1,000 gpm. the water is of remarkably low mineralization, and it is likely to be acidic.

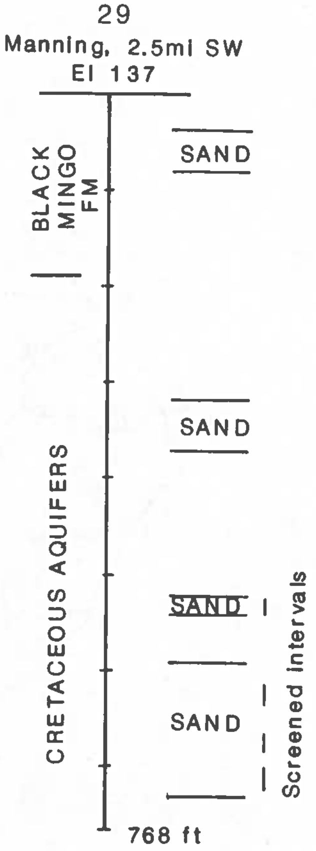

N
CLARENDON
Turbeville
378
301
New Zion
Douglas
P
Sardinia
Gable
95
River
Alcolu
261
Paxville
Sammy
Swamp
Big
Br
River
Manning
301
29
Rimini
Panola
Silver
Cr
15
Wilson
521
Foreston
261
Bear Cr
Deep Cr
Bloomville
260
Jordan
Summerton
Davis Station
25
St Paul
15
301
Tawcaw Cr
Potato Cr
SANTEE NATIONAL
WILDLIFE REFUGE
LAKE
83
MARION
75
10
0
10
20 Miles

CLARENDON COUNTY



Well yield: 525 gpm
Water quality: Very soft and moderately mineralized

Vertical scale is 200 ft to the inch

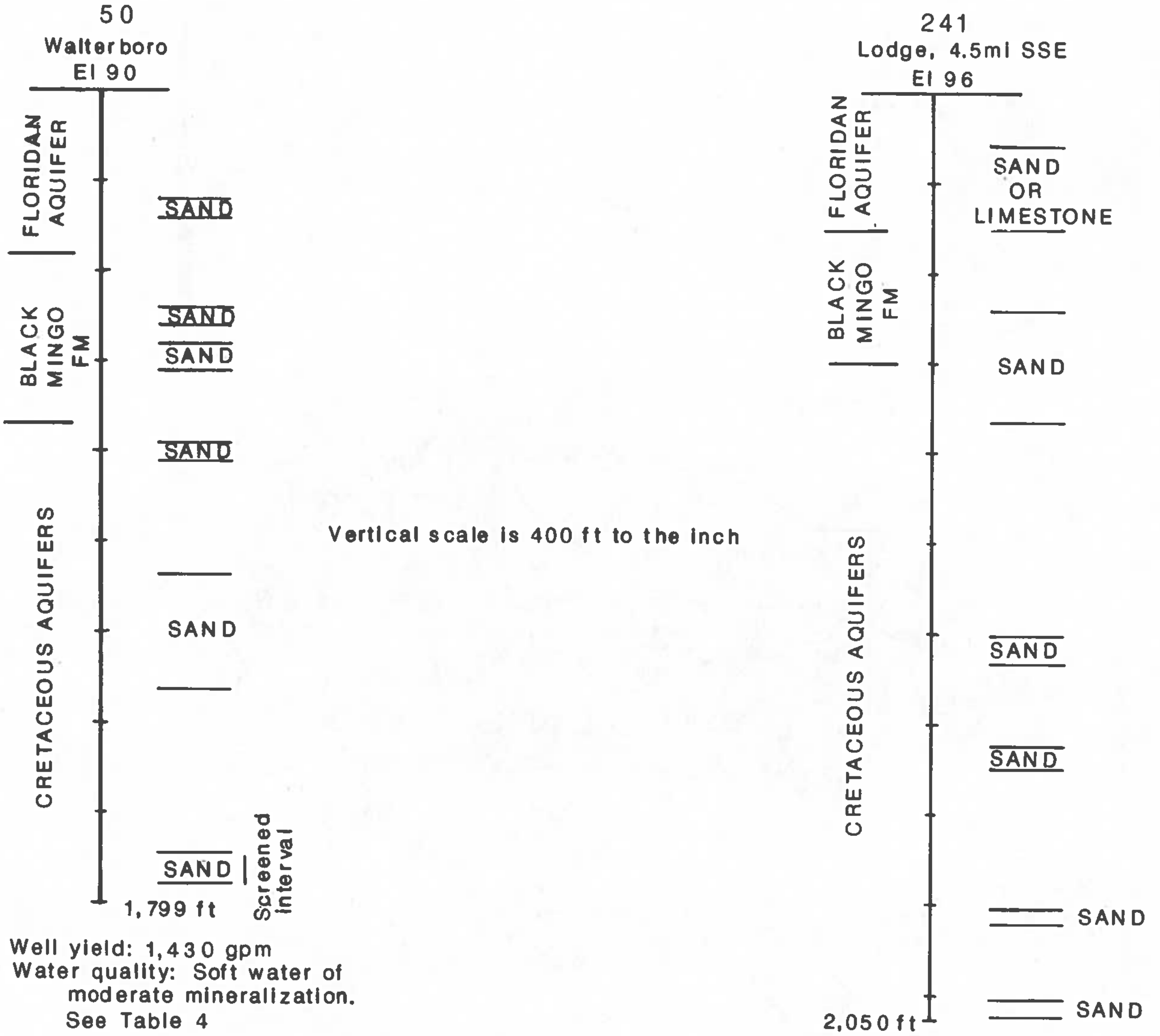


Well yield: 754 gpm
Aquifer transmissivity: 40,000 gpd/ft
Water quality: Low mineralization and very soft

The base of freshwater in Clarendon County ranges from about -750 ft msl along the northwest border to 1,600 ft at the southern boundary. No wells deeper than 950 ft have been recorded, but it is likely that substantial aquifers are available at greater depths in the Cretaceous section. At present, no wells yield as much as 1,000 gpm, although the two illustrated above are capable of that yield. All chemical analyses indicate excellent water, with very low mineralization and low hardness. Clarendon County should have a good potential for moderate to large ground-water supplies.


N
Edisto
River
80
Buckhead
Smoaks
217
Padgetts
362
Lodge
SEABOARD
Williams
212
Ruffin
Ashton
601
64
241
BRANCHVILLE
21
COAST
LINE
Jones
Swamp
Canadys
61
651
15
Ireland Cr
Round O
Chessey Cr
Cottageville
ALT 17
Moselle
Islandton
Indian Cr
50
Walterboro
(94)
64
63
COLLETON
Horseshoe Cr
River
Edisto
ALT 17
303
Black Cr
Chessey Gr
Cr
21
Hendersonville
Ritter
Jacksonboro
95
Ashepoo
Ashepoo
Green Pond
Whitehall
ALT 17
Blake
17
River
Fenwick
21
COMBAHEE
RIVER
SOUTH EDISTO
RIVER
Bennetts Point
Edisto Beach
ST HELENA
SOUND
10
0
10
20 Miles

COLLETON COUNTY



Vertical scale is 400 ft to the inch

Well yield: 1,430 gpm
Water quality: Soft water of moderate mineralization. See Table 4

Oil test, not made into water well

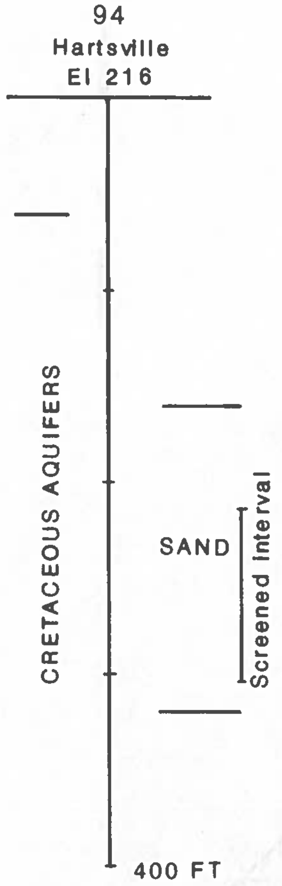
A large part of Colleton County has freshwater to great depths. It may be available as deep as -2,000 ft msl in much of the central part of the county and to depths greater than -1,000 ft msl in most of the rest of the county. Only at the south end, near St. Helena Sound, is the freshwater section as thin as 500 ft.

Only two wells are known to yield more than 1,000 gpm, but significant water-bearing sand beds are present in the Cretaceous section, the Black Mingo Formation, and the Floridan aquifer; the latter also contains water-bearing limestone in places. Water quality in the Cretaceous aquifers is excellent. That in the Black Mingo is variable but mostly good. Floridan aquifer water is hard but of good quality.

Colleton County has good potential for the development of large ground-water supplies, owing to the great thickness of the freshwater section and the good quality of the water, especially in the Cretaceous aquifers.

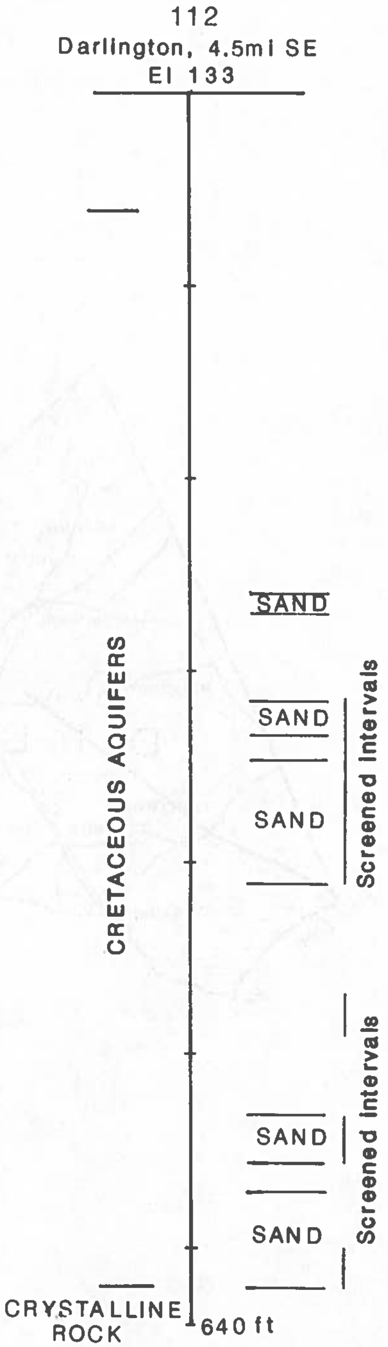

N
Society Hill
Cedar Cr
LAKE ROBINSON
15
52
401
SEABOARD
Pee Dee
River
North Hartsville
102
Dovesville
Mont Clare
94
College Heights
181
Hartsville
South Hartsville
Black
Mechanicsville
Ashland
Kellytown
DARLINGTON
34
Darlington
112
(153)
15
151
Swift Cr
Lydia
34
Indian Cr
401
Creek
183
High
Hill
52
403
Oats
Creek
Sparrow
340
20
Lynches
Lake
Swamp
Lamar
401
River
10
0
10
20 Miles

DARLINGTON COUNTY



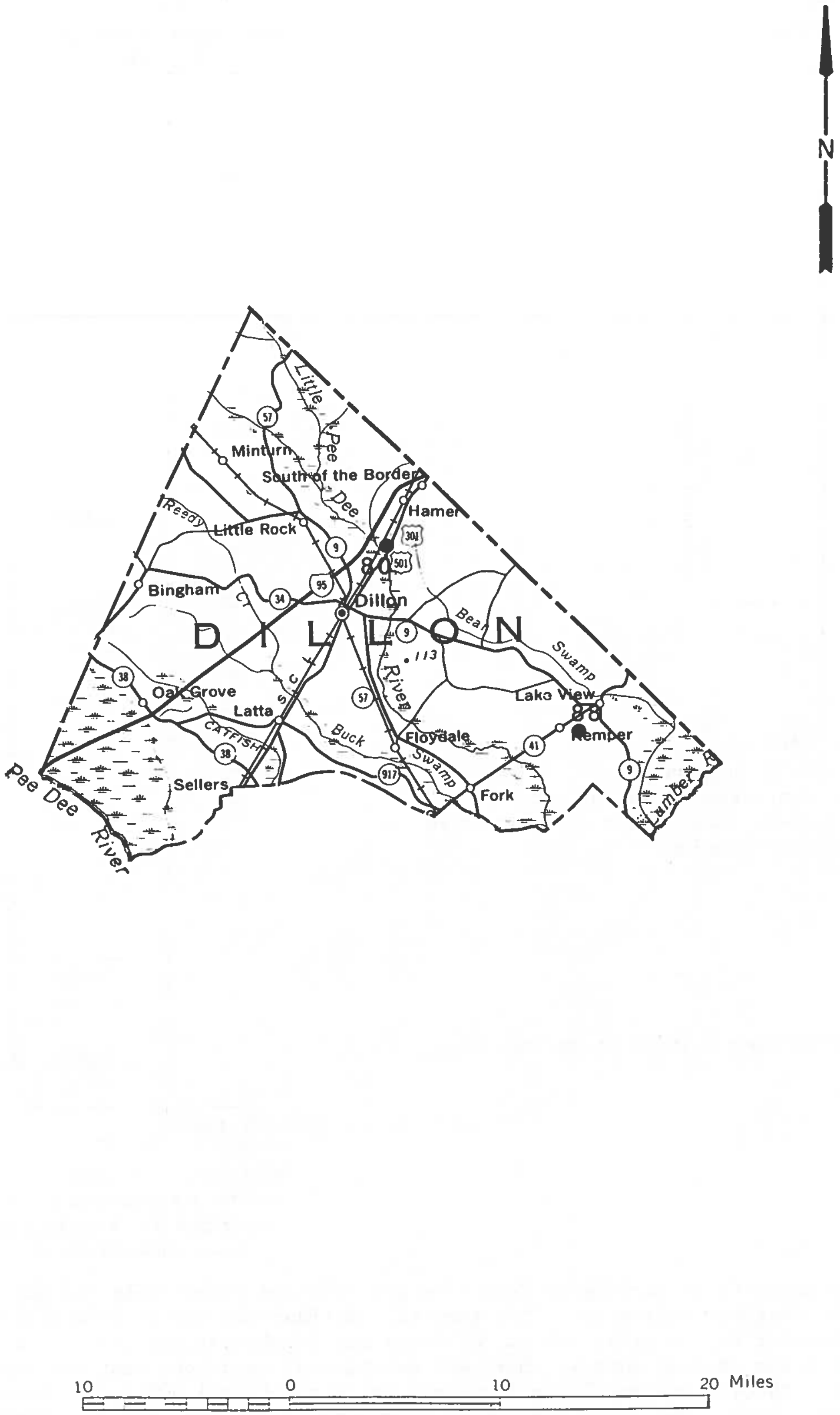
Well yield: 1,100 gpm
Aquifer transmissivity: 39,000 gpd/ft
Water quality: Acidic water with practically no mineralization

Vertical scale is 100 ft to the inch



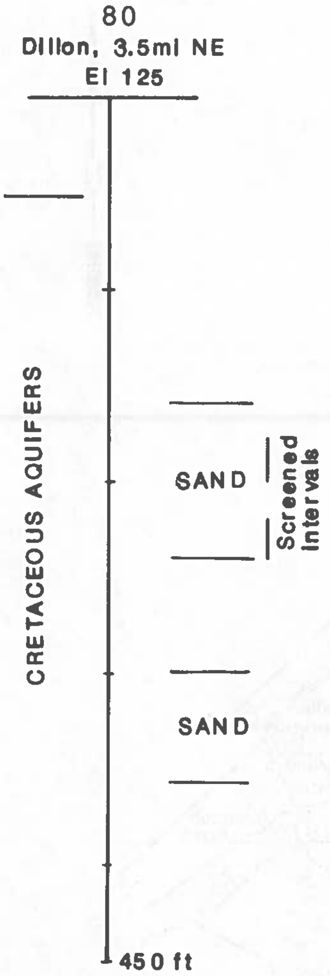
Well yield: 951 gpm
Aquifer transmissivity: 10,000 gpd/ft
Water quality: Slighty acidic with very low mineralization

The base of freshwater in Darlington County ranges from sea level along the northern boundary to -500 ft msl at the southern extremity. This generally defines the top of crystalline rocks also; there may be freshwater in the older rocks. Although the freshwater section in the Coastal Plain formations is not thick in this county, there are substantial sand beds that can support moderate to large well yields. Records are available for eight wells yielding 1,000 gpm or more; all are at Hartsville and Darlington. The water approaches rainwater in quality, its only problem likely to be the low pH. Darlington County should be able to support a greatly increased development of its ground-water resource, especially for those uses that require a minimum mineralization. Development in the southeastern part of the county may be limited by the pumping depression centered at Florence.

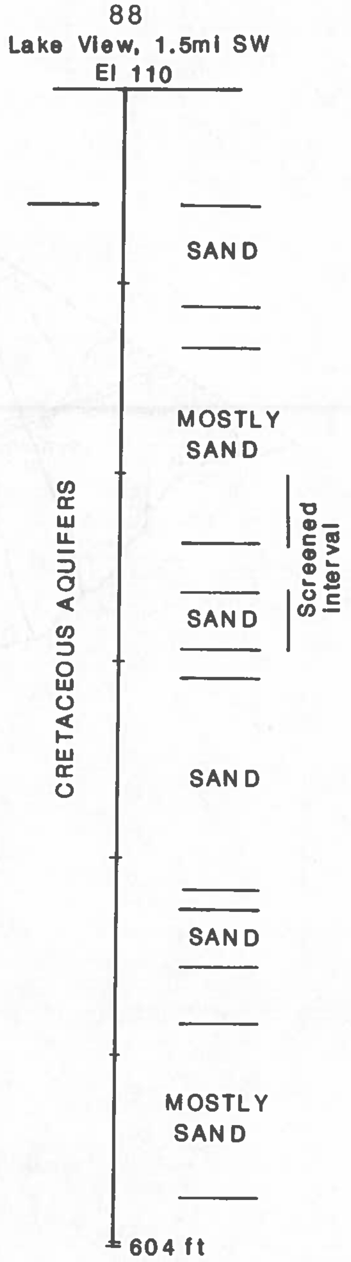

N
Little Pee Dee
57
Minturn
South of the Border
Hamer
Reedy
Little Rock
9
301
80
501
95
Bingham
34
Dillon
DILLON
9
Bear Swamp
113
River
38
Oak Grove
Latta
57
Lake View
88
Kemper
CATFISH
38
Buck Swamp
Floydale
41
917
9
Sellers
Fork
Lumber R.
Pee Dee River
10
0
10
20 Miles

DILLON COUNTY

Vertical scale is 100 ft to the inch

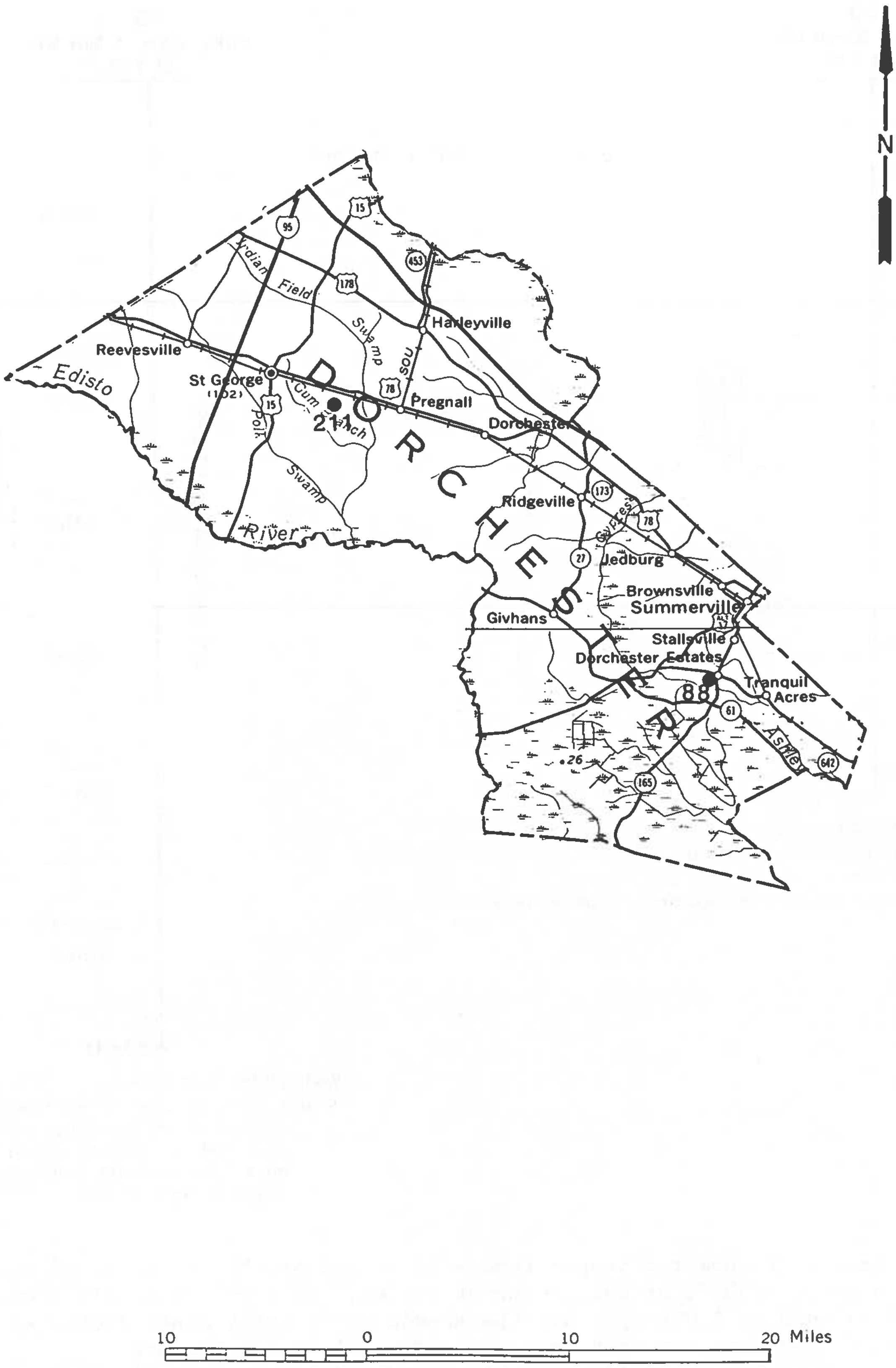


Well yield: 600 gpm
Aquifer transmissivity: Nearby test indicated a T of 33,000 gpd/ft
Water quality: Slighty acidic and of low mineralization

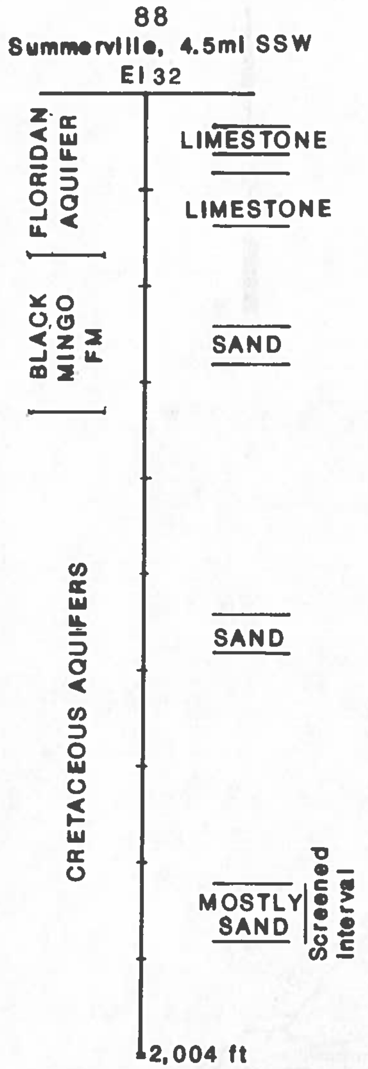


Well yield: 790 gpm
Water Quality: Low mineralization and very soft for screened aquifers and also for deeper zones shown here. All aquifers may contain a slight excess of iron

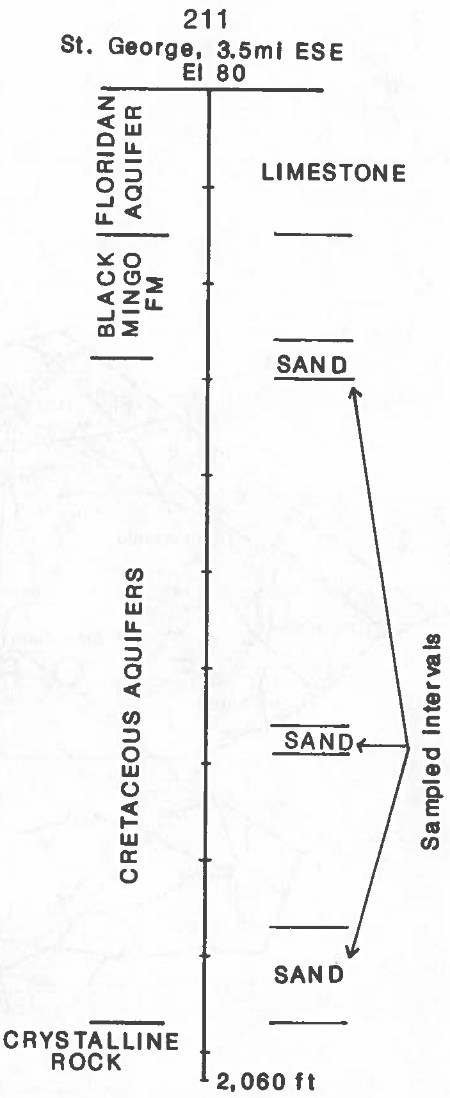
The base of freshwater ranges from -250 ft msl at the north tip of the county to about -700 ft at the southeast border. Only two wells are known to yield as much as 1,000 gpm, but the abundance of sandy zones indicated by electric logs suggests that wells capable of large yields are feasible. The water is of low mineralization and low to neutral pH. Iron possibly will be excessive in some aquifers in some localities.


N
Indian Field Swamp
95
15
453
178
Harleyville
Reevesville
St George
(102)
Edisto
15
Polk
Swamp
River
Cum
nch
211
78
sou
Pregnall
Dorchester
DORCHESTER
Ridgeville
173
Cypress
78
27
Jedburg
Brownsville
Summerville
Givhans
Stallsville
Dorchester Estates
Tranquil Acres
88
61
Ashley
642
26
165
10
0
10
20 Miles

DORCHESTER COUNTY



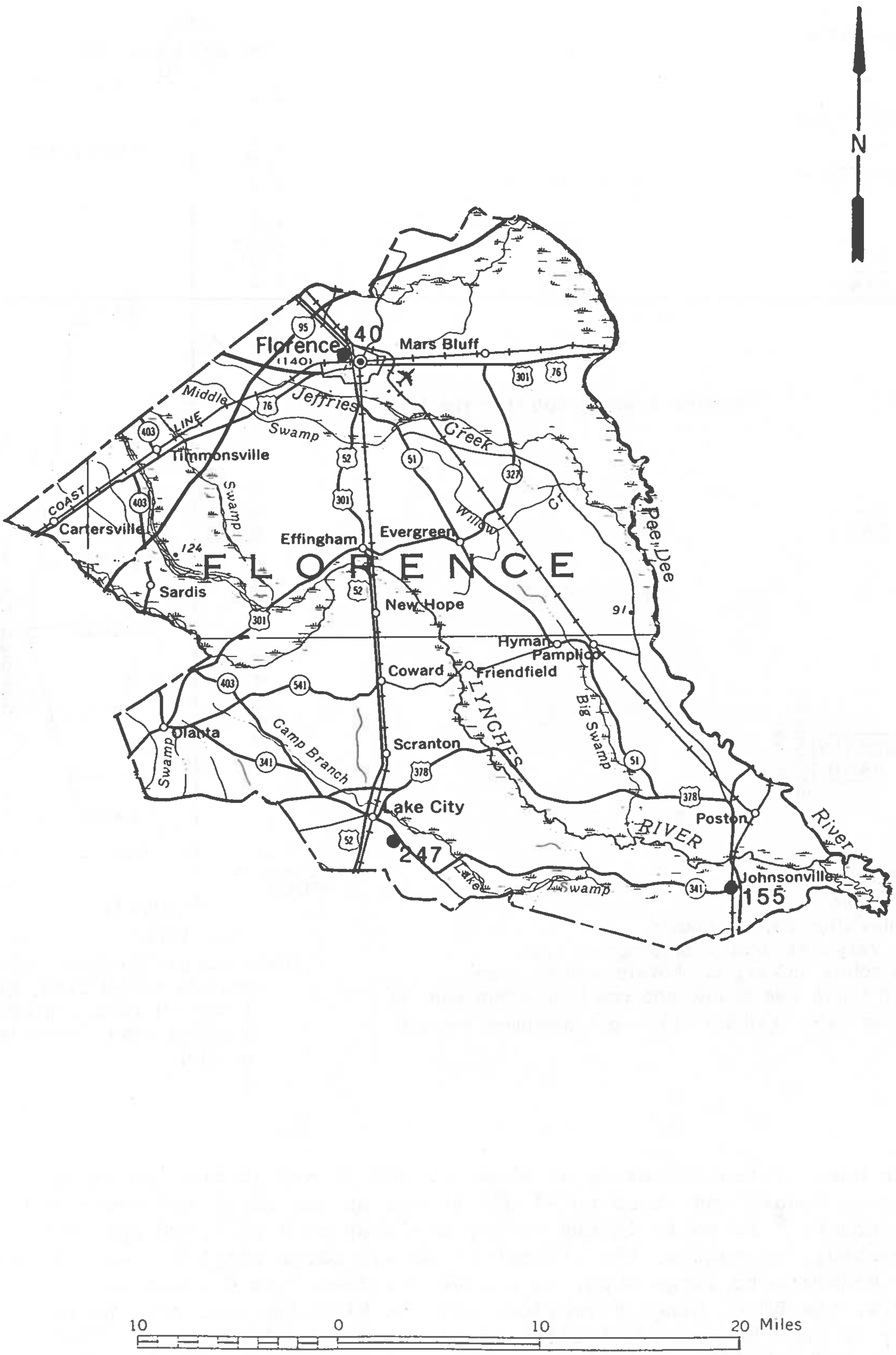
Vertical scale is 400 ft to the inch



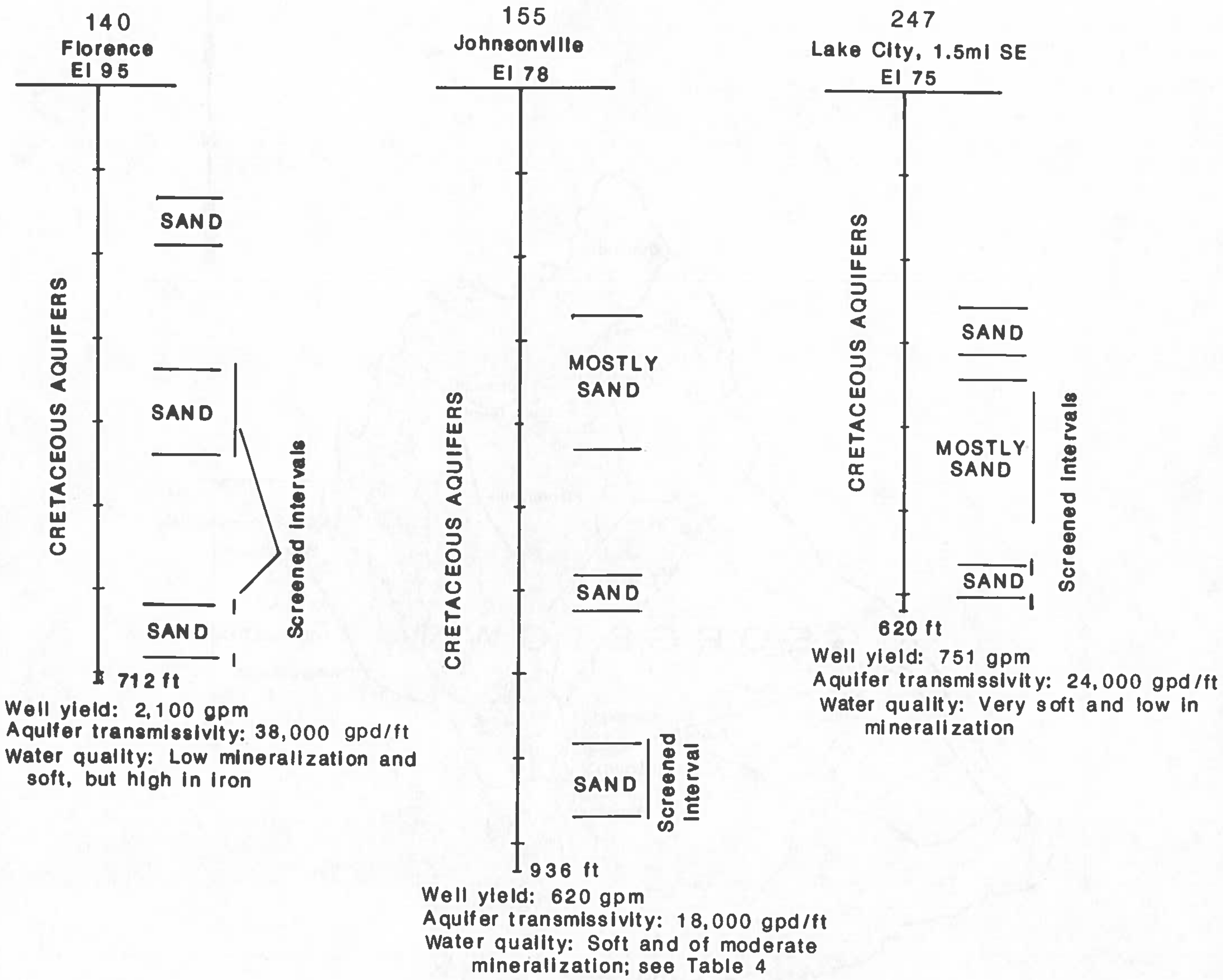
Well yield: 900 gpm
Aquifer transmissivity: 29,000 gpd/ft
Water quality: Very soft, sodium bicarbonate type. Dissolved solids 550 mg/L. A water sample from the 500-ft depth was saline, and one from a thin zone at 1,600 ft was barely saline (1,100 mg/L dissolved solids)

Test Well
Water quality: Dissolved solids were 180 mg/L in 600-ft zone, 1,160 mg/L in 1,340 -ft zone, and 800 mg/L in 1,800-ft zone. Water is soft and alkaline

The base of freshwater is at about -2,000 ft msl in the center of Dorchester County and rises to -1,600 ft msl at the north and south ends of the county. No wells in the county yield as much as 1,000 gpm, but this probably is because the attempt to obtain large supplies has not been made. Moderate to large supplies can be obtained from Cretaceous aquifers, the Black Mingo Formation, and the Floridan aquifer. Water quality is good but mineralization is higher in the deep zones. Test drilling and sampling is called for before committing large expenditures to installation of deep wells.


N
Florence
140
(140)
Mars Bluff
95
301
76
Middle
LINE
COAST
Jeffries
Creek
Swamp
403
Timmonsville
Cartersville
124
Swamp
Effingham
Evergreen
52
51
327
Willow
Cr
Pee Dee
FLORENCE
Sardis
New Hope
91
Hyman
Pamplico
Coward
Friendfield
541
LYNCHES
Big Swamp
Olanta
Swamp
Camp Branch
341
Scranton
378
Lake City
247
RIVER
Poston
River
Johnsonville
155
Lake
Swamp
10
0
10
20 Miles

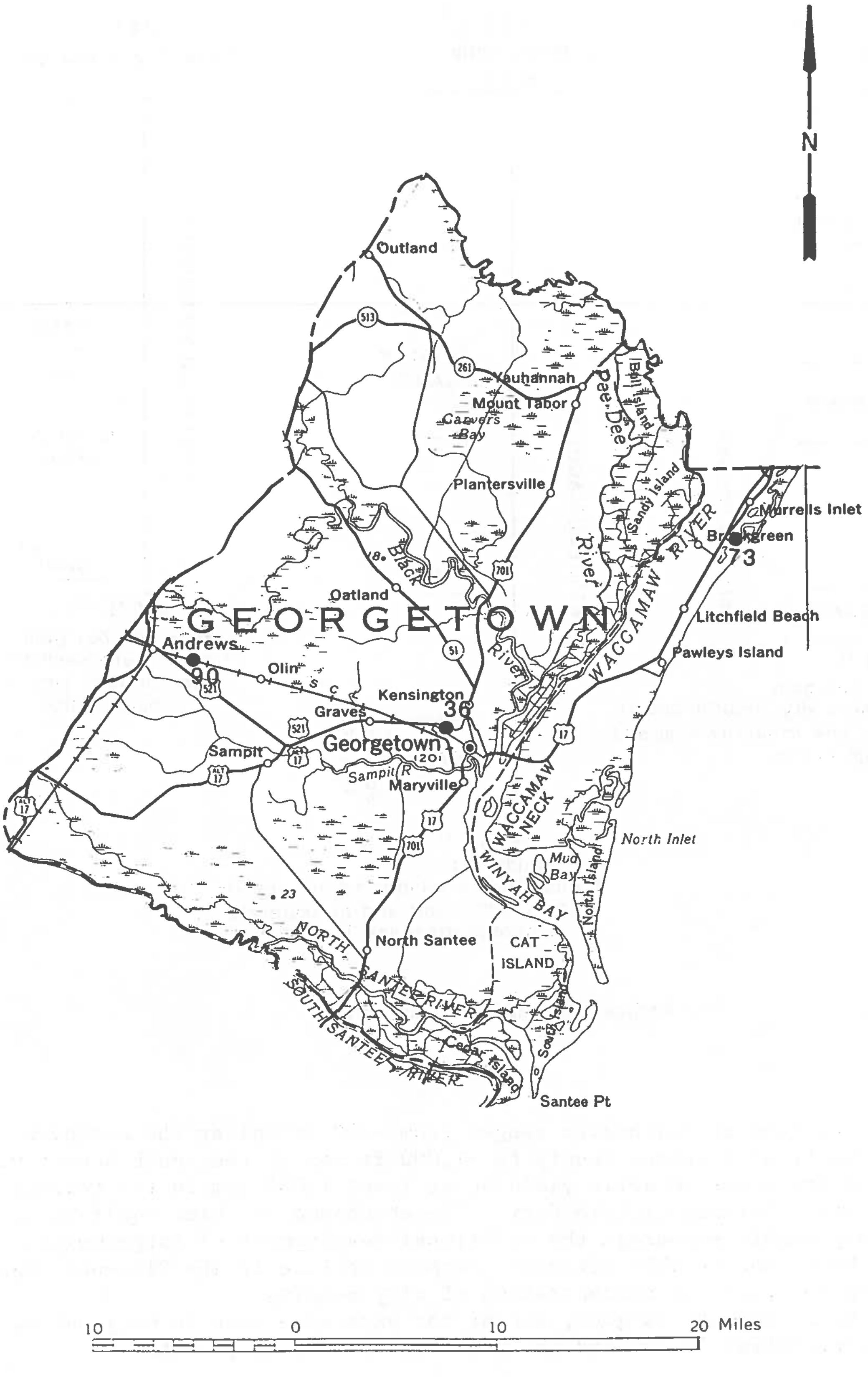
FLORENCE COUNTY



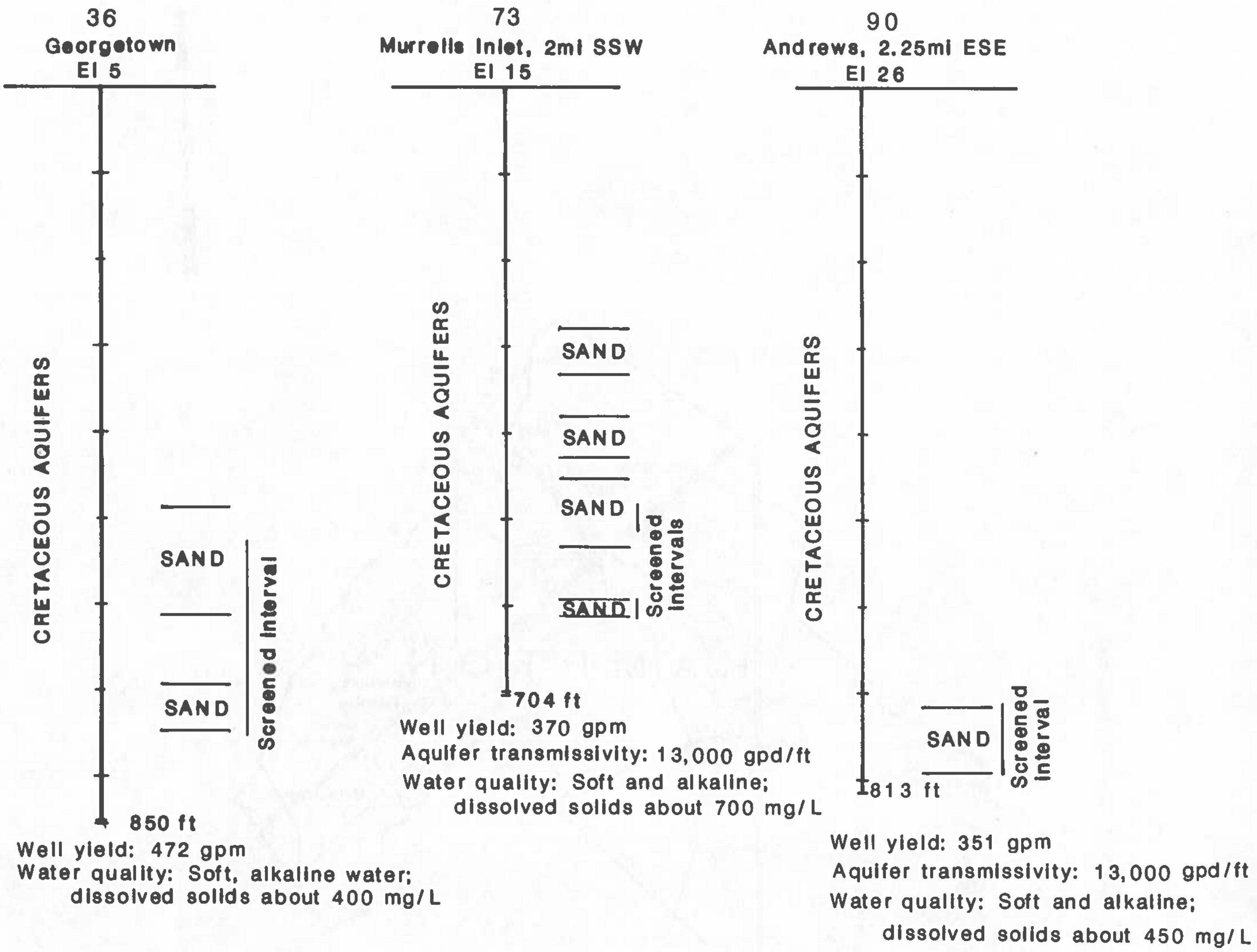
Vertical scale is 200 ft to the inch

The base of freshwater ranges from -400 ft msl at the northern extremity of Florence County to -1,000 ft msl at the south boundary. There are about 20 wells yielding at least 1,000 gpm in the county; most are near Florence or Lake City. The abundance of thick aquifers in this county should encourage the additional development of large wells. There has been considerable artesian-pressure decline in the Florence area, owing to long-time concentration of city pumping.

Water quality is good, except for excessive iron in many wells. Mineralization is low and the water is consistently soft.


N
GEORGETOWN
Outland
Yauhannah
Mount Tabor
Carvers Bay
Plantersville
Pee Dee River
Bull Island
Sandy Island
Black River
Oatland
Andrews
90
Olin
S C L
Kensington
36
Graves
Georgetown
Sampit
Sampit R
Maryville
Murrells Inlet
Brookgreen
73
Litchfield Beach
Pawleys Island
WACCAMAW RIVER
WACCAMAW NECK
WINYAH BAY
North Inlet
Mud Bay
North Island
North Santee
CAT ISLAND
NORTH SANTEE RIVER
SOUTH SANTEE RIVER
Cedar Island
South Island
Santee Pt
18
23
513
261
701
51
521
17
ALT 17
201
10
0
10
20 Miles

GEORGETOWN COUNTY



Well yield: 472 gpm
Water quality: Soft, alkaline water;
dissolved solids about 400 mg/L

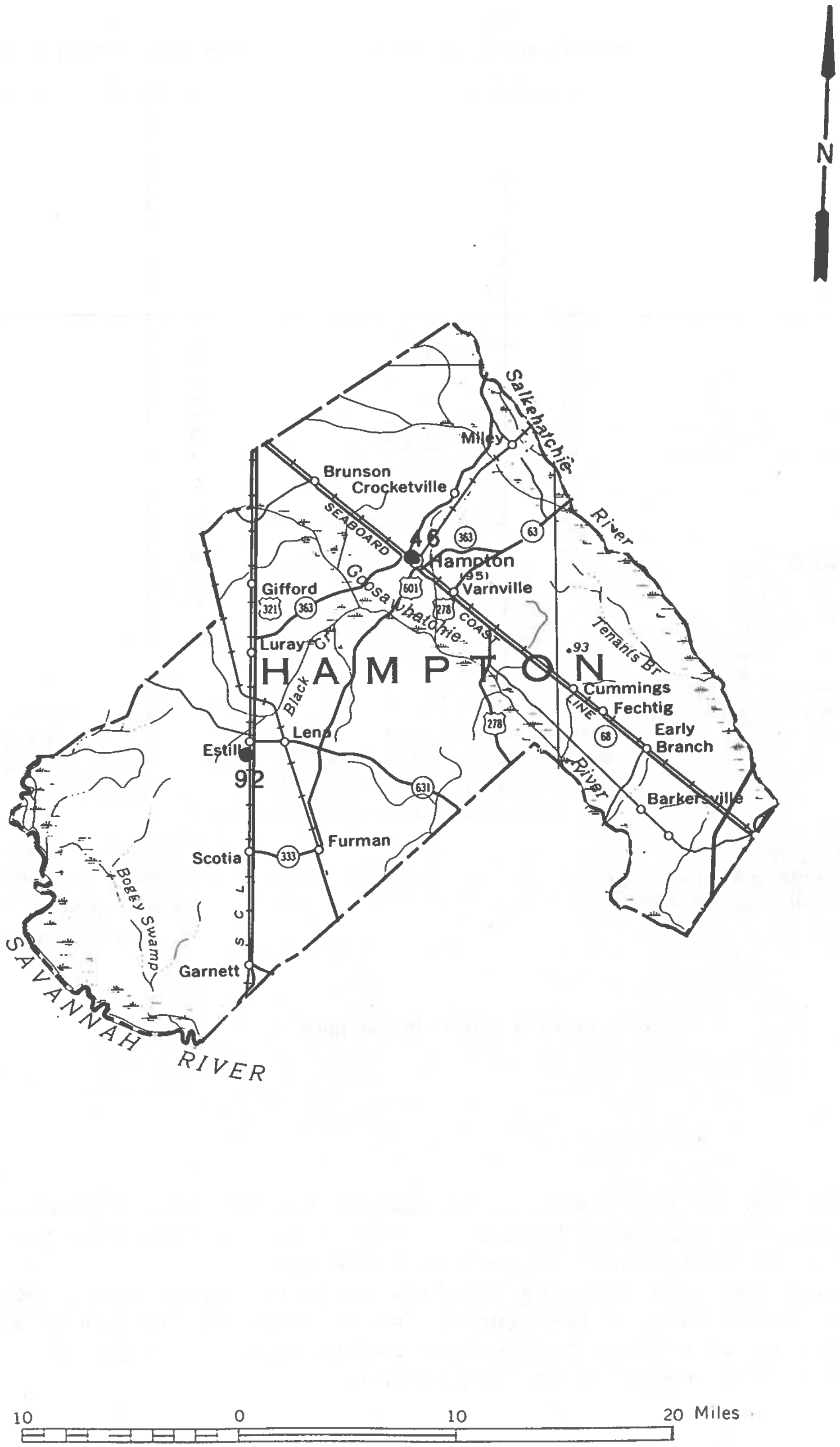
Well yield: 370 gpm
Aquifer transmissivity: 13,000 gpd/ft
Water quality: Soft and alkaline;
dissolved solids about 700 mg/L

Well yield: 351 gpm
Aquifer transmissivity: 13,000 gpd/ft
Water quality: Soft and alkaline;
dissolved solids about 450 mg/L

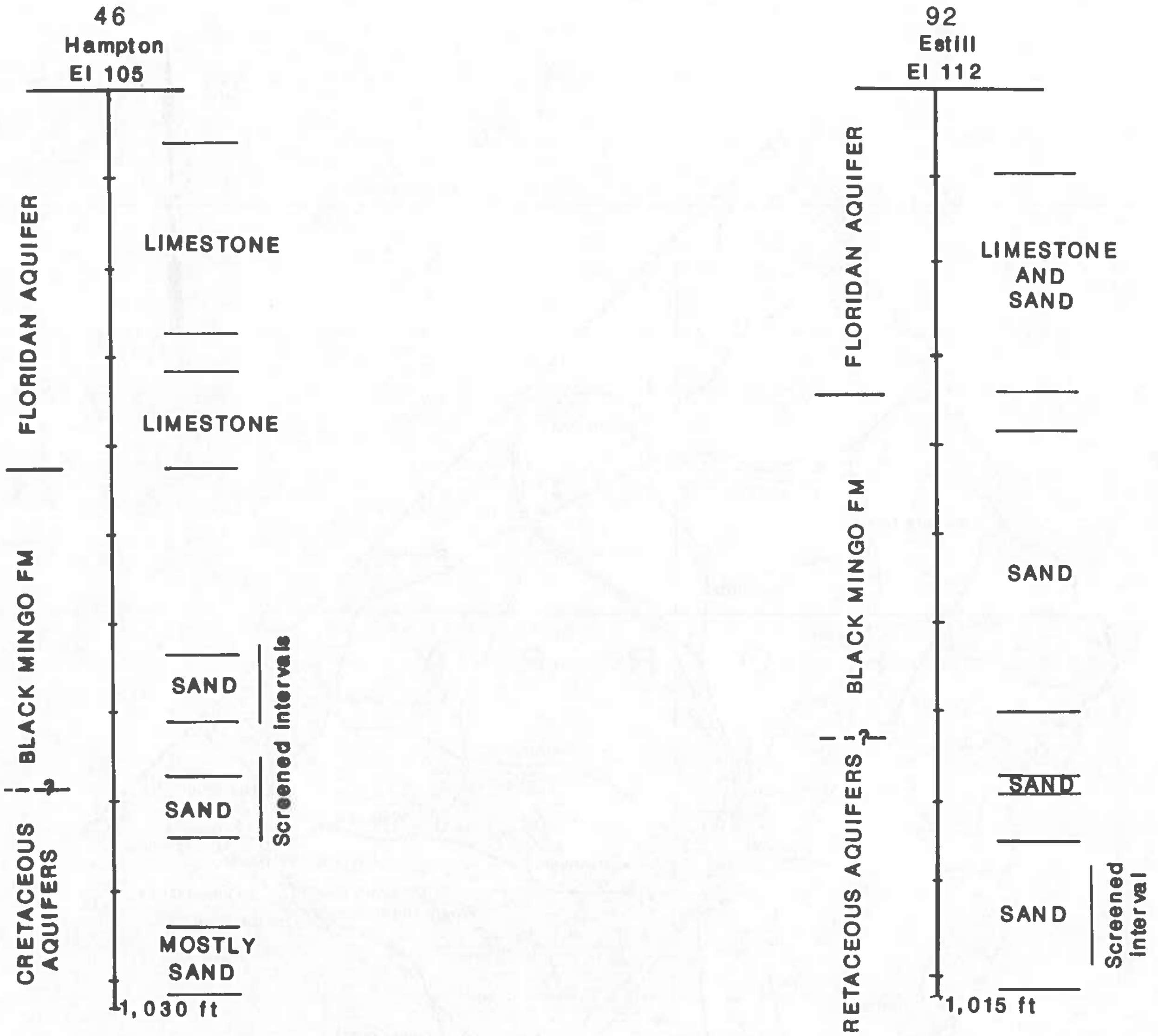
Vertical scale is 200 ft to the inch

The base of freshwater is Georgetown County rises from about -1,200 ft msl along the northwest border to -500 ft msl or higher at the south corner. No wells yield as much as 1,000 gpm.

Large and more enduring supplies of better water should be obtainable in the inland part of the county. Water from the Cretaceous aquifers in this county is a soft, sodium bicarbonate type with high pH. Fluoride is higher in the coastal area than inland.


N
HAMPTON
Salkehatchie River
Miley
Brunson
Crocketville
SEABOARD COAST LINE
46
Hampton
363
63
(95)
Varnville
Gifford
321
363
601
278
Coosawhatchie
Luray
Black Cr
Tenants Br
.93
Cummings
Fechtig
Early Branch
68
278
River
Barkersville
Estill
92
Lena
631
Furman
Scotia
333
S. C. L.
Boggy Swamp
Garnett
SAVANNAH RIVER
10
0
10
20 Miles

HAMPTON COUNTY



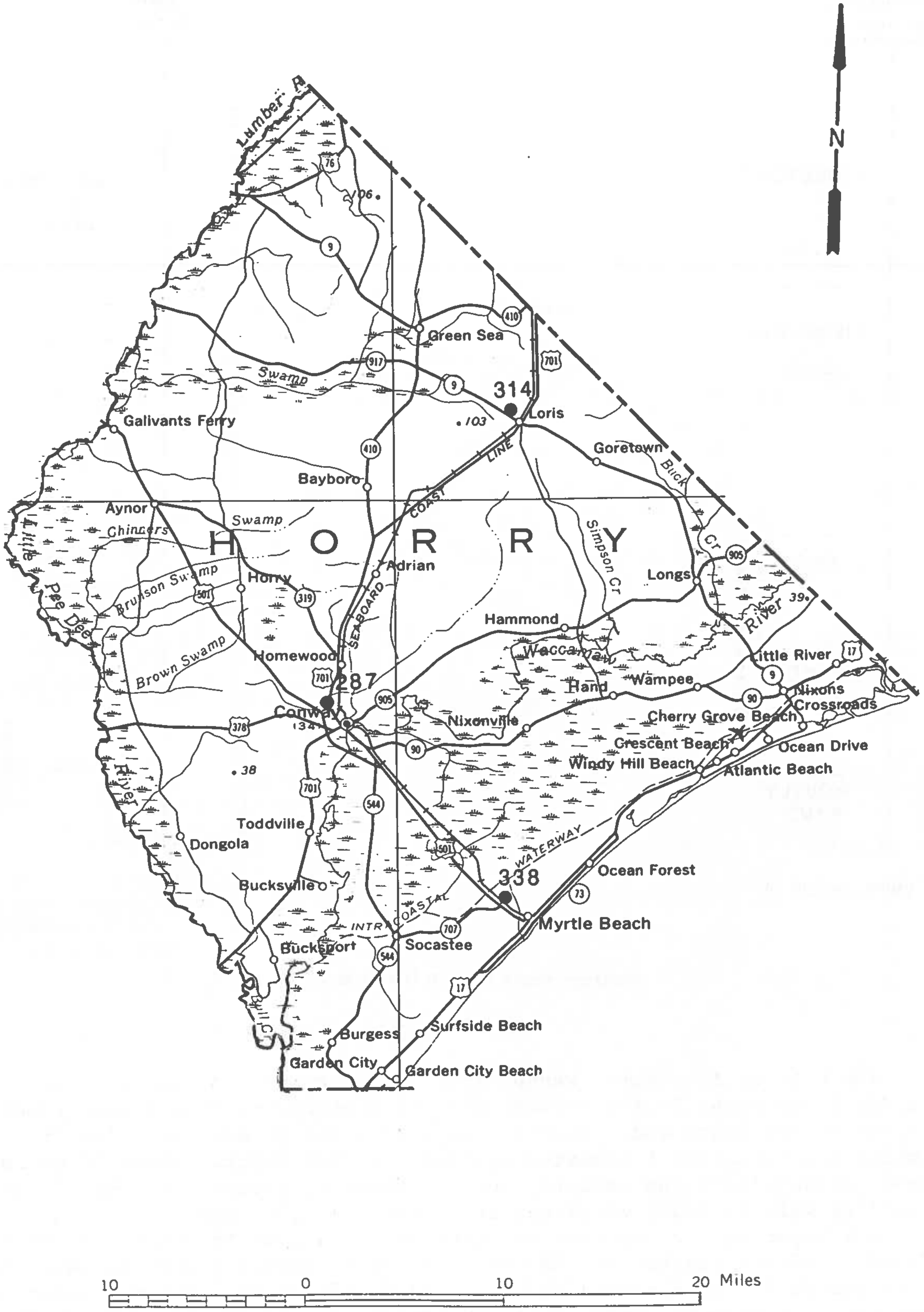
Well yield: 3,000 gpm

Well yield: 875 gpm
Water quality: Soft, alkaline, and moderately mineralized; see Table 4

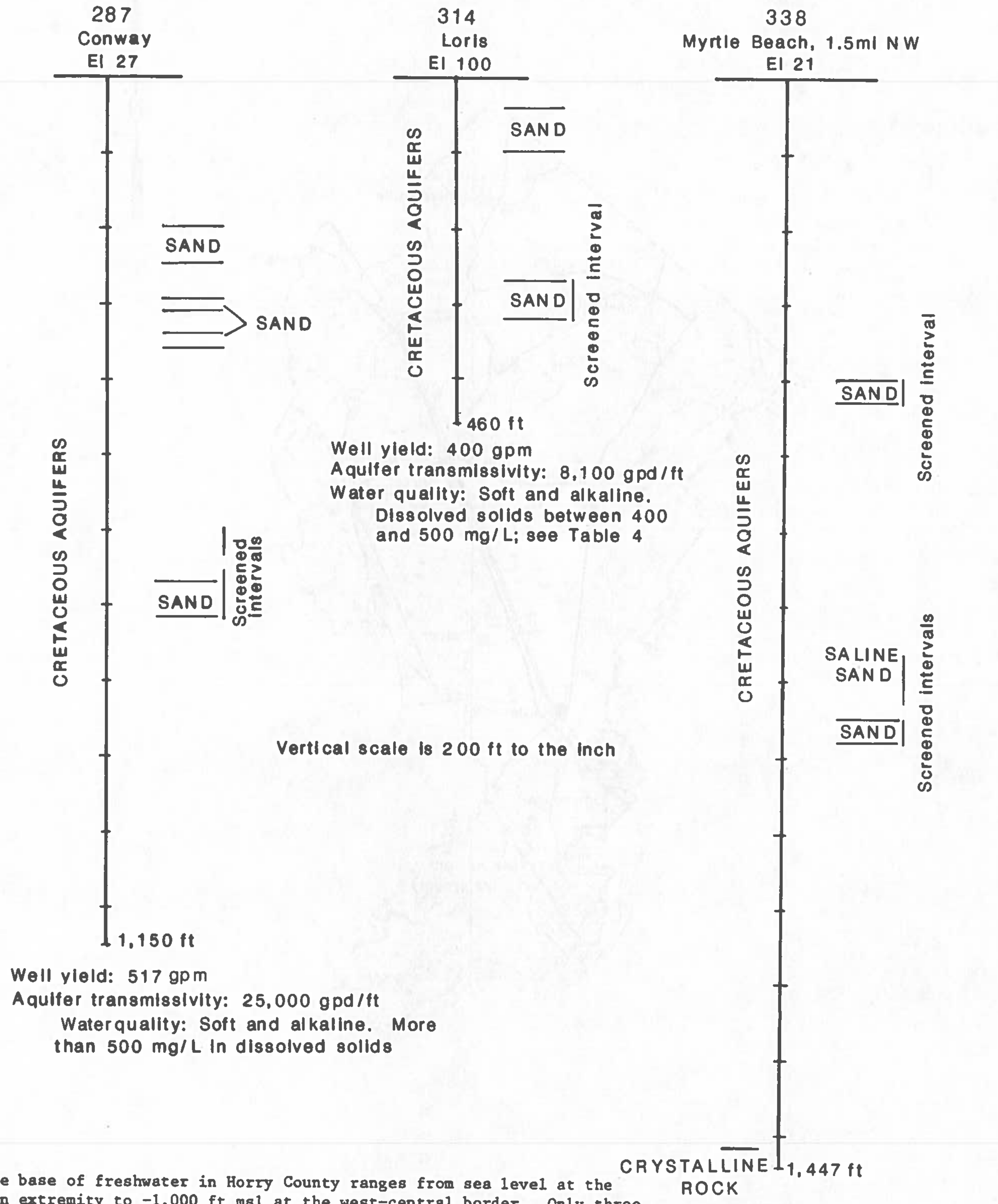
Vertical scale is 200 ft to the inch

The base of freshwater ranges from -1,700 ft msl in the north to -2,000 ft or lower in the central part of Hampton County and then rises to -1,750 at the south end. Electric logs of wells as deep as 1,460 ft indicate substantial freshwater aquifers to that depth. About 10 wells have yielded 1,000 gpm or more; one, at Hampton, probably is the highest yielding well in South Carolina, at a reported 3,000 gpm.

All major aquifer systems are available, in good thickness, in Hampton County. Mineralization of the water is low to moderate and the water is soft except in the Floridan aquifer. It is likely that Hampton County has the most, or near the most, abundant supply of good ground water in the State.


N
Lumber R.
76
106
9
Green Sea
410
701
917
Swamp
9
314
Loris
103
Galivants Ferry
Goretown
Buck Cr
Bayboro
410
Coast Line
Aynor
Swamp
Chinners
H O R R Y
Simpson Cr
Adrian
Longs
905
Little Pee Dee River
Brunson Swamp
501
Horry
319
Seaboard
Hammond
River
39
Waccamaw
Homewood
Brown Swamp
701
287
Little River
17
Hand
Wampee
9
Nixons Crossroads
905
90
Conway
134
Nixonville
Cherry Grove Beach
378
Crescent Beach
Ocean Drive
90
Windy Hill Beach
Atlantic Beach
River
38
701
544
Toddville
Dongola
501
Intracoastal Waterway
Ocean Forest
338
Bucksville
73
Myrtle Beach
707
Bucksport
Socastee
544
17
Bull Cr
Burgess
Surfside Beach
Garden City
Garden City Beach
10
0
10
20 Miles

HORRY COUNTY



Vertical scale is 200 ft to the inch

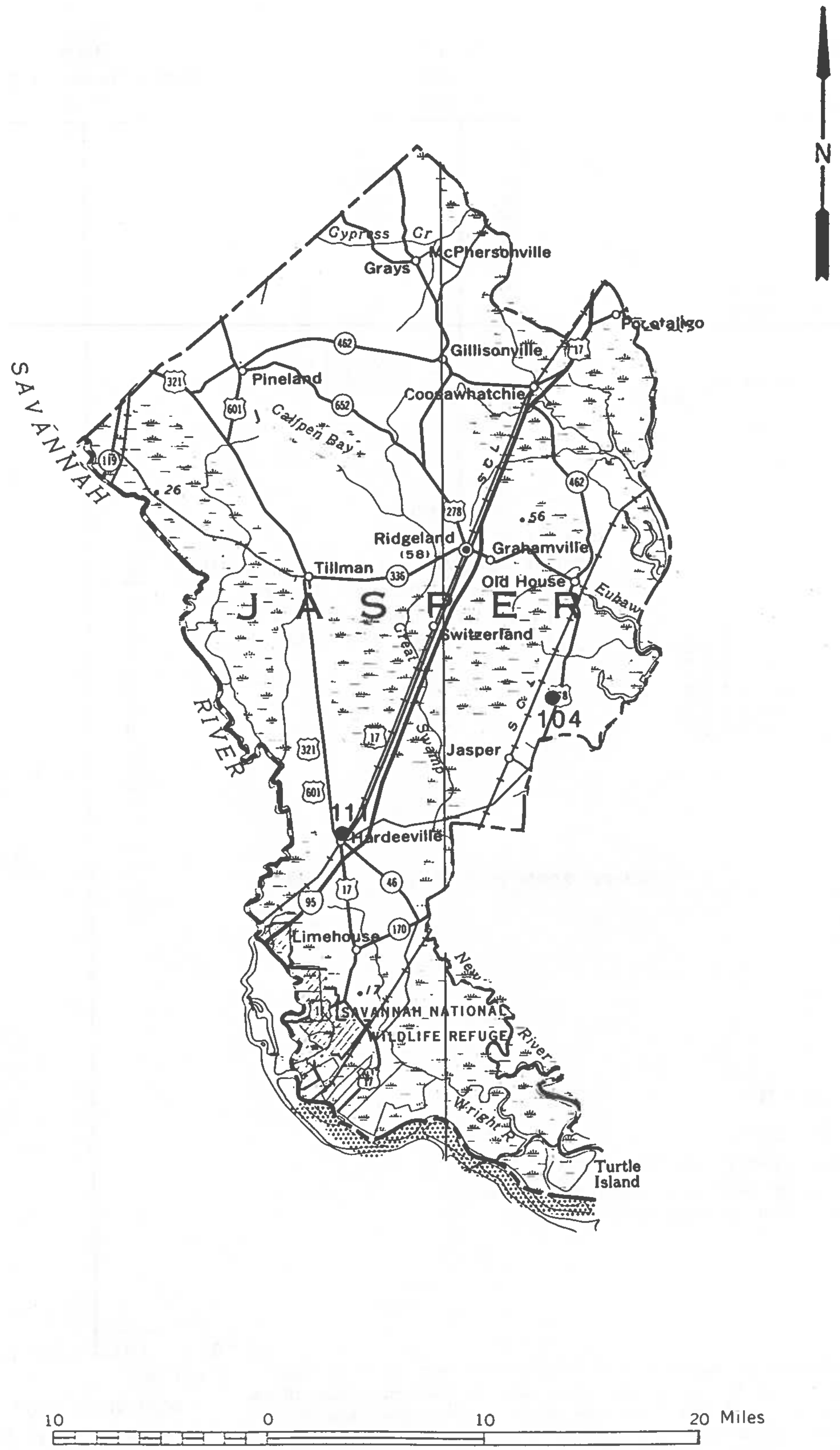
Well yield: 517 gpm
Aquifer transmissivity: 25,000 gpd/ft
Water quality: Soft and alkaline. More than 500 mg/L in dissolved solids

Well yield: 400 gpm
Aquifer transmissivity: 8,100 gpd/ft
Water quality: Soft and alkaline. Dissolved solids between 400 and 500 mg/L; see Table 4

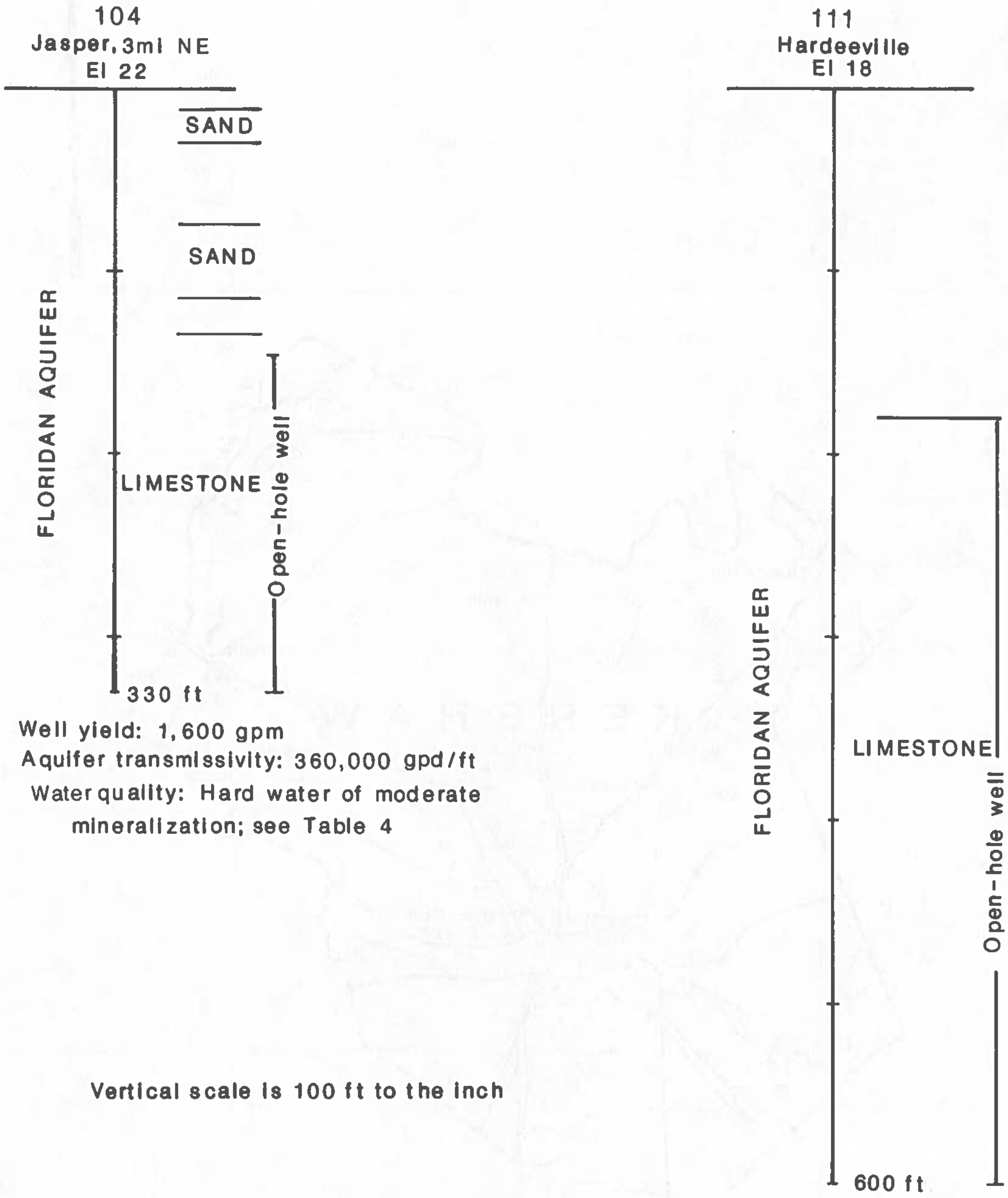
Well yield: 500 gpm
Water quality: Soft but highly mineralized; see Table 4

The base of freshwater in Horry County ranges from sea level at the eastern extremity to -1,000 ft msl at the west-central border. Only three wells are known to yield 1,000 gpm. In some wells saline-water aquifers are screened along with freshwater aquifers to provide adequate yields and a mixture of passable quality. Results of more than 60 pumping tests indicate a median transmissivity of 11,000 gpd/ft for the Cretaceous aquifers; the range in transmissivity values is 1,000 to 90,000 gpd/ft.

Water quality is marginal, with mineralization usually being between 500 and 1,000 mg/L. The water is soft and alkaline. Fluoride is excessive in many wells.


N
Gypress Cr
Grays
McPhersonville
Pocotaligo
Gillisonville
Pineland
Coosawhatchie
Calfpen Bay
SAVANNAH RIVER
JASPER
26
56
Ridgeland
(58)
Grahamville
Tillman
Old House
Eubaw
Switzerland
Great Swamp
S C L
104
Jasper
111
Hardeeville
Limehouse
17
SAVANNAH NATIONAL WILDLIFE REFUGE
New River
Wright R
Turtle Island
321
601
119
462
652
278
336
17
95
46
170
10
0
10
20 Miles

JASPER COUNTY



Well yield: 1,600 gpm
Aquifer transmissivity: 360,000 gpd/ft
Water quality: Hard water of moderate mineralization; see Table 4

Vertical scale is 100 ft to the inch

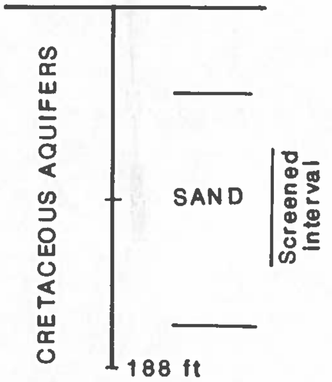
Well yield: 1,040 gpm

The base of freshwater rises from -2,000 ft msl along the northwestern boundary of the county to -500 ft at the coastline. Jasper County is in the enviable position of being able to obtain all the water it needs from the Floridan aquifer and at the same time having large undeveloped (and unexplored) resources in the Cretaceous aquifers at greater depths. At least 10 wells yield 1,000 gpm or more, all from the Floridan aquifer. The water is hard and of moderate mineralization. The untapped supplies in the deeper aquifer probably would be of better quality, softer at least. Water levels in Floridan aquifer wells have been affected by pumping at Savannah, Ga., and in the Beaufort area of South Carolina.


N
KERSHAW
Liberty Hill
Westville
Clyburn
Bethune
Cassatt
Camden
Du Bose Park
Lugoff
Elgin
Boykin
148
140
LYNCHES RIVER
Buffalo Cr
Little Lynches
White Oak Cr
Flat
Granny's Quarter
Cr
Creek
WATEREE DAM
SEABOARD COAST
Big Pine Tree
Hermitage Millpond
River
Spears Cr
Swift Cr
Mile
Creek
Five
425
903
157
341
346
97
521
601
1
34
20
12
261
10
0
10
20 Miles

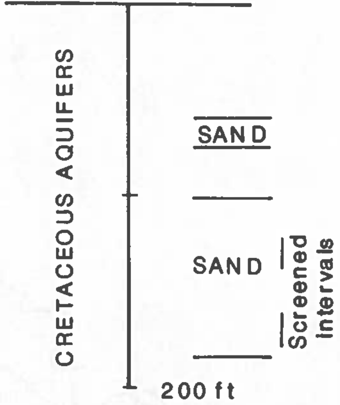
KERSHAW COUNTY

140
Elgin, 2mi SE
El 255



Well yield: 150 gpm
Water quality: Nearby wells in this aquifer yield water of very low mineralization

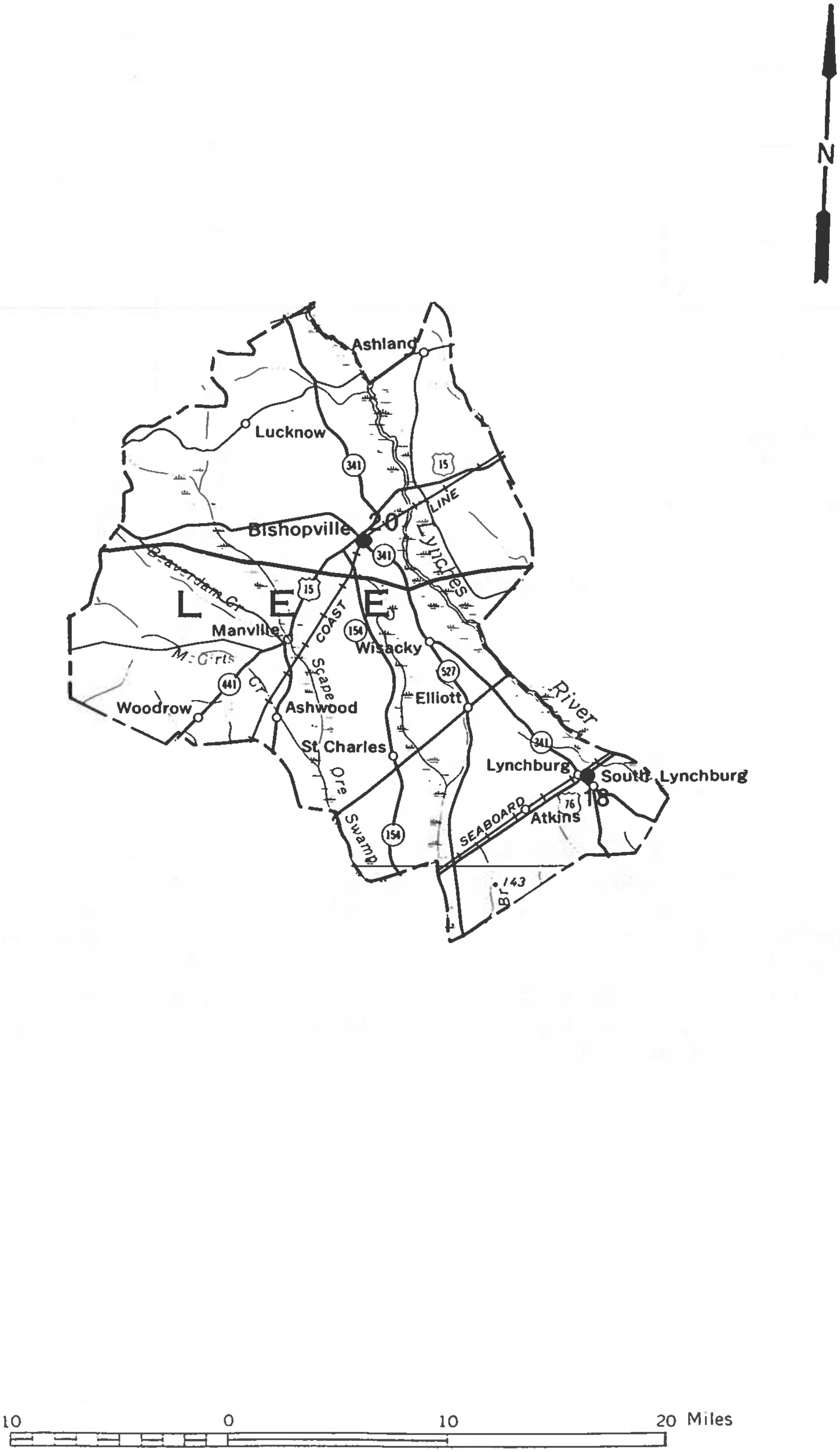
148
Bethune, 1mi SSW
El 290



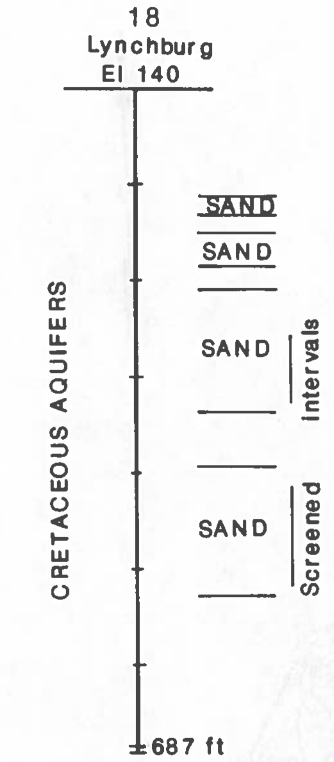
Well yield: 300 gpm
Aquifer transmissivity: 36,000 gpd/ft, but aquifer not fully screened
Water quality: Almost like rainwater

Vertical scale is 100 ft to the inch

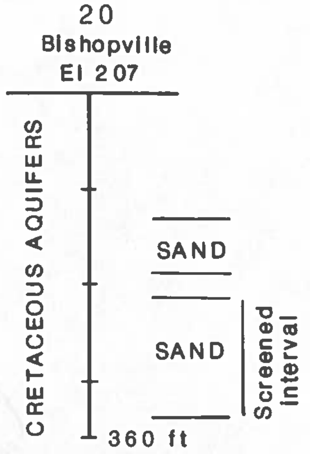
Most of Kershaw County is in the Coastal Plain, but because the county is in the upper reaches of the Cretaceous outcrop there is not much thickness of sediments above the crystalline basement rock. The base of freshwater in the Cretaceous beds is at sea level or above. Probably no wells yield more than 300 gpm, and the lack of substantial sand beds has resulted in unsuccessful attempts to construct public-supply wells in some places. The water quality is unusually good, so far as mineralization is considered; the water is acidic


N
Ashland
Lucknow
341
15
Bishopville
20
LINE
Lynches
341
L E E
Beaverdam Cr
15
COAST
Manville
154
Wisacky
McGirts Cr
Scape Ore Swamp
441
527
Woodrow
Ashwood
Elliott
River
St Charles
341
Lynchburg
South Lynchburg
18
76
SEABOARD
Atkins
154
Br 143
10
0
10
20 Miles

LEE COUNTY



Well yield: 805 gpm
Aquifer transmissivity: 27,000 gpd/ft
indicated by pumping test, but
aquifers are not fully screened.
Water quality: Practically no mineralization,
but iron was excessive in sample analyzed.
Nearby well did not have excessive iron



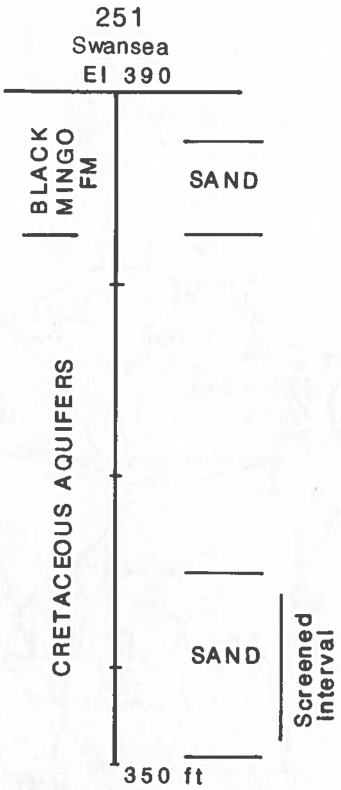
Well yield: 750 gpm
Water quality: Very low mineralization

Vertical scale is 200 ft to the inch

The base of freshwater in Lee County ranges from sea level in the north to about -700 ft msl in the south. Seven wells are recorded as yielding more than 1,000 gpm; most of them are in the Bishopville area. In quality the water seems to be as low in mineralization as anywhere in the Coastal Plain; it is close to rainwater in dissolved solids and pH.


N
Chapin
Irmo
60
LAKE MURRAY
365
432
6
76
378
West Columbia
Cr
Lexington
1
Cayce
Twelvemile
SOUTHERN
Springdale
215
Red Bank
602
Summit
Gilbert
Dixiana
Leesville
Batesburg
South Congaree
Pineridge
LEXINGTON
245
Kneece
Congaree Cr
First Cr
3
321
20
Edmund
Samaria
Black Cr
Gaston
425
Steedman
178
215
SOUTHERN
6
251
Pelion
Swansea
Thor
Pond Br
Bull Swamp
3
10
0
10
20 Miles

LEXINGTON COUNTY



Well yield: 432 gpm
Aquifer transmissivity: 38,000 gpd/ft
Water quality: Very soft and of very low mineralization

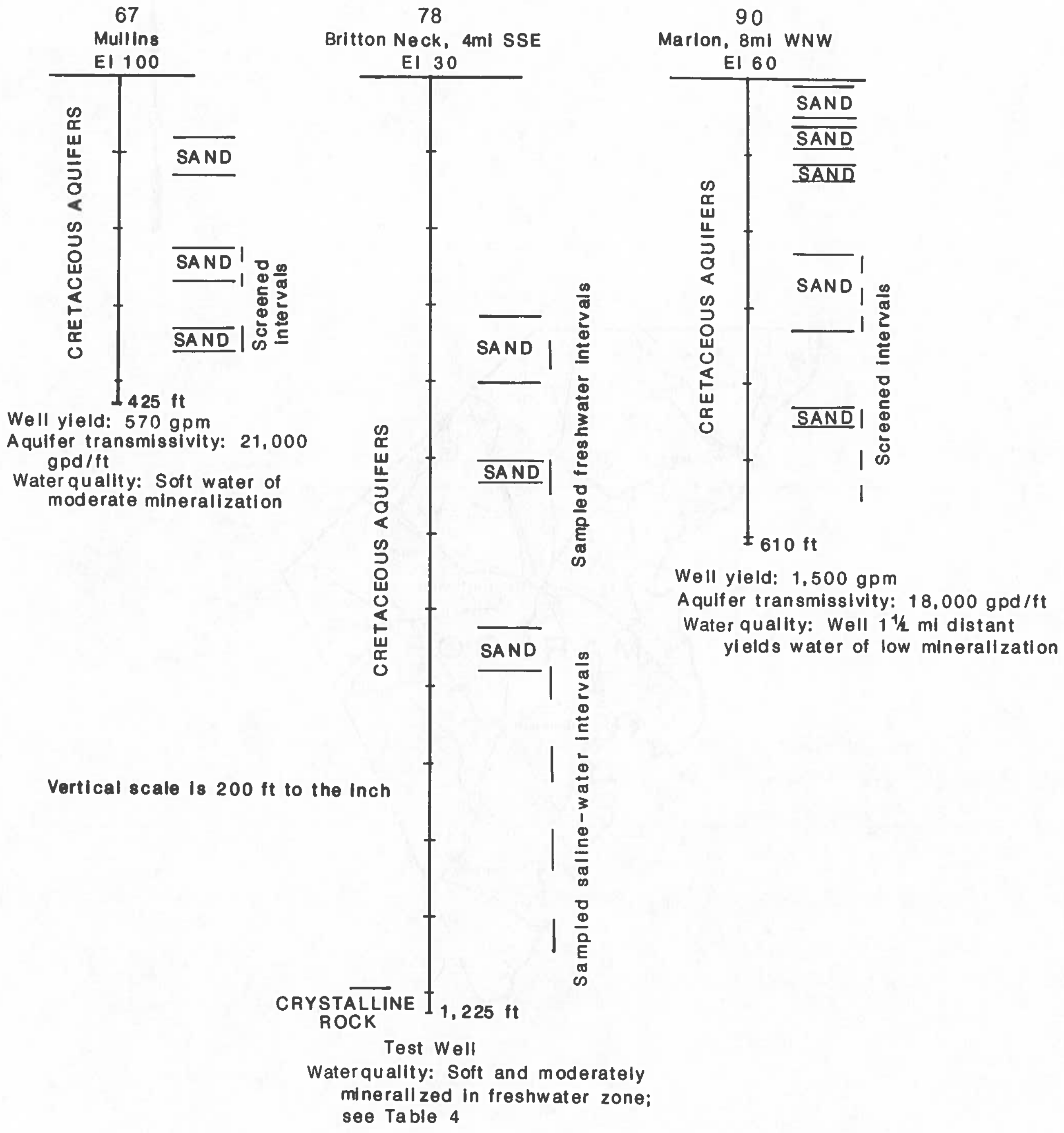
Vertical scale is 100 ft to the inch

Only the south half of Lexington County is in the Coastal Plain. The base of freshwater ranges from a little above sea level near the Fall Line to about -400 ft msl at the county's southern boundary. Only two wells are known to yield as much as 1,000 gpm. Considerable freshwater-section thickness is available in the southern part, but it is generally unexplored. Shallow aquifers in the Black Mingo Formation may support moderate yields in the extreme south.

The water is extremely soft and very low in dissolved solids; it is acidic. The combination of excellent water quality and probable availability of substantial aquifers should encourage development of ground-water supplies in southern Lexington County.


N
Sellers
Smithboro
Zion
Nichols
Blue Brick
Peedee
90
501
301
CANAL
ALT 41
41
.63
Mullins
S C L
67
West Marion
Marion
76
501
91
Gapway
LINE
COAST
41
Rains
Catfish Creek
Pee Dee
MARION
ALT 41
Centenary
Swamp
Bull
SEABOARD
41
Little
Pee Dee
Gresham
908
Britton Neck
378
River
78
River
BRITTON
NECK
10
0
10
20 Miles

MARION COUNTY



Well yield: 570 gpm
Aquifer transmissivity: 21,000 gpd/ft
Water quality: Soft water of moderate mineralization

Vertical scale is 200 ft to the inch

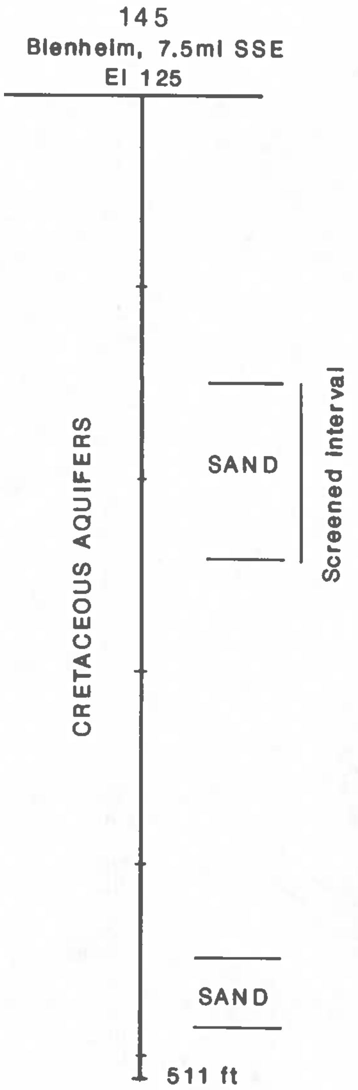
Test Well
Water quality: Soft and moderately mineralized in freshwater zone; see Table 4

Well yield: 1,500 gpm
Aquifer transmissivity: 18,000 gpd/ft
Water quality: Well 1¼ mi distant yields water of low mineralization

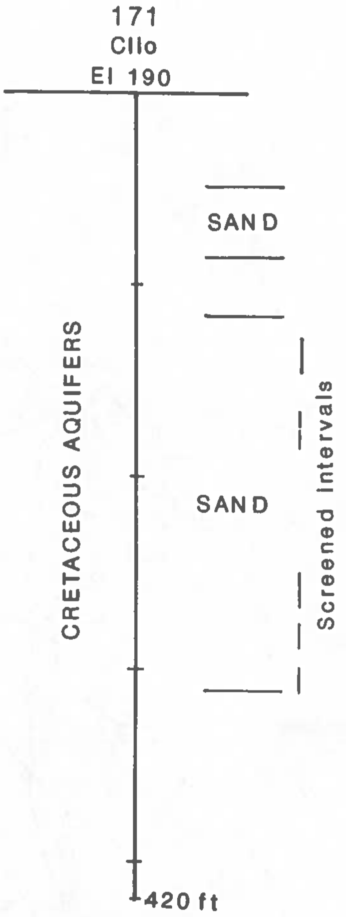
The base of freshwater in Marion County ranges from about -500 ft msl in the north to -1,000 ft msl in the south. Only a half-dozen wells currently yield 1,000 gpm or more, but one yields nearly 2,400 gpm (Table 3). The water generally is low to moderate in mineralization and is soft.


N
Whites
Cr
Pee Dee
1
177
.251
S C L
38
Cr
Cr
Wallace
9
Naked
79
Creek
385
River
381
McColl
Tatum
912
Crooked
15
401
83
Bennettsville
150
9
S C L
171
Clio
69.
LINE
MARLBORO
15
401
38
381
Dunbar
COAST
Blenheim
Three Creeks
Cr
Rogers
145
Brownsville
34
10
0
10
20 Miles

MARLBORO COUNTY



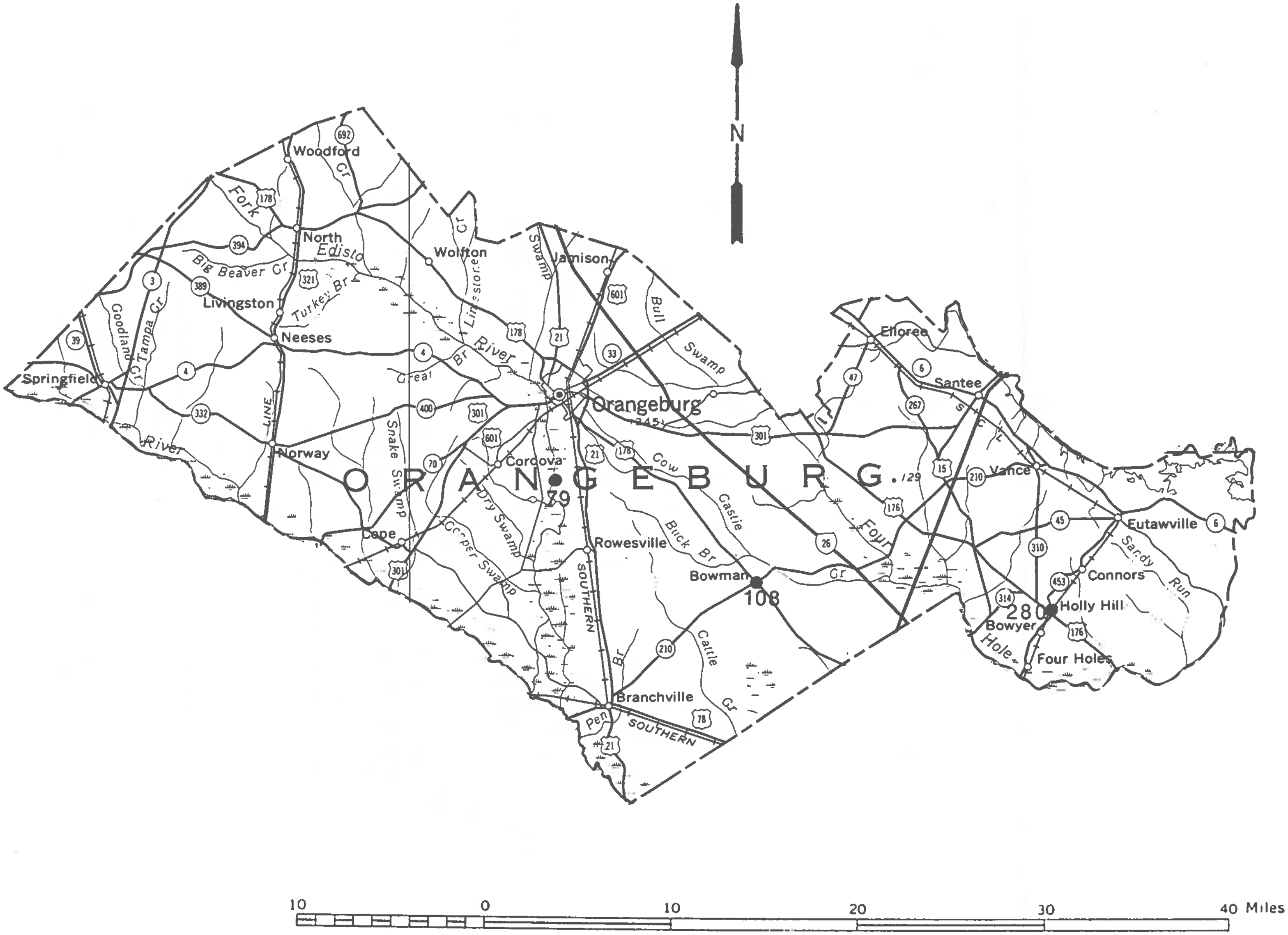
Well yield: 1,000 gpm
Aquifer transmissivity: 59,000 gpd/ft
Waterquality: Soft, with very low mineralization



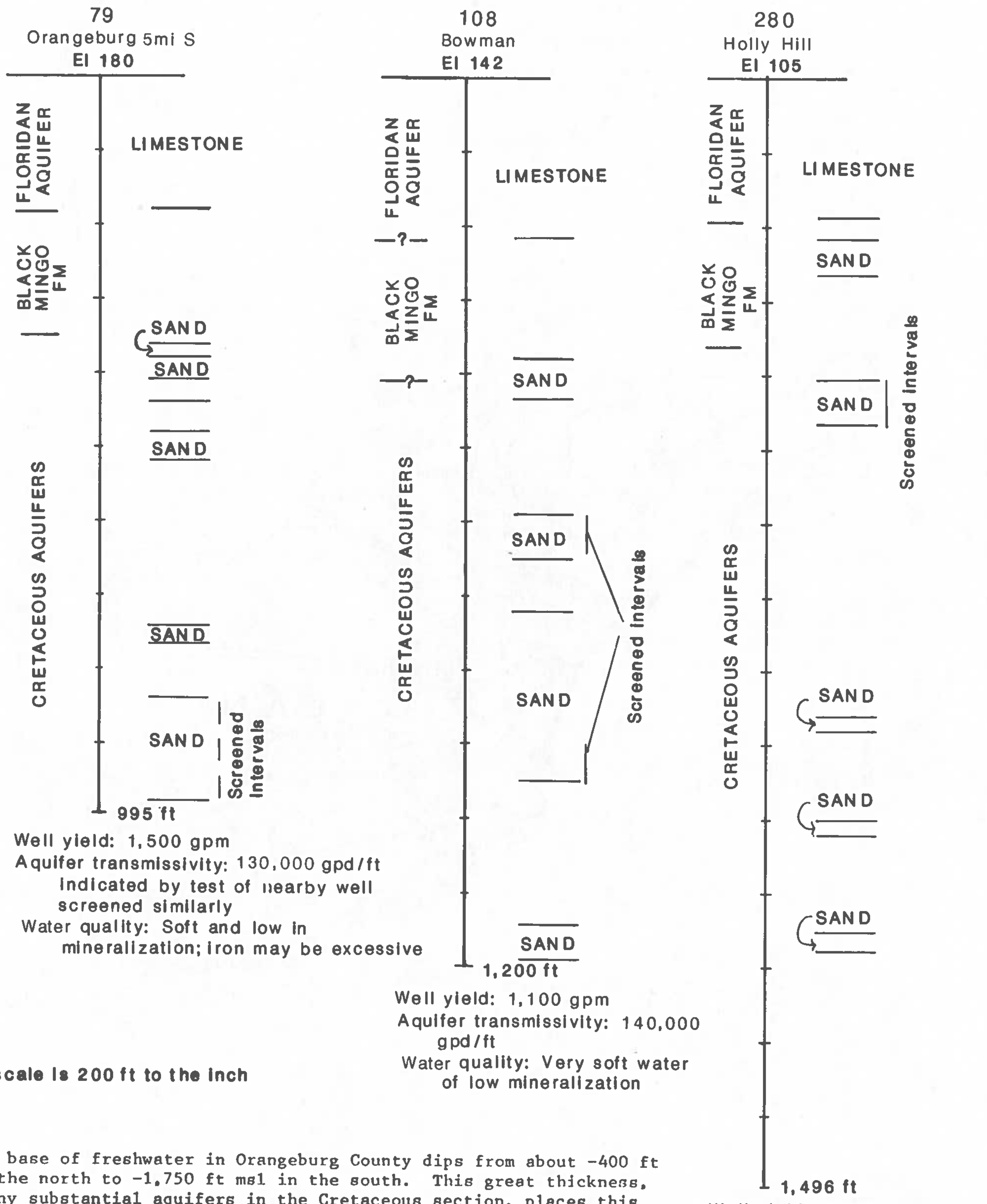
Well yield: 506 gpm
Aquifer transmissivity: 42,000 gpd/ft
Water quality: Soft, with low mineralization

Vertical scale is 100 ft to the inch

The base of freshwater in the Coastal Plain sediments of Marlboro County ranges from well above sea level in the north to about -400 ft at the south end of the county. Only one well is known to yield as much as 1,000 gpm, but some others, well 171 (above) among them, could easily provide that yield if equipped to do so. The water seems to be very low to low in mineralization, although in the deeper zones it is likely to be moderately mineralized. It usually is very soft. Iron may be excessive in places.


N
ORANGEBURG
Woodford
North
Wolfton
Jamison
Livingston
Neeses
Springfield
Orangeburg
Norway
Cordova
79
Cope
Rowesville
Bowman
108
Branchville
Elloree
Santee
Vance
Eutawville
Connors
Holly Hill
280
Bowyer
Four Holes
North Fork Edisto River
Edisto River
Big Beaver Cr
Turkey Br
Goodland Cr
Tampa Cr
Great Br
Limestone Cr
Caw Caw Swamp
Bull Swamp
Snake Swamp
Dry Swamp
Cooper Swamp
Cow Castle
Buck Br
Four Hole Swamp
Cattle Cr
Pen Br
Sandy Run
Hole
Cr
LINE
SOUTHERN
S. C. L.
129
245
692
178
394
321
389
3
39
4
332
400
301
601
70
21
33
176
26
210
78
47
6
267
15
45
310
453
314
10
0
10
20
30
40 Miles

ORANGEBURG COUNTY



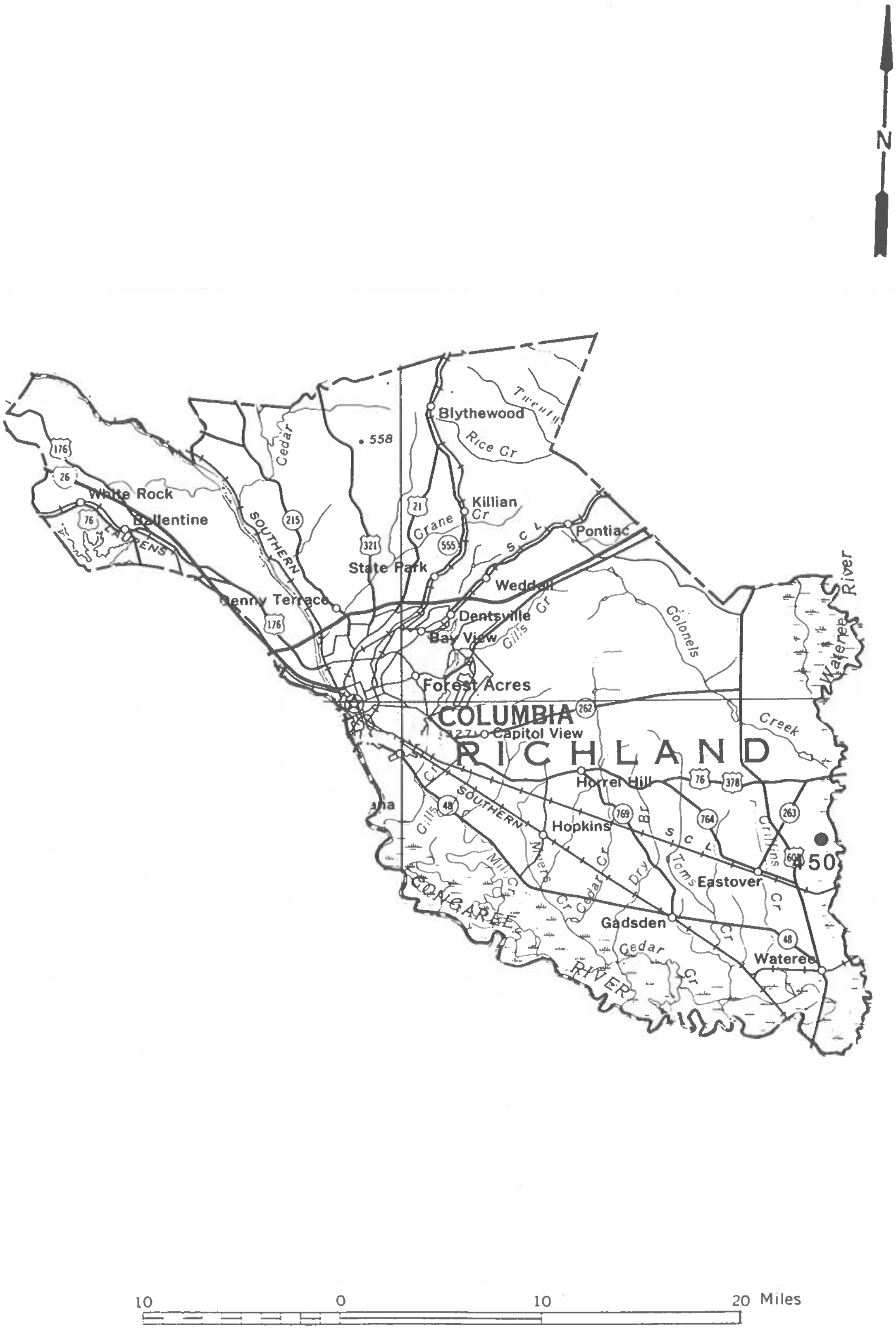
Well yield: 1,500 gpm
Aquifer transmissivity: 130,000 gpd/ft indicated by test of nearby well screened similarly
Water quality: Soft and low in mineralization; iron may be excessive

Well yield: 1,100 gpm
Aquifer transmissivity: 140,000 gpd/ft
Water quality: Very soft water of low mineralization

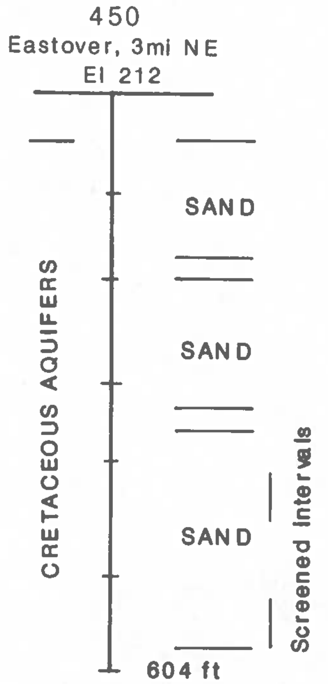
Well yield: 1,000 gpm
Waterquality: Soft and of moderate mineralization

Vertical scale is 200 ft to the inch

The base of freshwater in Orangeburg County dips from about -400 ft msl in the north to -1,750 ft msl in the south. This great thickness, with many substantial aquifers in the Cretaceous section, places this county at or near the top in ground-water development potential. At present more than 20 wells yield 1,000 gpm or more, several of them more than 2,000 gpm. The water from the deep aquifers is soft and low to moderate in mineral content; that from the Black Mingo and Floridan aquifers is variable, with water from limestone zones being harder and more mineralized.


N
Blythewood
Twenty
Rice Cr
558
Cedar
Killian
Cr
Crane
21
555
321
215
SOUTHERN
State Park
S C L
Pontiac
176
26
White Rock
76
Ballentine
LAURENS
Denny Terrace
176
Weddell
Dentsville
Bay View
Gills Cr
Colonels
Wateree
River
Forest Acres
COLUMBIA
262
127
Capitol View
RICHLAND
Creek
Horrel Hill
76
378
263
769
764
48
SOUTHERN
Gills Cr
Hopkins
Br
S C L
Mill Cr
Myers Cr
Cedar Cr
Dry
Toms Cr
Griffins
Cr
601
450
Eastover
Gadsden
48
Cedar Cr
Wateree
CONGAREE
RIVER
ana
10
0
10
20 Miles

RICHLAND COUNTY



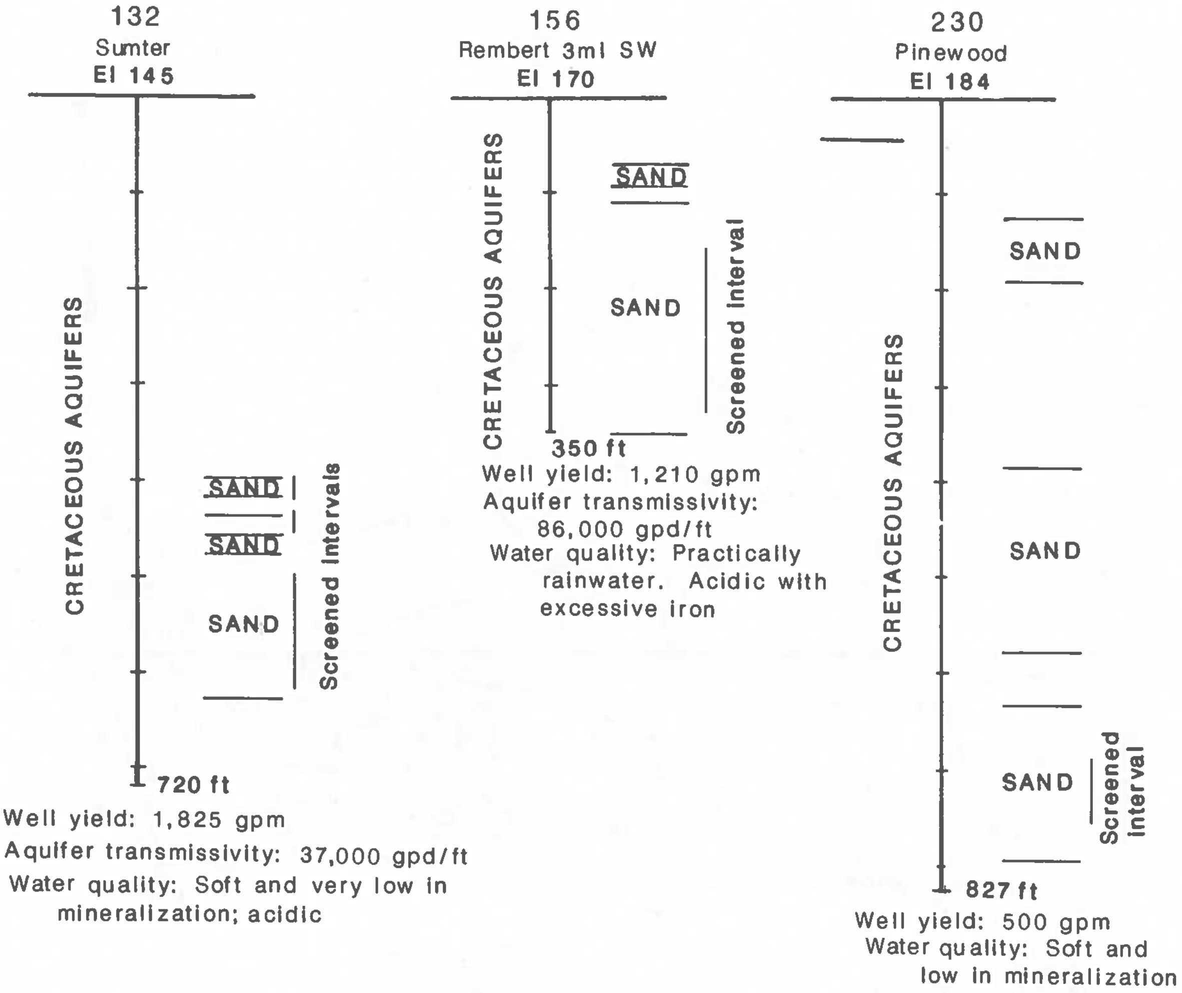
Well yield: 1,500 gpm
Aquifer transmissivity: 77,000 gpd/ft
Water quality: Very low mineralization
with practically no hardness.
The water is acidic and iron may
be excessive

Vertical scale is 200 ft to the inch

The northwestern part of Richland County is in the Piedmont. Below the Fall Line the base of freshwater ranges from about +200 ft msl to -600 ft msl. The well illustrated above is near the southern tip of the county, where the freshwater section is thickest. Massive sand beds capable of yielding very large quantities of water are indicated by the logs in the area. Four wells yield 1,000 gpm or more in Richland County, all near Eastover. All of the water is very soft, and mineralization is very low in most wells. The pH is nearly always on the acidic side.

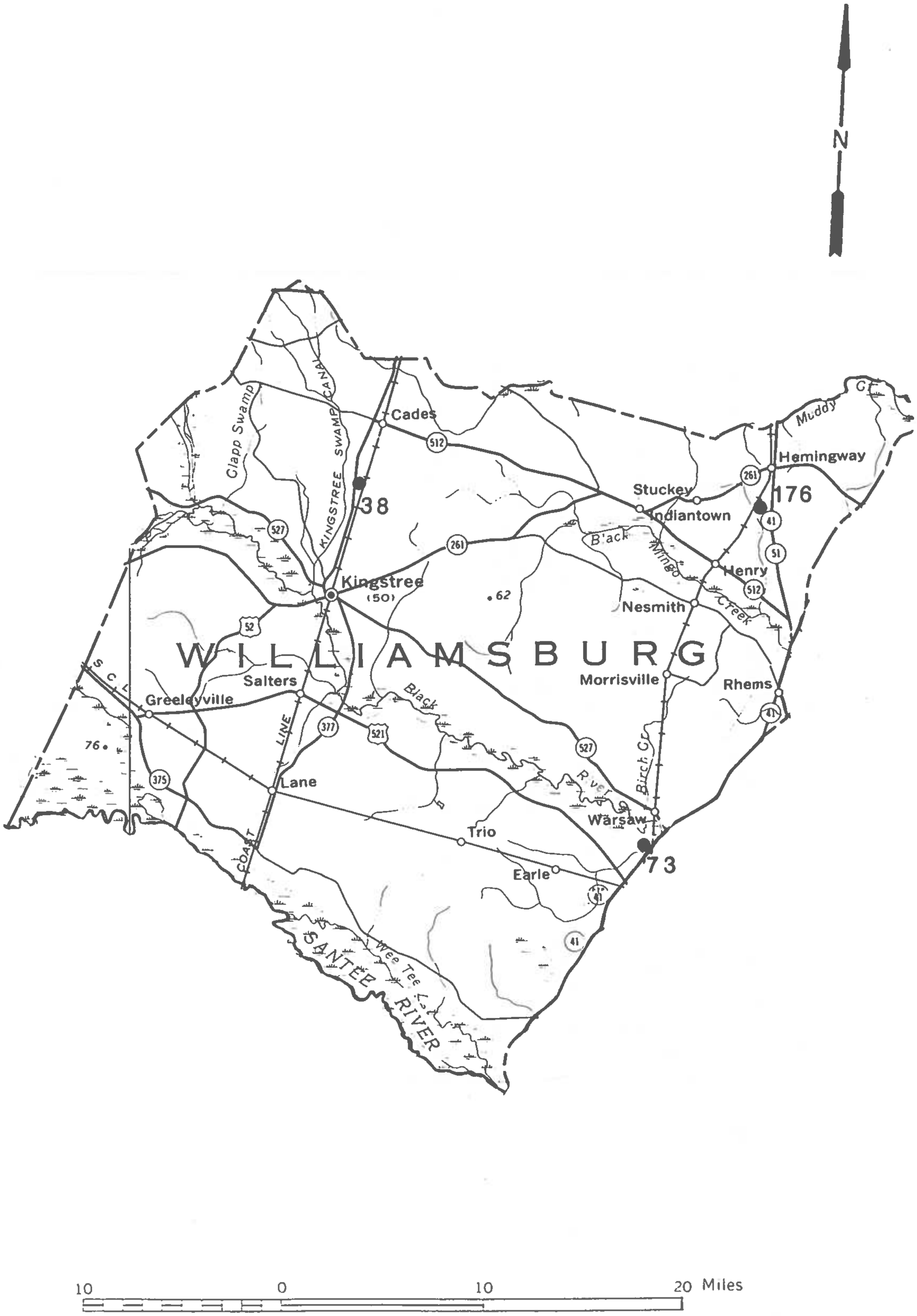

N
Wateree River
193
Rembert
Borden
Hagood
56
Dinkins Mill
Horatio
Dalzell
Robert Br
Oswego
Mayesville
SEABOARD
SOUTHERN
Bon Air Terrace
S U M T E R
132
Millwood Gardens
Sumter
(173)
Wedgefield
Beech Creek
Church
Black
Shiloh
191
Nasty Br
Pocotaligo
COAST LINE
230
Pinewood
SEABOARD
441
521
15
401
378
76
261
763
120
58
53
341
527
10
0
10
20 Miles

SUMTER COUNTY

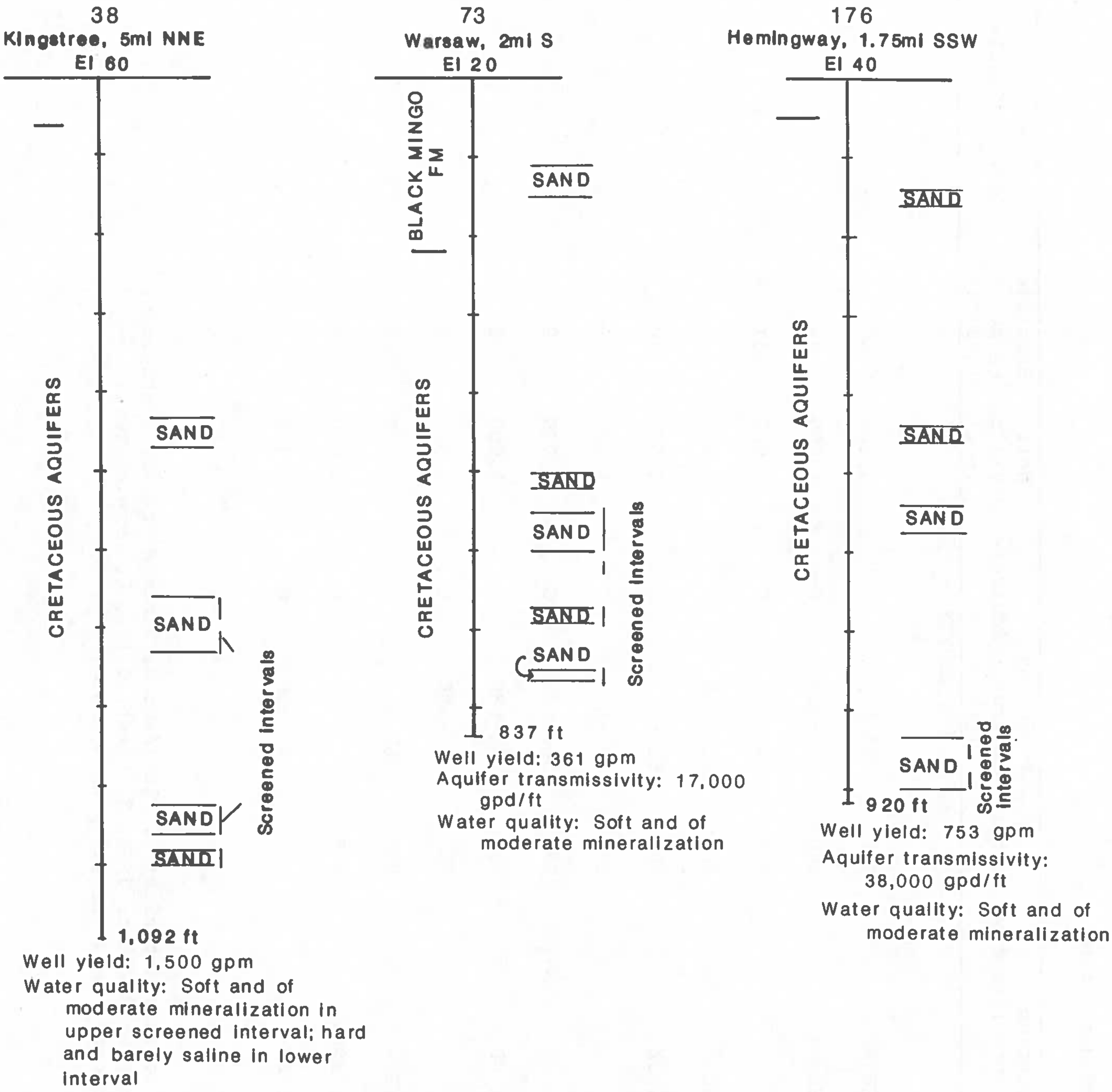


Vertical scale is 200 ft to the inch

The base of freshwater in Sumter County ranges from -100 ft msl in the north to -800 ft msl along the southeastern boundary. Within this relatively modest freshwater section are some of the most massive sand thicknesses in the Cretaceous beds of South Carolina. Approximately 40 wells yield over 1,000 gpm, several over 2,000 gpm. Nearly all of these are screened in Cretaceous aquifers, and most are in or near the city of Sumter. The water is soft and mineralization is very low to low. It usually is acidic, and excessive iron can be a problem.


N
WILLIAMSBURG
Cades
512
38
Clapp Swamp
KINGSTREE SWAMP CANAL
Muddy Cr.
Hemingway
261
176
Stuckey
Indiantown
41
51
527
Black Mingo Creek
Henry
512
261
Kingstree
(50)
• 62
Nesmith
52
Morrisville
Rhems
41
S C L
Salters
Greeleyville
377
521
Black River
Birch Cr.
527
76 •
LINE
375
Lane
COAST
Trio
Warsaw
73
Earle
41
41
SANTEE RIVER
Wee Tee L.
10
0
10
20 Miles

WILLIAMSBURG COUNTY



Vertical scale is 200 ft to the inch

The base of freshwater ranges from about -1,000 ft msl along the north~~east~~ern county boundary to -1,500 ft msl at the south west ~~end~~ corner of the county. The deepest wells do not penetrate the entire freshwater section, and the available electric logs do not show as much sand as those in counties to the north and west. Five wells, all at Kingstree, yield more than 1,000 gpm. The water is soft and of moderate mineralization.

Table 3. Wells having a yield of 1,000 gpm or more

Well No.	Location Crow-flight distance from town center		Producing interval (ft)	Aquifer[1]	Well yield (gpm)	Specific capacity (gpm/ft)	Data available[2]
			AIKEN COUNTY				
446	Jackson, 7 mi ESE	SRP	725-825	C	2,100	40	
447	Jackson, 9 mi ESE	SRP	695-850	C	1,000	24	
452	Jackson, 4 mi E	SRP	445-690	C	2,000	31	E,P
516	Jackson, 7 mi ESE	SRP	600-850	C	1,400	14	E,P
518	Jackson, 4 1/2 mi SE	SRP	615-725	C	1,500	30	
531	Jackson, 3 mi E	SRP	447-675	C	1,000	33	
534	Jackson, 3 mi E	SRP	560-680	C	1,000	29	
539	Jackson, 7 1/2 mi SE	SRP	455-680	C	1,000	42	
540	Jackson, 3 mi E	SRP	385-660	B,C	1,500	25	
544	Jackson, 9 mi ESE	SRP	660-854	C	1,000	42	
552	Jackson, 7 1/2 mi ESE	SRP	-850	C	1,000		
573	Jackson, 1 1/2 mi SW		160-260	C	2,100		

[1] Aquifer: P, Pleistocene terrace deposits; F, Floridan; B, Black Mingo; C, Cretaceous.

[2] Data: C, chemical analysis by SCWRC or USGS; E, electric log; P, pumping test.
Wells may be located on county maps preceding this table.

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	AIKEN COUNTY (continued)					
581	Salley	480-580	C	1,350		
589	Jackson, 9 mi E SRP	540-840	C	1,000		
686	Aiken, 9^{1}/2 mi E	230-400	C	1,400		
811	Aiken 9^{1}/2 mi E	200-450	C	2,200	20	
830	Aiken, 4 mi SSW	327-468	C	1,000		E,P
831	Aiken, 4 mi SSW	318-480	C	1,000	37	
832	Aiken, 2 mi SE	212-440	C	1,500	33	E,P
	SRP denotes the Savannah River Plant, U.S. Department of Energy					
	ALLENDALE COUNTY					
19	Martin, 2 mi ESE	610-760	C	1,000	10	E,C
22	Fairfax	672-825	C	1,250	24	E,C
27	Martin, 2 mi S	550-794	C	2,260	20	E,P
33	Fairfax, 7 mi NW	592-777	C	2,700		E
40	NW edge of county	550-750	C	1,800		E
44	Allendale, 2^{1}/2 mi SE	-856	C	1,750	13	E

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	ALLENDALE COUNTY (continued)					
47	S end of county	850-990	C	1,750	28	C,E
49	Allendale, 4 mi SW	-849	C	1,800	28	E
53	Allendale, 9 mi WNW	613-764	C	1,265		
66	NW end of county. Creek Plantation	390-716	B,C	1,500	16	P
80	Fairfax, 11 mi SSW	-190	F	1,500		
81	Fairfax, 12 mi SSW	-190	F	1,500		
82	Fairfax, 11 mi SSW	-190	F	1,500		
298	Fairfax, 8^{1}/2 mi SSW	850-1,000	C	1,750	25^{+}	E
313	Allendale, 9 mi NW	124-375	F	1,500		
317	Fairfax, 7 mi SSW	85-224	F	1,740	26	

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	BAMBERG COUNTY					
27	Bamberg	448-539	C	1,500	18	E
28	Denmark, 3 mi W	-340	C	1,550		
49	Denmark, 4^{1}/2 mi NW	820-920	C	1,350		
53	Denmark, 5^{1}/2 mi NW	440-590	C	1,200	24	
	BARNWELL COUNTY					
71	Barnwell, 6 mi W SRP	-931	C	2,000		E
72	Barnwell, 7^{1}/2 mi W SRP	662-945	C	2,000	32	E,P
76	Barnwell, 7^{1}/2 mi W SRP	-932	C	2,000		
79	Williston	490-680	C	1,400	11	C,E,P
236	Blackville, 3 mi N	220-454	B,C	2,000	17	
272	Jackson, 9 mi ESE SRP	414-824	C	1,090	19	

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	BARNWELL COUNTY (continued)					
274	Jackson, 9 mi ESE SRP	500-870	C	1,000	32	
294	Kline, 2 mi E	250-500,	F,B	1,000		
297	Blackville, 2 mi SW	60 -180	F	1,100		
298	Kline	247-487	C	2,330	30	
	BEAUFORT COUNTY					
2	Parris Island, USMC Base	63-315	F	1,800		
3	Parris Island, USMC Base	63-112	F	1,000		
7	Parris Island, USMC Base	103-134	F	1,000		
8	Parris Island, USMC Base	- 90	F	1,000		
9	Parris Island, USMC Base	-100	F	2,000		
22	Burton, 2 mi WNW	80- 84	F	1,400	50±	C,P
315	Hilton Head Island, N end	150-483	F	1,100		
371	Bluffton, 3^{1}/2 mi E	80-120	F	1,100		
400	Bluffton, 4 mi WNW	151-242	F	1,000		

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	BEAUFORT COUNTY (continued)					
443	Hilton Head Island, N end	138-213	F	1,000		C,E
499	Bluffton, 2^1/2 mi ENE	97-209	F	2,900	150	E,P
538	Beaufort, 8 mi SE	82-160	F	1,200		
652	Hilton Head Island, N end	135-200	F	1,500	250	P
671	Hilton Head Island, central coast	145-221	F	2,255	80	P
676	Bluffton, 5^1/2 mi ESE	115-191	F	1,125	144	
678	Hilton Head Island, SW part	150-195	F	1,500	188	
698	Hilton Head Island, N end	138-213	F	1,000		C
701	Hilton Head Island, SW end	146-202	F	1,000		
703	Hilton Head Island, SW part	147-176	F	1,000		E
720	Hilton Head Island, central coast	145-200	F	1,000		C
721	Hilton Head Island, central coast	145-200	F	1,000		C
736	Hilton Head Island, central coast	143-200	F	1,000		
737	Bluffton, 9 mi SE	184-208	F	1,000	175	C
758	Hilton Head Island, central coast	145-200	F	1,230	123	P

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	BEAUFORT COUNTY (continued)					
966	Beaufort, 5 mi SE	- 91	F	1,200		C,E
969	Port Royal, 6 mi SE	-105	F	1,300		C
970	Port Royal, 6^{1}/2 ESE	55 -159	F	1,200		C
976	Port Royal, 6^{1}/2 ESE	-120	F	1,200		
977	Port Royal, 4 mi E	60-120	F	1,200		
985	Hilton Head Island, north part	542-630	F	1,015	39	C,E,P
1234	Beaufort, 7^{1}/2 mi SE	-110	F	1,200		
1298	Port Royal, 6^{1}/2 mi SE	90-130	F	1,100		
1325	Bluffton, 3 mi E	140-200	F	1,000		
1326	Bluffton, 3 mi E	145-230	F	1,500		P
1336	Hilton Head Island, center	145-230	F	1,500	165	E
1388	Hilton Head Island, NE corner	127-230	F	1,015	248	E
1389	Bluffton, 4^{1}/2 mi NE	110-192	F	1,200	120	E,P
1418	Bluffton, 3 mi NW	160-200	F	1,950	65	E
1589	Hilton Head Island, central part	126-198	F	1,215	145	P

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
			BEAUFORT COUNTY (continued)			
1630	Bluffton, 5 mi NE	115-200	F	1,500	138	P
1632	Hilton Head Island, NE part	110-200	F	1,210	270	E,P
1685	Hilton Head Island, center	118-200	F	1,500	170	P
1788	Beaufort, 6 mi SE	52- 70	F	1,200	55	P
			BERKELEY COUNTY			
56	Mt. Pleasant, 9^1/2 mi NNE	84-340	F,B	1,100	35	E
444	Mount Holly, 4 mi NE	1,530-1,642	C	1,250	18	P
			CALHOUN COUNTY			
41	St. Matthews, 3 mi NNE	510-770	C	1,120	14	E,P
95	Cameron, 4^1/2 mi E	220-340	C	2,055	27	E

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	CHARLESTON COUNTY					
163	Mount Pleasant	1,829-1,912	C	1,300	4.7	C,E,P
167	Mount Pleasant	1,800-1,986	C	2,000	7.8	C,E,P
173	Mount Pleasant	1,575-1,862	C	1,400	2.5	C,E,P
174	Seabrook Island	2,040-2,260	C	1,610	3.7	C,P
219	Isle of Palms	1,773-1,985	C	1,420	7.7	C,E,P
559	Mount Pleasant, 3 mi NE	1,754-1,955	C	1,300	6.5	E,P
603	Isle of Palms	1,796-2,025	C	1,500	15	C,E,P
604	Isle of Palms	1,850-2,190	C	1,000	3.8	C,E,P
	COLLETON COUNTY					
49	Walterboro, 3 mi NE	1,602-1,664	C	1,250	12	
50	Walterboro, NE part	1,698-1,760	C	1,430	22	C

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	DARLINGTON COUNTY					
69	Darlington	180-305	C	1,000	6	C,E
71	Hartsville, SW part	205-293	C	1,500	42	E
82	Hartsville, 3 mi SW	208-294	C	1,430	39	E
89	Darlington, $4^{1}/4$ mi SE	530-624	C	1,000	3.9	E,P
92	Darlington, $4^{1}/2$ mi SE	235-620	C	1,000		E
94	Hartsville	214-306	C	1,100	16	E,P
114	Hartsville, $2^{1}/2$ mi WSW	-147	C	1,200	13	
123	Darlington, 8 mi NE	172-372	C	2,100	33	
	DILLON COUNTY					
103	Dillon, $8^{1}/2$ mi NW	140-215	C	1,000		
104	Latta, $3^{3}/4$ mi SW	164-447	C	1,250	$20^{\pm}$	

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	FLORENCE COUNTY					
2	Florence	200-728	C	1,080	39	
3	Florence	208-724	C	1,120	14	
4	Florence	261-726	C	1,180	11	C
33	Florence	325-718	C	1,150	14	C,E,P
105	Lake City	152-426	C	1,250	12	E
112	Florence	130-364	C	1,000	11	C,E,P
125	Florence, E edge	260-495	C	1,000	11	C,E,
127	Florence	309-495	C	1,000	10	C
140	Florence	344-680	C	2,100	21	C,E,P
146	Florence	354-660	C	1,400	11	E,P
154	Florence	303-706	C	1,570	14	
161	Florence, 2^3/4 mi WSW	230-660	C	1,400	9.5	E,P
179	Florence, 4^1/2 mi W	306-578	C	1,400		E
208	Florence, 1 mi E	320-720	C	1,500	16	E
226	Florence, 9^1/2 mi E	152-392		1,100	4.5	E

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	FLORENCE COUNTY (continued)					
243	Florence, 3 mi NNW	325-425	C	1,580	16	C
245	Lake City, 1^{1}/4 mi NW	-582	C	1,400		
250	Lake City, 1^{1}/4 mi NW	285-574	C	1,250	10	E,P
	HAMPTON COUNTY					
10	Varnville	-630	C	1,200		
41	Hampton	-853	C	1,100		C,E
46	Hampton	640-841	C	3,000	18	E
136	Estill, 5 mi NW	92-190	F	1,250	$40^{\pm}$	P
152	Furman, 4 mi E	290-493	F,B	1,400	35	
156	Furman, 4 mi WSW	96-497	F,B	1,250	$60^{\pm}$	
173	Estill, 6 mi SW	54-374	F,B	1,250	$30^{\pm}$	
174	Estill, 5^{1}/4 mi NNW	105-220	F	2,000		
180	Estill, 2 mi W	120-300	F	2,055	$40^{\pm}$	

Table 3. Continued

Well No.	Location Grow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
		HORRY COUNTY				
696	Conway, 5 mi SE	408-802	C	1,000	10	C,P
871	Socastee, 3 mi SW	387-710	C	1,400	9.0	C,E,P
934	Myrtle Beach, 4.5 mi NW	356-700	C	1,000	6.1	C,E,P
		JASPER COUNTY				
101	Ridgeland	190-450	F	1,010	140	
104	Jasper, 3 mi NE	145-330	F	1,600	100	C,E,P
108	Ridgeland, 8 mi NW	70-340	F	1,865	120	
109	Ridgeland, 7^1/2 mi SW	67-307	F	2,000+		
111	Hardeeville	182-600	F	1,040	98	E
157	Ridgeland	170-453	F	1,250	125	
158	Ridgeland, 12 mi NW	90-167	F	1,000	30	
325	Ridgeland, 15^1/2 mi NW	160-228	F	1,590	128	E
328	Ridgeland, 8^1/2 mi SSW	147-250	F	2,000		

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	JASPER COUNTY (continued)					
342	Hardeeville	100-208	F	1,140	80	
	LEE COUNTY					
12	Bishopville	243-314	C	1,050	28	C
13	Bishopville	160-314	C	1,035	55	C
21	Bishopville	245-310	C	1,200	50	E
26	Bishopville	240-300	C	1,400	54	C
27	Bishopville, 3 mi ENE	138-330	C	1,100	13	
50	Bishopville, $8^1/4$ mi SSW	-572	C	2,000		
53	Bishopville, $9^1/2$ mi NNW	180-250	C	1,800		

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	LEXINGTON COUNTY					
191	Swansea, 3 mi SE	286-425	C	1,000		C
697	Steedman, 1^{1}/2 mi NNE	-150	C	1,000		C
	MARION COUNTY					
62	Marion	190-735	C	1,000	5	C,E
70	Mullins, 2^{1}/2 mi WSW	145-464	C	1,500	17	E
73	Mullins, 2^{1}/2 mi WSW	-235	C	1,500		
82	Marion, 13 mi S	210-450	C	1,200		
90	Marion, 8 mi WNW	240-532	C	1,500	14	E,P
94	Marion, 3^{1}/2 mi ESE	168-408	C	2,380	40	
	MARLBORO COUNTY					
145	Blenheim, 7^{1}/2 mi SSE	150-240	C	1,000	33	E,P

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
		ORANGEBURG COUNTY				
49	Orangeburg, 2 1/4 mi SSE	764-912	C	1,010	37	C,E
79	Orangeburg, 5 mi S	843-974	C	1,500	26	C,E
80	Orangeburg, 5 mi S	790-965	C	1,500	28	C,E
81	Orangeburg, 5 mi S	890-970	C	1,500	19	
108	Bowman	588-940	C	1,100	10	E,P
200	Orangeburg, 3 1/2 mi SSE	835-950	C	1,000	19	P
204	Norway, 4 1/2 mi SE	366-486	C	1,500	18	
216	Eutawville 1 1/4 mi S	178-458	B,C	2,060	29	
218	Eutawville, 3 mi NW	140-424	B,C	1,250	16	
220	Elloree, 2 mi NW	117-400	B,C	1,250	25	
221	Elloree, 7 mi SW	707-1,007	C	2,200	51	
228	Norway, 5 3/4 mi SE	90-187	F,B	1,500	21	
232	Eutawville, 4 1/2 mi ESE	260-380	C	1,100		
233	Eutawville, 4 mi E	35-140	F	2,000	30$^+$	E
260	Elloree, 5 mi SW	700-1,000	C	2,000		

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	ORANGEBURG COUNTY (continued)					
266	Holly Hill, 3 mi SSW	126-496	B,C	1,000		
267	Holly Hill, 3 1/2 mi SSW	276-458	B,C	1,000		
268	Holly Hill, 3 mi SW	135-431	B,C	1,200		
269	Holly Hill, 3 mi SW	135-431	B,C	1,200		
271	Orangeburg, 4 mi SSW	843-944	C	1,500		
281	Norway, 5 1/2 mi SE	500-620	C	1,500		
294	Bowman, 6 mi N	240-380	B	2,360	21	
357	Holly Hill, 3 mi SSW	400-500	C	1,065	9.4	P
358	Norway, 3 1/2 mi NW	342-462	C	2,055	50	
	RICHLAND COUNTY					
62	Wateree, 1 mi N	434-544	C	2,000	30	E,P
63	Wateree, 1 mi N	425-542	C	2,000	22	E,P
348	Wateree, 1 mi N	470-608	C	2,500		C,E

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
	RICHLAND COUNTY (continued)					
450	Eastover, 3 mi NE	357-590	C	1,500	24	E,P
	SUMTER COUNTY					
7	Sumter	415-625	C	1,270	29	C
8	Sumter	419-711	C	1,540	25	
9	Sumter	415-625	C	1,400	17	C
10	Sumter	43- 55	P	1,300		
11	Sumter	43- 55	P	1,300		
12	Sumter	43- 55	P	1,300		
13	Sumter	43- 55	P	1,300		
14	Sumter	43- 55	P	1,300		
15	Sumter	43- 55	P	1,300		
56	Sumter	518-710	C	1,100	8	C
69	Sumter	525-605	C	1,500	13	E

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
SUMTER COUNTY (continued)						
71	Sumter	416-742	C	1,425	10	E,P
76	Sumter	-63	P	1,000	143	
80	Sumter, 3^1/2 mi NNE	109-422	C	1,200	15	E
84	Sumter	452-720	C	1,400	9.7	E
104	Sumter	320-615	C	1,715	14	C,E
111	Sumter	336-608	C	2,475	26	C,E,P
119	Sumter	436-610	C	1,400	10	E,P
132	Sumter	406-626	C	1,825	12	E,P
133	Sumter, 4^3/4 mi SW	296-682	C	1,800	8.8	E,P
134	Sumter, 4^3/4 mi SW	294-670	C	1,860	18	E,P
136	Sumter, 4^3/4 mi SW	292-663	C	1,750	23	E,P
140	Sumter	325-620	C	1,575	29	E
146	Sumter	394-545	C	1,500		E
153	Sumter, 4^1/2 mi SW	533-633	C	1,400	14	E,P
155	Sumter, 5 mi SW	550-704	C	2,100		E,P

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
SUMTER COUNTY (continued)						
156	Rembert, 3 mi SW	145-318	C	1,210	25	C,E,P
160	Rembert, 1^{1}/2 mi NW	110-330	C	2,000	$30^{\pm}$	C,E
161	Sumter, SE edge	446-604	C	1,500	15	P
163	Sumter, 2^{3}/4 mi SW	412-608	C	1,500		
164	Sumter, 2^{1}/2 mi SW	300-630	C	1,500		
165	Sumter, 2^{1}/2 mi SW	280-350	C	2,100	48	E
175	Sumter, 4^{1}/2 mi SSE	294-670	C	1,520	12	E,P
177	Sumter, 6 mi NNW	152-417	C	2,060	30	E,P
178	Sumter, 9 mi NW	145-440	C	1,200		E
179	Sumter, 9 mi NW	140-435	C	1,300	22	E,P
252	Sumter, 9^{1}/2 mi NW	-450	C	1,200		
280	Sumter, 6 mi NW	160-260	C	1,330		

Table 3. Continued

Well No.	Location Crow-flight distance from town center	Producing interval (ft)	Aquifer	Well yield (gpm)	Specific capacity (gpm/ft)	Data available
			WILLIAMSBURG COUNTY			
3	Kingstree	400-630	C	1,100	8	C
29	Kingstree, 4 mi NNE	690-1,050	C	1,500	5	
38	Kingstree, 5 mi NNE	660-1,000	C	1,500	19	C,E
39	Kingstree, 4 mi NNE	658-963	C	1,550	15	E
66	Kingstree, 5 mi NNE	620-740	C	1,900	14	C,E

Table 4. Representative chemical analyses of ground water in the Coastal Plain of South Carolina

Well No. - County well number in the files of the South Carolina Water Resources Commission.

Location - Crow-flight distance and direction from named community. Wells may be located on county maps preceding Table 3.

Date - Month/year of analysis.

Depth and aquifer - Depth of well, in feet/Aquifer: A, alluvium; F, Floridan or equivalent; B, Black Mingo; C. Cretaceous. Constituents and hardness are in milligrams per liter; pH and color are in the standard units for those properties.

Analyst - All analyses were made by the South Carolina Water Resources Commission (W) or the U.S. Geological Survey (U). The files of the former contain many analyses by other laboratories, both public and commercial, but the format of reporting and the degree of completeness are variable, and their inclusion here would require burdensome explanations and statements of disclaimer. The laboratory of thw Water Resources Commission is under the direction of Lawrence H. Lagman.

Remarks - Top of uppermost screen is given for wells in which a number of screens were installed through a large depth interval. Open-hole construction is used for wells in limestone aquifers.

Table 4. Continued

Well No.	Location Crow-flight distance from town center	Date	Depth and aquifer	Silica	Iron	Manganese	Calcium	Magnesium	Sodium	Potassium
AIKEN COUNTY										
146	Jackson, 8 mi ENE	11/58	212/C	6.4	0.31	0.00	1.2	0.2	3.5	0.2
181	Jackson	8/54	155/C	10	.03	.00	1.2	.5	1.4	.3
203	Beech Island, 1 mi NW	6/52	245/C	30	.75	.07	20	1.7	(39)	
266	Aiken, 2 mi SSE	8/54	330/C	8.2	.02	.00	.9	.3	1.7	.1
274	Couchton, 1 1/2 mi NE	1/54	126/C	8.0	.01	.00	.3	.2	(1.9)	
275	Sally, 6 1/2 mi SW	10/54	205/C	8.7	.00		.7	.0	.9	.0
290	New Ellenton	5/55	470/C	8.2	.00	.00	.8	.5	1.3	.0
378	Salley	8/60	323/C	8.9	.00	.01	.8	.1	1.0	.4
396	Between Clearwater and Beech Island	11/62	200/C	28	.04	.01	10	1.3	11	2.4
401	Aiken	5/65	195/B	31	.06		12	2.3	12	2.0
411	Aiken State Pk, 7 1/2 mi E of Couchton	9/63	115/C	8.9	.00	.01	.8	.1	1.3	.4
415	Aiken	4/64	100/F	3.2	8.5	.08	1.0	.0	1.1	.2
428	Bath, 1 mi S	2/72	93/C	4.9	.00	.00	.6	.5	2.6	.3
441	Jackson, 4 1/2 mi SE at SRP	2/54	215/F	7.8	.28	.00	2.0	.7	(.4)	
551	Jackson, 8 mi SSE at SRP	8/84	359/C	12	1.5	.06	.5	.8	2.7	4.9
ALLENDALE COUNTY										
1	Fairfax	11/55	750/C	9.3	0.24		3.6	0.5	25	3.2
2	Allendale	3/46	800/C		<.22					
4	Allendale	11/55	284/F	31	.00		42	1.3	2.8	1.1
7	Fairfax	11/46	660/B	5.6	.09		2.1	.5	(26)	
8	Sycamore	3/55	600/C	15	.00		17	2.0	2.5	5.5
10	Fairfax	11/55	635/B	13	.41		4.4	2.0	22	3.7
12	Allendale	11/55	646/C	17	.01		46	1.1	2.3	1.6
16	Martin	12/52	210/F	25	.07		47	3.7	(5.1)	
22	Fairfax	7/70	825/C	12	5.5	0.10	14	1.2	3.8	6.4
30	Allendale	11/55	1200/C	19	.85		18	1.9	3.8	4.7
47	S end of county	4/80	990/C	13	.02	.00	2.5	.3	60	1.5
272	Martin, 1 1/2 mi NW	1/84	240/F	16	.00		28	1.0	2.3	.8
274	Allendale	7/84	200/F	16	.00	.00	33	.6	1.9	1.6
289	Martin, 2 1/2 mi SE	7/84	290/F	15	.04		39	.8	1.8	1.2
292	Sycamore	7/84	200/F	43	.01	.00	42	3.4	2.7	3.6
297	Allendale, 2 mi NNW	7/84	200/F	16	.02	.00	45	.8	2.4	1.3
300	Between Allendale and Sycamore	7/84	250/F	36	.05	<.01	46	2.0	2.3	1.4
301	Appleton	1/84	340/F	35	.00		45	1.3	2.7	2.2
304	Appleton, 4 mi NNE, at Cave	7/84	350/F	17	<.02	<.02	5.0	.4	2.2	1.6
319	State Welcome Center on U.S. 301	1/84	121/F	25	.06		38	1.8	2.5	1.9
320	Allendale, N edge of town	7/84	360/F	2.9	.04	<.01	7.8	.1	2.1	8.4
BAMBERG COUNTY										
1	Denmark	1/55	240/F	19	0.03		41	1.7	3.1	1.0
6	Bamberg	9/63	575/C	4.9	.00		2.6	.3	1.3	9.3
9	Ehrhardt	3/46	596/B		1.6					
17	Bamberg	6/84	165/B	7.2	.16	0.01	59	.9	6.3	1.3
23	Denmark	6/84	296/B	22	.03	.00	37	.9	2.9	1.1
26	Ehrhardt	7/84	225/F	31	1.2	.12	54	1.7	3.6	3.3
34	Govan, 3 mi E	7/84	175/F	11	.00	.02	25	.8	1.7	.6
37	Ehrhardt, 6 mi N	7/84	140/F	11	.02	.01	52	1.5	3.0	1.0
45	Olar, 3 mi SE	7/84	169/F	17	.88	.01	44	1.7	2.1	1.0
BARNWELL COUNTY										
7	Blackville	10/56	300/B	18	2		39	1.2	1.4	1.2
9	Williston	4/58	150/F	7.9	<.44		1.2	.2	1.6	.3
13	Barnwell	11/50	165/F	11	.04		24	.3	.9	
54	Williston	6/55	136/F	8.1	.00		1.3	.7	1.9	.0
58	Barnwell	6/84	345/B	16		0.00	14	.6	1.5	.5
59	Barnwell	6/84	252/F	20		.01	16	.6	1.6	.7
60	Barnwell	6/84	327/B	29			16	.6	1.4	.7
69	Hilda	10/71	330/B	20	.00	.00	10	.2	1.3	.8
79	Williston	7/84	680/C	11	.04	.12	17	.5	1.7	.9
224	Elko	7/84	120/F	9.4	.05	.00	31	.3	2.0	.6

Bicarbonate	Sulfate	Chloride	Fluoride	Nitrate	Dissolved solids	Hardness	pH	Color	Analyst U, USGS W, SCWRC	Remarks
2	1.2	3.0	0.0	5.8	33	4	5.2	0	U	
0	4.9	2.8	.0	.3	21	5	4.5	2	U	
99	48	5.6	.6	.1	190	57	7.2	2	U	
3	1.2	2.0	.0	.8	15	4	5.4	2	U	
1	1.6	2.0	.1	.1	16	2	5.0	3	U	
0	4	.8	.0	.0	14	2	4.4		U	
4	.8	1.5	.0	.7	16	4	5.8	2	U	
2	1.6	1.0	.1		15	2	4.8	3	U	
62	4.6	3.0	.3	.14	92	30	7.2	7	U	
55		9.0			103	39	7.8		U	
2	2.6	2.6	.0	.3	18	2	4.8	3	U	
12	1.6	1.8	.0	.4	19	3	6.7	4	U	
1	.6	4.2	.0	.3	15	4	4.9		U	
1	4.1	1.5	.1	1.7	20	8	4.6	4	U	
16	9.8	1.5	.0		42	5	6.6		W	
76	6.5	2	0.4	0.6	89	12	7.7		U	
127	10	5.5	.2	.1		108			U	
128	7.3	2	.0	.6	155	109	7.6		U	
61	1.1	2.0	.4	.0	72	7	8.5		U	
55	14	1.8	.3	.3	92	50	7.0		U	
64	12	2	.3	.9	91	19	7.4		U	
146	1.6	3	.0	1	152	121	7.5		U	
156	10	3.5	.1	.1	176	132	7.3		U	
44	15	2.5	.2	.5	83	40	6.7	6	U	
66	11	2	.2	.7	96	53	7.1		U	
150	8.7	3.4	.4		172	7	8.7		U	
104	3.5	2.5	.0		106	76	7.9		W	
104	4.0	2.8	.0		112	88	8.1		W	
123	4.0	2.1	.0		128	106	8.1		W	
142	7.5	3.2	.1		182	129	8.0		W	
144	3.9	2.9	.0		144	123	8.1		W	
145	6.3	2.7	.1		173	127	8.1		W	
161	6.5	4.7	.0		178	119	8.0		W	
19	3.5	3.4	.3		43	18	7.1		W	
142	4.0	4.3	.1		149	103	7.9		W	
35	6.2	2.3			51	24	8.0		W	
131	4.5	6.5	0.1	0.0	145	110	7.5		U	
15	.6	2.0	.2	.3	29	8	7.7		U	
33	13	4.0	.2	.1		39			U	
172	13	12	.0		186	151	7.1		W	
130	2.9	4.4	.4		136	109	6.5		W	
170	4.8	4.3	.1		194	147	7.8		W	
73	3.8	2.4	.0		85	69	7.8		W	
172	4.6	5.5	.1		164	140	8.0		W	
139	4.8	3.2	.1		152	124	7.8		W	
122	0.8	2.5	0.3	0.3	127	103	7.1		U	
5	.3	3.1	.0	1.7	18	4	5.5		U	
75	.8	.4	.0	.2	79	61	7.1		U	
4	2.0	2.5	.0	2.3	21	6	5.5		U	
42	.0	3.9	.1		60	40	7.6		W	
47	2.9	3.2	.1		71	44	7.6		W	
46	2.9	3.5	.1		78	43	7.6		W	
28	1.8	1.8	.2	.0	53	26	7.0	0	U	
50	8.5	1.9	.2		69	48	7.8		W	
90	3.4	3.4	.1		98	82	8.2		W	

Table 4. Continued

Well No.	Location Crow-flight distance from town center	Date	Depth and aquifer	Silica	Iron	Manganese	Calcium	Magnesium	Sodium	Potassium
BEAUFORT COUNTY										
10	Parris Island, USMC	9/81	2,972/C	19	0.05	0.00	1.5	1.4	480	3.9
11	Parris Island, USMC	9/81	2,786/C	19	.03	.00	1.2	1.2	420	3.4
22	Burton, 2 mi WNW	9/86	84/F	6.2	.76	.09	59	8.4	11	5.1
100	Bluffton, 3 mi W	10/53	235/F	45	.10		21	10	13	
101	Hilton Head Island, central	6/54	200/F	33	.33		24	12	56	3.2
		6/54	400/F	24	.41		26	26	84	8.0
		6/54	600/F	29	1.2		26	33	30	18
		6/54	740/F	26	3.8		38	36	375	18
102	Port Royal	4/55	300/F	12	.00		110	6.5	110	1.2
106	Beaufort	3/55	81/F	10	.01		38	2.5	13	.7
114	Burton, 1 1/2 mi NW	4/55	100/F	13	.00		44	2.6	4.6	.8
131	Beaufort, 3 1/2 mi NW	3/56	113/F	40	.04		51	2.8	5.9	.7
133	Seabrook, 2 1/2 mi E	3/56	110/F	14	.18		32	11	19	3.7
146	Bluffton, 9 mi N	7/56	265/F	33	.01		34	9.7	18	2.9
345	Hilton Head I., SW end	10/80	200/F	36	.03		19	10	17	2.8
407	Hilton Head I., E corner	10/80	214/F	30	.22	.00	44	9.6	91	6.6
436	Hilton Head I., Forest Beach	10/80	200/F	23	.02	.03	23	12	58	4.4
454	Hilton Head I., Hilton Head Plantation	7/74	3,034/C	21	.20	.01	1.8	.4	480	4.5
		9/81	3,034/C	20	.05	.00	2.6	2.1	520	4.2
457	Fripp Island, golf course	9/81	2,730/C	19	.10	.00	2.1	1.9	560	4.9
458	Yemassee; Auld Brass Plantation	10/74	67/F	43			23	7.8	26	6.2
472	St. Helena Island, NE end	3/84	99/F	55	.2	.01	80	6.8	34	2.6
530	St. Helena Island, SW end	3/84	190/F	29	.22	.03	100	8.1	49	2.6
563	Frogmore, 1 mi SE	3/84	81/F	22	.01	.00	18	1.3	10	1.3
566	Parris Island, USMC	9/84	75/F	25	.05	.02	40	18	200	12
613	Bluffton, 5 1/2 mi E. Jenkins I.	10/80	200/F	49	.11	.00	44	18	50	4.4
634	Hilton Head I., E corner	10/80	200/F	40	.13	.03	54	6.3	36	2.2
648	Hilton Head I., central	10/80	150/F	28	.04	.01	43	14	34	3.7
786	Hilton Head I., NE shore	1/77	524/F	22	.08	.01	19	14	280	27
787	Hilton Head I., NE shore	3/83	185/F	20	.22	.05	78	4.9	18	1.2
788	Hilton Head I., NE shore	1/77	100/F	30	.05	.10	100	2.6	25	1.5
824	Hilton Head I., W side	10/80	221/F	21	.02	.0	20	11	25	2.9
970	Frogmore, 2 mi S	3/84	159/F	30	1.2	.05	80	3.8	14	1.1
1043	Grays Hill, 4 mi ENE	1/84	99/F	13	.06	.0	36	5.4	14	1.2
1459	Beaufort, 5 1/2 mi E. Datha I.	4/84	63/F	35	.02	.02	42	2.4	16	23
1578	Beaufort, 2 mi E. Ladies I.	1/84	70/F	17	.35	.01	64	3.1	6.3	.9
1584	Beaufort, 5 mi NE. Coosaw I.	1/84	130/F	10	.28	.02	50	2.6	7.3	1.0
BERKELEY COUNTY										
3	St. Stephen	7/63	180/B	27	2.4	0.04	42	3.1	21	1.7
4	Moncks Corner	11/55	147/F	37	.52	.01	33	22	76	15
8	Moncks Corner	11/55	170/F	26	.27	.00	29	19	18	11
16	Jamestown, 1 1/2 mi W	1/54	362/B	18	2.0	.00	67	2.7	(3.9)	
23	Bethera, 8 mi SW of Jamestown	1/54	90/F	44	2.6	.00	84	4.5	(2.0)	
29	St. Stephen, N edge of town	12/55	1,223/C	15	.07	.01	1.6	1.0	118	2.2
47	W edge of county, on State Hwy 27	2/82	372/B	42	.01	.00	10	2.8	50	8.1
65	St. Stephen, 4 mi NW	5/73	130/B	30	.07		40	1.3	3.9	1.7
84	Jamestown	6/79	894/C	18	.00	.00	1.5	.3	190	4.2
87	Moncks Corner	7/79	693/C	20	.02	.00	5.1	2.3	400	10
96	Moncks Corner	5/78	185/B,F	35	.01	.00	30	19	30	14
147	Huger, 2 mi N	12/82	122/F	40	.04	.00	41	12	11	7.9
165	Bonneau	1/82	327/B	28	.10	.02	40	2.4	5.0	3.8
175	Goose Creek, 6 mi E	1/82	302/F	36	.02	.00	3.4	2.2	280	15
204	Mount Holly, 4 mi N	1/82	265/B	42	.03	.00	5.3	4.2	346	16
238	Cross, 6 mi WSW	1/80	120/F	7.0	.73	.02	48	1.1	2.8	.6
312	Mount Holly, 6 mi NE	1/82	200/F	38	.01	.00	3.3	2.5	149	9.6
430	Mount Holly, 4 mi NNE	11/81	1,965/C	13	.20	.00	1.8	.0	182	3.1
431	Moncks Corner, 2 mi SW	1/82	1,607/C	22	2.2	.04	2.5	.4	336	4.9
435	Mount Holly, 4 mi NW	2/82	460/F	49	.03	.00	3.0	1.3	169	10
CALHOUN COUNTY										
4	St. Matthews	1/55	93/F	13	0.12		19	0.5	1.5	0.8
75	NW end of county	3/84	60/C	6.1	.00	0.08	14	4.0	3.8	6.7
76	NW end of county	4/84	300/B	11	.37	.01	1.2	.3	.8	.4

Bi-carb-onate	Sul-fate	Chlor-ide	Fluor-ide	Ni-trate	Dis-solved solids	Hard-ness	pH	Color	Analyst U, USGS W, SCWRC	Remarks
1,245	1.0	43	5.8	<0.01	1,120	9	8.2		U	} No significant change since
1,076	.6	13	4.1	<.01	1,040	8	8.4		U	} 1954 or earlier.
236	.0	14	.4	1.0	216	181	7.3		W	
131	7.6	3.5	.5	.6	162	94	7.8		U	
145	30	66	.6	.0	327	109	8.1		U	
165	34	142	.7	.0	468	172	8.2		U	
185	128	484	1.2	.5	1,180	200	8.1		U	
180	207	530	1.2	.0	1,360	243	8.1		U	
146	18	280	.1	.6	815	194	7.2		U	
114	4.9	24	.0	.0	155	105	7.6		U	
147	1.5	8.5	.1	.2	148	120			U	
172	.7	7.8	.1	.4	196	138	7.5		U	
132	3.9	38	.4	.3	195	124	7.5		U	
166	5.4	20	.3	.1	198	124	7.6		U	
130	8.0	10	.5		168	88	7.8		W	
174	69	110	.4		450	150	7.6		W	
149	25	62	.5		282	106	7.9		W	
1,130	2.9	87	4.3	.07	1,160	6	8.2		U	Temp. 107.6 degrees F.
1,095	.8	230	5.2	<.01	1,310	15	8.2		U	Boron 3.8; Temp. 110 degrees F.
1,430	2.1	62	7.6	<.12	1,410	13	8.1		U	Boron 6.5.
200	2.4	5.1	0.6	0.01	202	88	8.5		U	
260	3.8	68	.3		381	227	8.2		W	
264	3.7	130	.3		453	294	7.9		W	
37	4.8	16	.3		92	50	9.6		W	
218	51	240	.3		694	174	8.1		W	
131	18	120	.5		369	182	7.8		W	
216	4.4	55	.4		306	160	7.6		W	
238	9.8	41	.5		293	163	7.8		W	
192	59	350	1.2		867	110			U	
217	4.5	26	.2		261	215	7.5		W	
315	3.7	34	.2		352	260			U	
137	12	24	.5		184	94	7.9		W	
215	4.4	19	.3		272	217	8.0		W	
114	11	63	.1		200	112	7.6		W	
66	7.3	61	.5		300	115	8.2		W	
176	3.1	12	.1		282	172	7.7		W	
168	3.3	12	.2		170	135	7.6		W	
181	0.8	7.6	0.2	0.0	211	118	7.6		U	
376	2.5	32	.7	.5	389	174	7.4	7	U	
222	1.8	12	.9	.6	215	149	7.6	5	U	
212	3.4	6.5	.0	.4	215	178	7.5	8	U	
271	2.6	4.8	.3	.3	294	228	7.1	7	U	
264	1.7	9.0	1.4	.0	308	8	8.6	15	U	
214	3.6	6.1	.4		220	38	8.1		W	
109		5.0	.3		185	100			U	
370	2.7	4.0	2.0		445	5	8.5		U	
700	.5	59	1.5		920	22	8.0		U	
250	3.9	17	.7		273	150	7.0		U	
210		13	.4		230	150	9.0		W	Open hole below 42 ft.
134	7.0	6.9	.1		161	113	7.9		W	
517	25	167	2.2		790	18	8.7		W	
700	62	82	3.0		910	30	8.1		W	
202	3.0	4.0	<.1		168	129	7.4		W	
429	4.9	4.2	1.0		427	19	8.8		W	
433	5.7	26	2.7		450	5			W	
821	7.5	68	3.8		857	16	7.7		W	
605	9.6	32	4.2		580	13	8.6		W	
56	1.0	3.5	0.0	3.6	74	49	7.1		U	
50	6.0	16	.1		75	50	4.4		W	
0	8.3	2.0	.0		24	5	4.0		W	

Table 4. Continued

Well No.	Location Crow-flight distance from town center	Date	Depth and aquifer	Silica	Iron	Manganese	Calcium	Magnesium	Sodium	Potassium
CHARLESTON COUNTY										
9	Charleston, at Marion Square	1/67	1,260/C	15	0.02		2.0	0.4	460	3.8
21	Sullivans Island, E of Fort Moultrie	3/81	2,030/C	16	.02	0.00	3.1	1.1	463	8.3
49	U.S. Naval Base, Charleston	2/80	440/B,F	20	.04	.00	4.6	5.1	460	23
96	North Charleston, 4 mi NNW	1/80	325/B	19	.18	.00	6.2	5.0	260	17
108	North Charleston	3/64	450/B,F	33	.11	.00	9.9	9.9	830	25
115	Mount Pleasant, Hobcaw Point	4/82	350/B,F	38	.02	.00	8.5	13	660	36
163	Mount Pleasant	3/81	1,912/C	20	.00	.00	2.1	.3	360	4.5
167	Mount Pleasant	3/81	1,986/C	11	.02	.00	2.0	.3	345	3.6
172	North Charleston, 3 mi SW	7/79	1,840/C	5.3	.30	.02	2.3	.2	340	2.9
182	McClellanville, 7 1/2 mi NNE	7/76	761/C	14	.36	.00	4.2	2.3	400	13
183	Whitehall Terrace	7/79	1,840/C	14	.03	.00	1.7	.4	530	3.8
187	Isle of Palms, W part	8/81	2,000/C	18	.02	.00	1.5	.33	620	3.7
216	Yonges Island	7/79	557/C,F	41	.09	.00	6.9	6.1	560	18
224	McClellanville, 2 1/2 mi NW	7/79	105/F	33	.71	.29	70	17	11	2.6
233	McClellanville, at town hall	7/79	60/F	40	.67	.19	73	7.5	22	6.2
237	McClellanville, 4 1/2 mi SW	2/80	74/F	16	.00	.00	0	0	130	.5
240	Awendaw	6/80	97/F	26	.16	.03	60	4.8	9.9	3.1
253	Whitehall Terrace, 2 mi NNE	2/80	302/F	16	.00	.00	4.9	11	268	20
318	Ravenel, 1/2 mi N of Hwy 17	2/80	280/F	16	.08	.01	42	6.7	17	1.8
363	NW corner of county	2/80	406/B,F	12	.00	.00	2.0	1.2	144	6.2
369	Edisto Island	6/80	56/F	37	.18	.09	43	3.7	16	1.4
374	Whitehall Terrace, 3 1/2 mi NNE	6/80	425/B,F	22	2.0	.00	5.0	4.8	140	17
376	James Island	5/80	58/F	6.2	.27	.06	53	14	43	15
439	Whitehall Terrace, 2 mi N	11/80	242/F	35	.07	.00	9.2	9.5	268	22
539	Edisto Island, 6 mi NW	6/80	561/B,F	21	.03	.02	5.3	5.9	540	15
CHESTERFIELD COUNTY										
1	Jefferson	1/55	205/C	24	0.00		11	4.6	4.6	0.5
2	McBee	1/54	188/C	6.4	.02		1.2	.1	1.8	.2
34	Patrick, 1 mi SW	5/55	100/C	11	.00		.6	.2	2.2	1.4
CLARENDON COUNTY										
2	Manning	1/55	480/C	27	0.00		4.6	1.1	38	3.6
3	Manning	1/55	600/C	11	.00		2.6	.6	33	2.0
15	Summerton	10/56	640/C	12	.01		3.7	.2	52	1.9
17	Sardinia, 4 mi W	9/57	350/C	36	.20		12	3.5	4.6	10
19	Turbeville	3/59	352/C	34	<.12		7.2	.5	20	4.8
COLLETON COUNTY										
16	Walterboro	1/55	528/B	24	0.00		3.0	1.4	80	8.2
27	Walterboro, 14 mi W	1/62	843/C	14	.01		2.9	1.1	74	3.9
30	Walterboro	4/66	1,340/C	14	.45	0.00	3.5	1.2	209	5.7
33	Ritter, 4 mi NNW of Green Pond	10/57	550/B,F	94	.31		18	15	48	9.3
50	Walterboro, NE part	1/76	1,760/C	19	.02	.00	1.1	.2	74	.7
70	Lodge, 5 1/2 mi SSE	3/76	651/C	20	.00		4.5	.4	34	3.0
86	Edisto Beach	7/79	562/B	11	<.03	<.01	4.8	7.0	570	12
92	Green Pond, 5 mi SW	2/77	600/B,F		.02		79	7.6	42	3.2
94	Bennetts Point, 6 mi W	2/77	600/B,F		.01	.01	46	2.5	6.	2.3
DARLINGTON COUNTY										
1	Society Hill	5/47	360/C	31	3.9		7.2	4.1	(32)	
7	Darlington	4/57	317/C	13	.89		2.4	1.0	3.9	1.6
9	Darlington	4/57	570/C	20	2.4		6.4	2.5	23	7.8
30	Lamar	1/55	285/C	11	<2.0		15	1.4	1.6	1.4
49	Dovesville, 2 1/2 mi W	1/55	200/C	7.4	<.2		.6	.1	.9	.5
55	Oats	1/55	147/C	9.3	<.43		1.9	.3	1.8	.1
58	Darlington	4/57	450/C	18	.07		.7	.4	2.4	2.7
63	Darlington	4/57	285/C	12	.11		.6	.6	1.3	2.1

Bicarbonate	Sulfate	Chloride	Fluoride	Nitrate	Dissolved solids	Hardness	pH	Color	Analyst U, USGS W, SCWRC	Remarks
989		139	3.3	.2	1,130	7			U	
1,110	4.5	520	5.0		1,580	18	8.4		W	
922	82	265	4.8		1,330	252	8.5		W	Open hole below 308 ft.
619	49	104	2.9		773	28	8.2		W	Open hole below 270 ft.
856	138	744	4.0	.6	2,220	68	7.9	12	U	Open hole below 140 ft.
784	157	946	3.9		2,255	73	7.4		W	Open hole. Casing depth unknown.
1,010	4.0	135	4.4		1,040	8	8.6		W	
920	4.0	104	4.0		934	6	8.6		W	
620	4.6	50	3.2		781	7	7.5		U	
701	8.6	230			1,070	20	9.3		U	
989	5.8	130	5.2		1,220	6	7.4		U	
1,050	.2	184	7.1	.03	1,290	5	8.5		U	
430	86	570	3.2		1,560	42	7.9		U	Open hole below 192 ft.
200	1.7	17	.1		262	200	7.3		U	
280	.7	33	.1		322	210	7.2		U	
360	3.1	25	.1		339	0	7.2		W	
226	3.4	8.9	.4		229	169	7.4		W	
461	24	185	2.2		761	58	8.4		W	Open hole below 94 ft.
221	2.9	6.5	.4		204	132	7.2		W	Open hole below 77 ft.
403	8.8	23	1.4		400	10	8.7		W	Open hole below 40 ft.
168	3.9	20	.2		209	122	7.6		W	
295	9.0	92	1.6		442	36	8.3		W	Open hole below 230 ft.
149	43	97	.2		345	190	7.5		W	
379	34	300	2.6		871	81	8.3		W	Open hole below 151 ft.
696	59	460	2.1		1,460	36	8.2		W	Open hole below 127 ft.
54	5	8.2	0.2	1.5	87	46	6.9		U	
.6	.1	3.8	.1	2.1	16	4	4.7		U	
2	4.6	2.5	.0	.3	24	3	5.0	2	U	
95	8.6	8.0	0.5	2.1	138	16	7.3		U	
83	8.1	2.8	.4	.5	102	9	7.5		U	
135	7.0	1.5	.6	.5	144	10	7.5		U	
68	5.1	3.0	.1	.5	107	44	7.1		U	
73	6.0	.7	.2	.2	108	20	7.9		U	
218	12	6.5	1.1	0.0	260	13	8.9		U	
210	4.2	3.2	.5	.1	214	12	8.2		U	
544	1.0	3.4	2.2	.2	518	14	8.3	10	U	
232	14	24	1.0	.3	340	108	7.4		U	
184	1.5	2.7	.6	.0	207	4			U	
91	13	3.9	.4	.0	125	13			U	
520	56	480	5.3		1,406	40	8.2		U	
242		80±		.0	350±	230			U	Open hole below 96 ft.
153		10±		.0	150±	130			U	Open hole below 84 ft.
66	18	22	0.3	0.1	148	35	7.0		U	
16	5.7	1.2	.5	.0	48	11	6.3		U	
78	.2	16	.4	.3	120	26	7.0		U	
48	4	2.8	.1	.3	60	42	6.4		U	
0	4	1.0	.1	.0	11	2	4.4		U	
3	4.8	2.5		.6	25	6	5.1		U	
8	5.4	1.3	.0	.0	36	4	5.8		U	
4	5.5	1.4	.0	.0	27	4	5.4		U	

Table 4. Continued

Well No.	Location Crow-flight distance from town center	Date	Depth and aquifer	Silica	Iron	Manganese	Calcium	Magnesium	Sodium	Potassium
DARLINGTON COUNTY (cont.)										
71	Hartsville, SW part	1/63	293/C	8.0	<.01		.5	.2	1.2	.2
79	Hartsville, E side	1/84	155/C	10	.32	0.01	3.9	.6	4.1	.4
80	Hartsville, N side	1/84	236/C	8.5	.06	.00	.2	.2	2.0	.4
87	Lamar	1/84	486/C	10	.60	.01	.6	.4	2.0	.8
DILLON COUNTY										
7	Latta	6/56	360/C	19	0.33	0.16	2.4	2.4	24	6.0
8	Dillon	4/54	282/C	18	<2.0	.00	3.1	2.8	(22)	
58	Dillon, 3 1/2 mi NE	6/56	500/C	20	.73	.30	6.8	1.5	7.8	2.4
78	Lake View		256/C		.05		2.4	.2		
DORCHESTER COUNTY										
3	Harleyville, 2 mi NNE	3/60	482/C	15	0.06	0.02	1.9	0.5	50	2.9
4	St. George	3/60	559/C		.00		3.6	.2		
5	Ridgeville, 2 1/2 mi E	4/63	280/B	23	.06	.01	25	1.3	59	9.2
7	Summerville	11/50	925/C		2.5	.00	2.5	1.2	(630)	
17	Dorchester, 1 1/2 mi WNW	7/79	320/B,F	34	.02	.00	24	12	13	6.0
23	Jedburg	7/63	491/B	38	.02	.00	4.0	2.9	278	18
29	Summerville, 4 1/2 mi W	2/82	543/B,F	42	.01	.00	3.8	2.2	77	12
51	Reevesville	1/82	370/B	38	.25	.00	20	4.7	44	12
52	Dorchester Estates	5/78	1,740/C	16	.06	.01	1.1	.1	230	1.7
56	Dorchester	4/62	583/B	4.2	.13	.05	5.6	.2	90	5.7
70	St. George, 3 mi NE	3/80	447/B	3.0	.00	.00	31	.8	20	1.9
76	Jedburg	1/82	400/B	43	.03	.00	3.6	1.3	198	9.2
203	Summerville	4/50	322/B	36	.07	.00	3.0	2.3	(192)	
FLORENCE COUNTY										
10	Pamplico	5/47	182/C	35	0.22		1.6	0.4	(43)	
17	Lake City	4/48	491/C	17	1.9	0.0	.8	.3	(30)	
72	Johnsonville	4/48	290/C	28	1.7	.0	2.0	.6	(116)	
85	Timmonsville	2/54	535/C	15	4.3	.00	3.4	1.6	(4.1)	
88	Poston	5/51	175/C	28	.16	.00	1.5	.6	(115)	
97	Florence, E edge	4/54	429/C	17	3.4		1.8	1.3	(10)	
100	Florence, E edge	4/54	180/C	34	3.7		6.4	1.5	(4.3)	
114	Olanta	4/56	338/C	35	2.1	.02	9.0	2.7	3.4	10
116	Johnsonville, 1 mi N	4/77	405/C	30	.03	.00	.4	1.3	140	2.0
125	Florence, E edge	1/59	495/C	18	1.8	.03	2.2	1.3	6.4	4.0
126	Mars Bluff, 4 1/2 mi E	5/59	705/C	37	.10	.01	.3	.1	22	1.7
153	Timmonsville	1/84	480/C	15	1.7	.01	1.7	1.1	2.7	3.8
155	Johnsonville	4/77	876/C	30	.03	.00	.4	1.3	140	2.0
243	Florence, 3 mi NNW	1/84	425/C	16	.52	.01	1.4	1.0	3.9	4.0
GEORGETOWN COUNTY										
15	Georgetown, 4 mi SW (Airport)	4/78	200/B	30	0.21	0.02	31	3.4	23	5.6
16	Georgetown	1/55	710/C	12	.02	.0	2.0	.9	219	
17	Georgetown	12/51	885/C	14	.01		2.4	.7	246	
24	Georgetown	4/63	1,344/C	13	.10	.01	6.1	2.8	860	7.4
30	Georgetown	6/56	805/C	14	.04	.01	1.0	.4	204	3.9
37	West corner of county (Santee River)	7/65	800/C		.38	.01	1.6	.2	127	4.8
38	West corner of county (Santee River)	8/65	53/F	16	4.1	.26	74	14	7.6	1.0
48	Murrells Inlet, 3 mi SW	4/83	110/B	4.5	.00	.00	48	1.8	22	1.2
51	Georgetown, 5 1/2 mi N	9/83	678/C	13	.04	.00	2.6	.4	199	5.5
56	Pawleys Island	9/83	723/C	14	.03	.00	3.3	.9	283	7.5
65	Georgetown, 6 1/2 mi E	9/83	648/C	14	.03	.00	3.2	.9	260	7.0
69	Georgetown, 6 mi ESE	9/80	113/B	9.0	.02	.01	16	4.5	350	9.0
70	Murrells Inlet, 1 1/2 mi E	8/73	715/C	19	.10	.02	2.4	.6	320	4.5
78	Olin, 1 1/2 mi ESE	4/78	585/C	14	.01	.01	2.1	.5	210	4.8
84	Georgetown, 8 mi NE	11/77	620/C	13	.02	.01	2.1	.8	280	17

Bicarbonate	Sulfate	Chloride	Fluoride	Nitrate	Dissolved solids	Hardness	pH	Color	Analyst U, USGS W, SCWRC	Remarks
4	.8	1.5	.0	.1	15	2	5.4		U	
2	11	4.5	.0	.0	36	13	5.1		W	
1	3.3	2.5	.0		18	1	4.9		W	
.0	7.4	2.0	.0		21	4	4.1		W	
91	0.4	2.4	0.2	0.4	107	16	6.8	5	U	
71	3.5	4.2	.1	.0	96	19	6.7	2	U	
44	4.4	2.8	.0	.3	72	24	6.4	10	U	Top screen at 200 ft.
97	2.8	7.0	.3	1.1	115 ±	7	7.4		U	
110	9.3	2.8	0.7	0.1	149	7	9.1	5	U	
106	9.8	2.0	.3		140	10	7.5		U	
238	.6	8.1	.2	.3	244	67	7.8	5	U	
993	.8	400	.5	1.8	1,540	11	8.1	7	U	
130	1.1	4.7	.4		174	0	8.0		U	Open hole below 124 ft.
586	37	93	1.5	.2	762	22	7.6	8	U	
458	13	51	1.5		432	18	8.3		W	Open hole below 153 ft.
202	0	6.1	.3		226	69	7.9		W	
560	3.3	10	1.8		557	3	8.8		U	
255	1.0	4.4	1.4	.3	240	16	8.0	8	U	
128	8.7	7.0	.1		137	80	8.0		W	
444	11	37	1.2		526	14	8.8		W	
395	11	51	1.0	.2	511	17	8.3	6	U	
104	8.6	2.4	0.5	0.0	147	6	7.6	8	U	
65	8.2	3.2	.4	.1	93	3	7.5	4	U	
227	7.5	4.5	1.6	.4	311	7	8.9	3	U	
15	7.9	2.0	.2	.1	46	15	6.0	2	U	
233	7.6	6.0	1.4	.4	303	6	8.9	4	U	
20	11	2.5	.1	.0	54	10	6.2	1	U	Top screen at 311 ft.
21	9.7	2.2	.4	.0	73	22	6.1	1	U	
54	9.3	1.3	.2	.5	97	34	6.9		U	Top screen at 240 ft.
300	16	30	1.5		369	6	8.5		U	Top screen at 270 ft.
24	8.4	1.0	.1	.3	55	13	6.5	5	U	Top screen at 260 ft.
49	5.9	3.5	.3	.3	96	1	7.4	6	U	Top screen at 242 ft.
11	9.3	2.7	.1	.0	44	9	6.0		W	Top screen at 355 ft.
300	16	30	1.5		369	6	8.5		U	Top screen at 789 ft.
14	8.4	2.5	.1		45	8	6.5		W	Top screen at 325 ft.
150	3.6	15	0.1		186	91	7.0			
	3	46	1.1	.8	536	9	8.3		U	Top screen at 530 ft.
	2.1	54	1.1	.8	599	9	8.4		U	Top screen at 703 ft.
1,250	2.4	645	3.2	.4	2,160	28	7.8	5	U	Top screen at 1,190 ft.
471	.8	32	1.1	.5	519	4	8.7	7	U	Top screen at 618 ft.
306	3.4	6.6	2.2	.2	328	6	9.0	15	U	Top screen at 730 ft.
288	2.0	12	.1	.1	269	240	7.7	3	U	
182	6.5	14	.3		190	128	7.5		W	Sodium estimated.
464	4.7	44	.8		502	8	8.4		W	Top screen at 504 ft.
673	3.9	54	4.5		707	12	8.3		W	Top screen at 422 ft.
609	3.4	71	1.4		665	12	8.5		W	Top screen at 544 ft.
576	28	296	2.0		1,000	69	8.0		W	
642	3.7	59	4.0		772	8	8.4		U	Top screen at 422 ft.
450	16	33	.5		512	7	8.5		U	Top screen at 360 ft.
647	1.8	41	3.8		679	9	8.6		U	

Table 4. Continued

Well No.	Location Crow-flight distance from town center	Date	Depth and aquifer	Silica	Iron	Manganese	Calcium	Magnesium	Sodium	Potassium
GEORGETOWN COUNTY (cont.)										
86	Georgetown, 3 1/2 mi SSW	9/83	800/C	15	0.02	0.00	2.8	0.4	238	7.0
88	Maryville, 6 1/2 mi SSE	7/76	1,295/C	15	.20	.00	6.4	3.4	980	10
93	Litchfield Beach	9/83	588/C	19	.03	.00	4.0	1.1	288	8.9
94	Plantersville	4/78	580/C	12	.17	.00	3.5	1.1	260	7.6
95	Georgetown, 5 mi SW	9/83	680/C	15	.04	.00	2.4	.5	222	6.3
102	Rhems, 3 mi SE	11/77	990/C	14	.15	.00	1.4	.2	200	2.1
105	Murrells Inlet, 1/2 mi W	11/77	770/C	18	.06	.00	2.3	.6	330	4.0
107	Murrells Inlet, 2 mi NE	3/78	650/C		.11	.00	1.7	.5	290	3.9
109	Murrells Inlet, 2 1/2 mi S	4/78	706/C	23	.05	.00	2.3	.6	290	4.5
114	Oatland	4/77	700/C	13	.01	.01	5.5	2.2	160	3.5
154	Georgetown, 6 mi ESE	9/83	594/C	13	.02	.00	2.6	.6	226	6.3
155	Outland, 3 3/4 mi SE	5/80	420/C	5.3	.01	.00	1.7	.3	140	6.3
173	Rhems, 5 mi ESE	9/80	682/C	3.2	.02	.00	3.2	.4	150	4.3
179	Georgetown, 5 1/2 mi WSW	10/78	82/B	52	.09	.03	30	3.8	46	10
182	Georgetown, 5 1/2 mi WSW	9/78	110/B	40	.04	.00	16	12	390	35
185	Graves, 2 mi S	9/83	800/C	16	.06	.01	3.3	.7	229	6.2
191	Andrews	4/77	768/C	16	.13	.00	5.3	.4	160	5.1
213	North Santee	8/82	680/C		4.0	.03	36	5.0	478	44
HAMPTON COUNTY										
12	Estill	11/55	844/C	16	0.24		4.4	0.6	54	3.6
14	Estill	11/55	165/F	23	.13		25	3.1	33	2.4
18	Varnville	10/56	673/B	17	.02		4.5	.7	55	2.2
24	Lena, 2 mi E	11/52	750/B	15	.09	0.00	1.6	.7	(108)	
27	Brunson	8/52	720/C	14	.38		4.9	.9	(28)	
34	Estill, 7 1/2 mi WSW, Bostic Plantation	2/77	822/C	14	.02	.00	3.2	.1	58	2.3
41	Hampton	12/64	853/C	.9	.56	.02	4.2	.2	51	4.5
80	Gifford, 2 mi N	1/77	60/F	3.2	.02	.02	29	1.9	12	2.0
92	Estill	6/80	985/C	8.6	.00	.00	4.6	.3	56	3.9
HORRY COUNTY										
32	Myrtle Beach, nr U.S. 17 and U.S. 501	/58	548/C	15	0.04	0.00	3.4	0.6	314	6.1
33	Myrtle Beach, 2 1/2 mi NE of U.S. 501	6/58	551/C	16	.07	.00	3.2	.7	295	2.5
203	Myrtle Beach, nr U.S. 501	4/86	730/C	12	.05	.00	7.3	2.5	357	6.7
204	Conway, SW part	5/55	715/C	13	.01	.01	2.4	1.0	250	3.0
216	Myrtle Beach, 2 mi SW of U.S. 501	4/86	721/C	17	.05	.00	3.7	1.1	273	6.4
218	Myrtle Beach Air Force Base	1/74	789/C	15	.00	.00	2.3	.7	280	5.2
230	North Myrtle Beach, 9th Ave S	4/86	560/C	22	.02	.00	9.4	4.3	351	18
241	North Myrtle Beach, nr Cherry Grove	4/86	400/C	13	.03	.01	8.9	3.8	447	18
244	Myrtle Beach, 18th St and Oak Ave	4/86	807/C	12	.05	.00	3.3	1.5	355	7.1
246	Ocean Forest, 2 mi NE	5/86	771/C	15	.05	.00	7.4	1.7	311	8.5
247	Myrtle Beach, 3 mi SW (Springmaid)	4/86	718/C	17	.03	.00	3.2	1.2	275	6.8
248	Myrtle Beach, Green Bay Park	5/86	714/C	21	.03	.00	4.5	2.4	303	8.6
261	North Myrtle Beach (Windy Hill)	10/85	695/C	15	.05	.00	11	2.7	439	8.5
274	Toddville	3/78	517/C	15	.03	.00	1.5	.5	240	3.7
279	Myrtle Beach, 2 1/2 mi NW	4/78	416/C	16	.00	.00	2.1	1.1	260	8.0
280	North Myrtle Beach, 2nd Ave S	4/86	702/C	18	.06	.00	8.4	2.5	421	14
284	Surfside Beach	4/86	624/C	20	.03	.00	3.0	1.2	244	6.5
289	Myrtle Beach, 4 1/2 mi NW	4/83	675/C	21	.03	.00	2.7	.9	345	6.9
291	Aynor	11/77	350/C	17	.02	.00	3.1	1.3	260	12
297	Conway, 2 mi SW	4/78	380/C	12	.06	.01	2.7	1.0	253	4.3
298	E end of county, on Hwy 17	12/73	506/C	16	.10	.03	9.6	6.3	600	52
308	Midway between Conway and Myrtle Beach	11/77	482/C	18	.02	.00	3.2	.3	270	3.9
314	Loris	4/83	325/C	14	.03	.00	2.6	1.2	165	8.6
333	Near Myrtle Beach State Park	4/86	746/C	18	.02	.00	3.9	1.3	291	7.0
338	Myrtle Beach, 1 1/2 mi NW	4/86	880/C	14	.04	.00	3.7	1.6	358	6.1
339	Windy Hill Beach, 2 1/2 mi SW	3/83	700/C	16	.05	.00	3.5	1.4	293	10
		5/86	700/C	17	.03	.00	5.2	3.5	364	8.9
340	Myrtle Beach, 1 3/4 mi WNW	4/86	712/C	14	.01	.00	3.4	1.0	261	5.6
343	Conway, 4 mi NW, at Mary	9/83	230/C	15	.01	.00	5.5	3.6	224	11
344	Near Garden City Beach	10/85	594/C	18	.05	.00	7.7	2.2	305	8.3
345	Conway, 2 1/2 mi SE	9/83	780/C	13	.01	.00	2.9	.6	268	3.1
380	Crescent Beach	11/76	380/C	14	.03	.00	6.8	2.8	360	15
386	Nixonville, 4 1/2 mi W	11/76	390/C	18	.56	.00	9.1	4.2	280	16

Bicarbonate	Sulfate	Chloride	Fluoride	Nitrate	Dissolved solids	Hardness	pH	Color	Analyst U, USGS W, SCWRC	Remarks
505	6.4	89	1.2		612	9	8.6		W	Top screen at 612 ft.
1,230	6.0	830			2,460	30	9.4		U	
653	3.4	81	5.3		736	15	8.4		W	Top screen at 495 ft.
520	1.3	30	3.7		630	13	8.6		U	Top screen at 474 ft.
495	8.0	61	1.1		564	9	8.5		W	
430	1.9	6.1	2.1		487	4	8.6		U	Top screen at 880 ft.
780	2.3	55	4.0		809	8	8.7		U	Top screen at 450 ft.
690	4.1	29	4.3		698	7	9.1		U	
720	2.5	30	3.9		712	8	8.0		U	
456	.9	8.2	.6		421	23	8.5		U	Top screen at 516 ft.
534	4.2	61	1.2		580	9	8.5		W	
366	7.0	4.0	1.8		350	2	8.7		W	
452	5.4	5.7	.9		400	10	8.6		W	Top screen at 551 ft.
208	1.8	19	.2	.1	267	90	6.3		W	
497	65	416	1.9	.1	1,220	88	6.2		W	
484	6.3	89	1.2		594	11	8.8		W	Top screen at 625 ft.
420	9.4	14	1.7		422	15	5.1		U	Top screen at 552 ft.
809	27	300	2.2		1,300	136	7.6		W	
151	7.2	3.0	0.6	0.2	164	14	8.2		U	
157	7.8	3.5	.4	.3	171	76	7.4		U	
144	8.7	3.5	.6	.5	158	14	7.5		U	
239	7.8	4.8	1.7	.1	275	7	8.8	2	U	
72	14	2.0	.5	.0	100	16	7.6		U	
149	7.0	2.9	.5	.0	162	8			U	
140	11	2.4	.5	.0	144	12	8.1	10	U	
106	7.2	5.4	.2		113	80			U	
154	6.3	2.5	.2		159	12	8.7		W	
528	0.2	124	4.3		731	11	8.1		U	
652	.2	89	4.3	.3	744	12	8.1	2	U	
605	0	228	3.9		920	28	8.3		W	Top screen at 265 ft.
520	3.8	95	1.9	1.5	639	10	8.2	17	U	
727	0	69	3.5		740	13	8.4		W	Top screen at 305 ft.
596	3.2	82	3.3	.2	691	9	8.6	3	U	Top screen at 553 ft.
648	0	244	5.6		979	41	8.3		W	Top screen at 299 ft.
640	0	420	3.7		1,235	37	8.1		W	
628	0	168	4.4		865	14	8.2		W	Top screen at 431 ft.
560	0	140	4.4		768	25			W	Top screen at 352 ft.
584	0	93	3.2		691	12	8.2		W	Top screen at 300 ft.
550	0	110	3.6		679	21			W	Top screen at 372 ft.
948	0	143	5.7		1,100	38	8.1		W	Top screen at 360 ft.
510	3.4	21	3.0		594	6	8.6		U	Top screen at 300 ft.
520	2.6	41	4.1		646	11	8.1		U	Top screen at 355 ft.
646	0	335	4.5		1,126	31	8.3		W	Top screen at 378 ft.
697	0	23	3.0		650	12	8.6		W	
487	7.5	71	4.4		704	11	8.3		W	Top screen at 365 ft.
590	1.5	39	4.3		629	13	8.8		U	
480	2.5	32	3.6		592	11	8.0		U	
666	5.2	550	2.8		1,570	50	8.0		U	Saline water below 340 ft.
600	5.0	66	3.1		679	9	8.2		U	
412	5.8	21	3.7		429	13	8.6		W	
727	0	96	3.3		790	15	8.4		W	Top screen at 314 ft.
621	0	114	2.1		809	15	8.2		W	Top screen at 395 ft.
547	5.9	129	5.9		739	16	8.1		W	Top screen at 580 ft.
670	0	276	4.4		1.010	27	8.3		W	Note Cl increase.
596	0	95	3.4		681	12	8.3		W	Top screen at 403 ft.
470	3.6	61	5.1		564	29	8.3		W	
668	0	55	5.3		735	28	8.2		W	Top screen at 374 ft.
458	3.4	108	3.7		632	10	8.3		W	
701	3.9	170	5.4		924	29	9.7		U	
650	3.1	85	3.8		740	40	9.5		U	

Table 4. Continued

Well No.	Location Crow-flight distance from town center	Date	Depth and aquifer	Silica	Iron	Manganese	Calcium	Magnesium	Sodium	Potassium
HORRY COUNTY (cont.)										
397	Surfside Beach, 1 3/4 mi SW	5/86	370/C	18	0.07	0.00	3.4	1.7	264	11
409	Myrtle Beach AFB	4/83	611/C	26	.00	.00	2.3	.9	326	7.3
412	Socastee	4/77	560/C	14	.03	.00	2.1	2.1	220	6.3
416	Surfside Beach, 2 mi NE	5/86	690/C	16	.05	.00	3.4	1.0	259	5.6
428	Garden City Beach	5/86	703/C	19	.24	.01	5.9	1.0	296	6.2
429	Garden City Beach	2/79	535/C	16	.23	.00	3.4	1.1	250	9.4
430	Atlantic Beach	11/77	560/C	15	.05	.00	3.6	1.9	360	12
431	Loris, 2 1/2 mi NW	3/78	300/C	15	.19	.01	2.4	.8	130	7.0
435	Conway, 3 mi SSE	4/78	178/C	22	.10	.00	5.1	4.7	240	15
438	Loris, 10 mi SE	6/78	200/C	12	.01	.00	15	12	520	24
441	North Myrtle Beach, 3 mi NW	5/86	565/C	17	.04	.00	4.3	4.6	318	13
463	Cherry Grove Beach	4/86	560/C	13	.03	.00	9.0	2.5	429	14
467	Atlantic Beach, 4 mi N	4/83	400/C	8.1	.12	.01	52	2.4	8.0	.8
468	Crescent Beach	8/78	75/C	12	.53	.04	61	2.4	14	.6
475	Longs, 1 1/2 mi SW	3/83	374/C	12	.13	.00	5.1	2.5	368	16
495	Loris, 3 mi S	8/78	185/C	34	.65	.05	30	7.7	40	7.9
513	Conway, 4 1/2 mi SW	9/83	605/C	13	.04	.00	2.9	.5	238	3.4
521	Green Sea, 2 mi S		180/C	30	.03	.00	8.3	3.2	101	11
523	Conway, 3 mi E	12/80	315/C	14	.78	.01	16	1.9	194	9.5
538	Conway, 5 1/4 mi SE	9/83	780/C	14	.05	.00	4.2	.5	265	3.7
573	Conway, 1 1/2 mi NE	10/78	200/C	14	1.2	.02	30	9.8	165	25
596	Bucksport, 3 1/2 mi SE	4/83	758/C	26	.00	.00	1.4	.4	288	4.3
609	Horry, 1 1/2 mi SW	9/78	80/C	62	1.2	.16	38	3.1	10	2.6
635	Aynor, W edge	9/78	90/C	46	.11	.08	28	2.7	13	3.0
646	Conway, 8 mi WNW	8/78	80/C	38	3.2	.10	44	4.2	17	2.8
666	Bucksport, 1 1/2 mi NNW	9/83	585/C	14	.02	.00	2.7	.5	247	3.6
677	North Myrtle Beach	8/61	105/C	8	1.8	.06	73	6.1	220	2.6
861	North Myrtle Beach, Ocean Drive	4/86	627/C	14	.16	.01	20	4.9	377	12
862	Crescent Beach	4/86	655/C	18	.04	.00	8.8	2.4	429	11
863	Ocean Forest	5/86	614/C	19	.02	.00	7.9	1.9	292	9.4
JASPER COUNTY										
1	Limehouse, 3 1/2 mi SW	8/57	503/F	50	0.09		22	8.5	9.0	2.0
5	Limehouse, 5 mi SE	11/57	300/F	53	.10		26	6.3	22	5.8
37	Hardeeville	11/56	900/B	41	0.03		19	8.2	19	3.5
52	Limehouse, 3 1/2 mi SE	11/57	400/F	55	.09		26	6.3	11	2.7
101	Ridgeland	10/56	450/F	33	.01		43	7.7	10	2.2
102	Ridgeland	6/54	210/F	28	.01		46	7.8	(7.2)	
104	Jasper, 3 mi NE	5/57	330/F	*26			28	9.0	(*16)	
154	Old House, 4 1/2 mi NNE	/85	198/F	*15	.98		45	7.9	(12)	
KERSHAW COUNTY										
19	Bethune	9/53	194/C	7.9	0.05		1.5	0.8	(1.8)	
21	Lugoff, Dupont Plant	6/50	50/A	13	1.1		2.9	1.8	(7.9)	
LEE COUNTY										
1	Lynchburg	11/55	285/C	16	0.31		1.6	1.0	1.8	3.6
4	Bishopville	11/60	200/C	9.7	.07	0.01	.5	.5	1.5	.2
12	Bishopville	11/60	314/C	10	<.43		.3	.2	1.5	.3
42	Bishopville, 4 mi SE	1/84	114/C	5.0	.42	.04	4.2	.5	1.8	.5
LEXINGTON COUNTY										
24	Swansea	6/58	180/C	11	0.14	0.00	0.8	0.2	1.4	0.4
75	Edmund, 1 mi NE	5/61	285/C	6.8	.03	.01	1.1	.2	1.8	.1
76	Gaston, 2 mi WSW	3/61	216/C	10	.27	.00	.6	5.9	1.1	.3

* Estimated from other data in analysis.

Bi-carb-onate	Sul-fate	Chlor-ide	Fluor-ide	Ni-trate	Dis-solved solids	Hard-ness	pH	Color	Analyst U, USGS W, SCWRC	Remarks
720	0	37	3.8		700	15	8.7		W	Top screen at 295 ft.
604	6.3	43	4.2		717	10	8.4		W	
620	.5	33	3.8		597	14	8.6		U	Top screen at 320 ft.
697	0	51	2.8		690	12	8.6		W	Top screen at 334 ft.
825	0	83	3.6		830	18	8.8		W	
510	2.3	30	3.8	.06	625	13	8.1		U	
710	1.8	180	2.5		927	17	8.7		U	Top screen at 325 ft.
330	2.9	15	1.9		338	9	9.7		U	
510	2.8	41	3.5		641	36	7.6		U	
510	33	500	1.6		1,370	87	7.3		U	
795	0	146	4.5		910	29	8.7		W	Top screen at 353 ft.
668	0	362	4.6		1,170	32	8.1		W	Top screen at 302 ft.
154	8.9	12	.1		170	142	8.1		W	Top screen at 92 ft.
198	2.1	19	.2	.03	211	200	7.3		W	
525	31	275	3.3		975	25	8.2		W	Top screen at 132 ft.
188	5.8	9	.3	.2	230	123	7.5		W	
554	3.9	56	3.9		600	10	8.5		W	
262	3.6	6	1.7	0	297	36	8.0		W	
477	4.8	54	3.5		538	48	7.4		W	
550	3.4	116	3.9		686	13	8.5		W	Top screen at 348 ft.
495	2.1	51	4.3	.15	550	114	7.8		W	
550	9.8	24	3.8		583	6	8.8		W	Top screen at 655 ft.
154	2.0	5.7	.1	.1	202	107	6.2		W	
121	1.7	3.6	.1	.1	159	81	5.8		W	
163	6.0	8.8	0.2	.4	206	127	5.5		W	
600	3.9	44	4.4		620	10	8.4		W	Top screen at 388 ft.
585	16	95	.0	.0	796	207	7.2		U	
583	0	72	.8		800	70	8.1		W	Top screen at 330 ft.
677	0	369	5.2		1,180	31	8.1		W	Top screen at 334 ft.
770	0	91	4.5		810	27	8.6		W	Top screen at 338 ft.
120	6.5	6.0	0.5	0.1	164	90	7.7		U	
156	3.5	8.0	.5	1.0	203	91	7.5		U	
133	6.0	4.0	.6	.3	154	80	7.3		U	
130	6.0	5.5	.5	.6	178	91	7.6		U	
188	3.6	4.0	.1	.9	200	140	7.3		U	
187	1.8	5.2	.0	.1	198	147	8.0		U	
151	7.6	6.5	.4	.7	*170	108	7.2		U	Open hole below 145 ft.
149	3.5	27	.3		185	140			W	Open hole below 118 ft.
6	2.6	2.0	0.1	0.3	20	7	5.6		U	
23	5.4	3.9	.5	.6	50	15	6.4		U	
9	7.2	1.5	0.1	0.2	39	8	5.7		U	
3	.6	2.0	.0	.0	16	4	5.3	3	U	
3	.6	2.0	.0	.1	18	3	5.4		U	
10	4.9	2.2	.0		25	13	5.8		W	
2	1.7	2.5	0	0	19	3	5.1	0	U	
2	2.4	2.2	.0	.4	19	4	5.8	10	U	
28	3.2	1.8	.1	1.6	39	30	6.8	4	U	

Table 4. Continued

Well No.	Location Crow-flight distance from town center	Date	Depth and aquifer	Silica	Iron	Manganese	Calcium	Magnesium	Sodium	Potassium
LEXINGTON COUNTY (cont.)										
141	Gaston	11/78	269/C	6.6	0.04	0.01	0.9	1.0	4.6	0.8
163	Swansea	4/83	302/C	7.5	.07	.00	.1	.2	1.6	.4
182	Pineridge, 3 mi SE	4/83	137/C,A	5.3	.00	.00	.2	.1	.8	.5
191	Swansea, 3 mi SE	6/82	425/C	5	.05	.00	.4	.2	3.3	.1
192	Gilbert, 5 1/2 mi SSE	6/82	263/C	5	.01	.00	.6	.4	1.6	.1
249	South Congaree, 3 mi SE	4/83	388/C	4.7	.04	.00	.2	.4	3.1	.5
250	Gaston, 3 1/2 mi W	4/83	288/C	5.3	.03	.00	.2	.3	2.2	.4
577	Lexington, 3 mi SSW	4/83	118/C	4.7	.01	.00	.1	.2	3.0	.4
609	Steedman, 3 1/2 mi NE	6/82	230/C	5	.12	.03	9.0	3.6	4.2	3.3
645	Gilbert, 5 mi SE	6/82	130/C	5	.02	.00	.5	.5	3.2	.5
697	Steedman, 1 1/2 mi NNE	6/82	150/C	5	.04	.00	2.4	1.8	3.4	1.5
738	Gilbert	2/84	142/C	7.1	.00	.00	.6	.5	1.7	.4
791	Pelion, 2 1/2 mi E	5/85	240/C	5	.07		1.3	.5	(1.2)	
MARION COUNTY										
1	Marion	11/60	150/C	47	0.39	0.08	23	2.0	6.1	3.5
37	Marion	2/50	378/C	38	.26	.00	2.0	.9	(43)	
38	Marion	3/84	450/C	35	.12	.01	9.2	1.2	53	2.8
42	Marion	8/81	580/C	45	.28	.02	2.5	.7	33	4.7
56	Mullins	5/57	386/C	43	.65	.10	2.0	1.5	40	5.7
62	Marion	3/84	735/C	36	.11	.01	10	1.7	66	2.8
69	Sellers, 2 mi SW	3/84	360/C	33	.14	.00	5.9	1.3	38	4.9
77	Britton Neck, 4 mi SSE	5/82	355/C	14	.01	.00	1.4	.2	120	4.1
78	Britton Neck, 4 mi SSE	4/82	537/C	17	.04	.00	2.3	.5	190	3.7
		4/82	768/C	24	.12	.01	1.7	.4	180	2.2
		4/82	831/C	34	2.2	.09	12	3.4	580	6.1
		4/82	1,030/C	32	5.5	.09	9.9	2.6	480	6.6
		4/82	1,140/C	9.5	1.6	.4	42	12	1,000	12
MARLBORO COUNTY										
1	Clio	5/47	150/C	12	0.50		2.6	0.5	3.3	3.3
5	McColl	5/47	120/C	6	2.0		1.9	1.0	(16)	
28	Wallace, 12 mi NW of Bennettsville	6/58	98/C	36	6.5	.08	5.7	2.4	14	3.1
30	McColl	6/58	190/C	12	.03		1.6	.7	12	1.6
109	Blenheim, 4 mi WSW	5/57	357/C	16	4.4	.10	19	10	34	8.2
110	Blenheim, 4 mi WSW	4/58	115/C	16	.01		1.6	.2	2.3	2.1
147	Clio, 2 3/4 mi WSW	5/84	167/C	14	.89	.01	1.1	.3	2.2	2.4
156	Bennettsville, 4 mi S	/84	124/C	11	.06	.03	.7	.4	4.4	1.6
168	Blenheim, 2 mi SE	5/84	160/C	9	.26	.04	1.4	1.8	9.6	2.3
ORANGEBURG COUNTY										
3	Springfield	6/58	138/F	15	0.01	0.00	5.6	0.5	1.4	0.4
8	Holly Hill	11/55	278/B	17	.31		44	3.3	7.7	3.4
10	Elloree	10/56	135/F	31	.09		30	3.1	3.7	3.0
18	Orangeburg	11/60	320/B	19	1.5		22	2.7	(5.5)	
24	North	6/54	200/F	10	.46		.9	.2	1.4	.7
26	Branchville	1/56	278/B	17	.02	.02	57	3.2	3.0	2.8
36	North, 2 1/2 mi E	2/63	174/F	5.2	.28		.6	.2	4.6	.1
37	North	6/58	124/F	10	.01	.00	1.4	1.2	10	.6
48	Orangeburg, S edge	9/63	127/F	26	.11	.02	47	2.3	5.0	3.2
49	Orangeburg, 2 1/4 mi SSE	1/65	912/C	16	.00		3.0	0.4	2.3	6.5
80	Orangeburg, 5 mi S	1/71	965/C	18	.80	0	10	4	18	
RICHLAND COUNTY										
4	Hopkins, 4 mi E	5/83	125/C	5.6	0.16	0	0.8	0.4	3.3	0.1
40	Columbia (Dentsville area)	12/61	233/C	1.2	.31	.04	11	.1	6.3	4.1
48	Horrell Hill, 5 1/2 mi ENE	5/83	164/C	5.5	.01	0	.3	.3	1.9	.1
52	Eastover	5/83	112/C	6.0	.09	0	.8	.5	5.1	.2

Bicarbonate	Sulfate	Chloride	Fluoride	Nitrate	Dissolved solids	Hardness	pH	Color	Analyst U, USGS W, SCWRC	Remarks
2	.4	4.8	.0	2.7	31	6	6.4		U	
2	4.9	3.6	.0		19	1	8.2		W	
5	0	3.1	.0		12	1	5.3		W	
4	2.9	3.1	.0		20	2	5.6		W	Silica estimated.
4	2.7	3.1	.0		18	3	4.8		W	Silica estimated.
2	0	3.6	.0		14	2	5.2		W	
4	0	3.1	.0		14	2	5.9		W	
9	0	2.6	.0		16	1	6.1		W	
36	4.0	12	.1		59	36	5.4		W	Silica estimated.
12	0	22	.0		18	3	5.7		W	Silica estimated.
24	0	4.0	.0		30	13	5.7		W	Silica estimated.
2	3.1	3.8	.0	.0	19	4	5.5		W	
2	0	1.8	.0		10	5			W	Silica estimated.

Bicarbonate	Sulfate	Chloride	Fluoride	Nitrate	Dissolved solids	Hardness	pH	Color	Analyst U, USGS W, SCWRC	Remarks
84	6.0	3.5	0.2	0.0	133	66	7.0	3	U	
109	3.3	6.0	.7	.0	147	9	7.2	13	U	
126	7.0	8.3	.9		180	28	7.6		W	
92	.2	3.6	.3	.9	133	9	7.0		U	Top screen at 350 ft.
68	39	5.0	1.3	1.2	177	11	6.7	3	U	
142	14	12	.6		215	32	7.8		W	Top screen at 190 ft.
112	3.4	3.6	3.6		150	20	7.4		W	Top screen at 184 ft.
287	5.3	6.2	1.2	<.1	313	4	8.7		U	
485	<.2	36	4.7	<.1	496	8	8.6		U	
380	13	57	2.7	<.1	450	6	8.1		U	
819	118	359	.6	<.1	1,500	44	7.6		U	
886	124	373	.6	<.1	1,700	35	7.5		U	
428	525	1,300	6.7	<.01	3,500	153	8.0		U	

Bicarbonate	Sulfate	Chloride	Fluoride	Nitrate	Dissolved solids	Hardness	pH	Color	Analyst U, USGS W, SCWRC	Remarks
	6.0	2.5	0.1	0.0	33	9	6.6	1	U	
2	1.5	26	.1	4.4	66	9	4.9		U	
45	14	3.0	.0	.4	101	24	6.3		U	
	.3	16	.0	5.2	54	7	5.6		U	
37	7.6	97	.2	.7	290	92	6.3	3	U	Top screen at 107 ft.
6	3.0	3.0	.0	.3	31	5	5.3	0	U	
7	5.6	2.1	.0	.0	32	5	5.4		W	
2	7.4	5.9	.0	.0	32	4			W	
2	4.8	14	.0	.0	45	11	4.9		W	Top screen at 80 ft.

Bicarbonate	Sulfate	Chloride	Fluoride	Nitrate	Dissolved solids	Hardness	pH	Color	Analyst U, USGS W, SCWRC	Remarks
16	0.7	3.5	0.1	2.5	38	16	5.9	0	U	
164	5.2	4.0	.1	.2	167	123	7.3		U	
99	8.9	5.0	.2	1.5	136	88	7.2		U	
76	8.8	4.2	.2	.7	97	66	7.1		U	
	8.3	2.5	.0	.3	29	3	4.1	10	U	
190	1.7	5.0	.2	.0	193	155	7.1	5	U	
4	.8	4.0	.0	4.4	17	2	5.8	5	U	
0	.8	14	.0	14	52	8	4.5	0	U	
136	4.8	9.6	.1	9.7	175	128	7.5	4	U	
11	11	2.8	.1	.3	52	10	6.3		U	
16	12	4			75	41	6.2		U	

Bicarbonate	Sulfate	Chloride	Fluoride	Nitrate	Dissolved solids	Hardness	pH	Color	Analyst U, USGS W, SCWRC	Remarks
4	2.9	3.6	0.0	0.0	19	4	5.6		W	
24	3.2	19	.0	.5	58	28	6.7		U	Top screen at 98 ft.
2	3.1	4.2	.0		16	2	5.2		W	
5	0	4.7	.0	.0	16	4	6.0		W	

Table 4. Continued

Well No.	Location Crow-flight distance from town center	Date	Depth and aquifer	Silica	Iron	Manganese	Calcium	Magnesium	Sodium	Potassium
RICHLAND COUNTY (cont.)										
143	Hopkins, 2 1/2 mi N	11/56	294/C	8.3	0.00	0.03	0.4	0.5	0.9	0.1
196	Columbia, nr V.A. Hospital	8/62	85/C	6.2	.14	.03	1.4	.5	1.4	.2
305	Horrell Hill, 3 1/2 mi NNE	5/83	306/C	5.5	.22	0	3.4	.2	.8	.1
348	Wateree, 1 mi N	9/83	608/C	11	.62	.02	4.7	1.1	9.0	8.8
417	Horrell Hill, 3 1/2 mi NNE	5/83	172/C	6.2	.13	0	.7	.2	.9	.1
458	Gadsden, 3 1/2 mi NW	1/84	60/C	7.9	.13	.01	1.3	.9	3.5	.9
487	Weddell, 1/2 mi SW	9/85	150/C	6.9	.22	.01	1.4	.2	16	.3
502	Pontiac, 1 1/2 mi NW	9/85	135/C	5.6	0	0	.8	.1	4.8	.2
506	Weddell, 2 mi NE	7/86	130/C	5.1	.01	.00	.5	.8	2.2	.4
SUMTER COUNTY										
25	Wedgefield, 4 1/2 mi NNE	2/72	200/C	8.1	0.07		0.4	0.3	(3.8)	
30	Mayesville	5/47	180/C	13	1.6		42	1.2	(3.0)	
50	Mayesville, 2 mi SW	4/49	250/C	29	.91	0.06	11	3.9	(4.5)	
70	Wedgefield, 1 1/2 mi SSE	3/56	261/C	11	.02	.04	2.4	.7	2.2	3.4
73	Sumter	9/57	55/B	5.7	.02	.02	7.6	3.0	8.4	2.0
86	Shaw AFB	1/72	75/B	6.0	.30		.4	.2	(2.6)	
106	NW of Shaw AFB, Oakland Plant	1/63	299/C	11	.01	.06	2.4	.2	2.3	1.1
111	Sumter	5/65	608/C	11	1.5	.03	1.0	.6	2.0	1.4
137	Shaw AFB	2/72	292/C	8.8	.18		.2	.2	(39)	
160	Rembert, 1 1/2 mi NW	1/83	330/C	9.6	.02	.04	1.4	1.4	7.0	1.4
229	Shaw AFB	5/76	340/C	8.4	.17	.02	.5	.1	9.0	.5
WILLIAMSBURG COUNTY										
12	Kingstree	1/55	525/C	22	0.08	0.00	1.6	0.4	74	2.8
14	Lane, 3 mi SW	4/69	600/C	13	.18		1.5	.3	91	3.2
18	Hemingway	3/59	500/C	24	.07	.01	2.8	.5	101	4.2
25	Kingstree, 4 mi NNE	8/60	670/C	21	.48	.00	3.4	.4	72	2.8
31	Lane, 5 mi SE	5/69	972/C	1.5	.18		1.0	.1	75	1.5
34	Kingstree	8/69	716/C	19	.43	.03	5.0	.3	84	3.9
37	Hemingway	10/70	898/C	.8	.00		2.4	.0	151	2.7
54	Hemingway, 4 1/2 mi SE	2/69	325/C	26	.06	.01	1.5	.4	150	8.3
66	Kingstree, 5 mi NNE	1/70	740/C	15	4.6	.01	2.3	.3	60	2.9
115	Greeleyville, 4 mi SSW	4/80	119/B	10	.02	.01	38	1.6	3.0	1.5

Bi- carb- onate	Sul- fate	Chlor- ide	Fluor- ide	Ni- trate	Dis- solved solids	Hard- ness	pH	Color	Analyst U, USGS W, SCWRC	Remarks
3	1.3	1.3	.0	.0	17	3	5.2	2	U	
6	.4	2.9	.1	1.9	18	6	6.4	5	U	
23	3.1	2.6	.0	.0	27	9	6.9		W	
36	10	2.7	.2	.0	66	18	7.6		W	Top screen at 470 ft.
5	0	2.6	.0	.0	13	3	6.2		W	
4	5.5	5.0	.0	.0	27	4	6.6		W	
20	.0	.0	.0	.0	35	4	6.1		W	
2	2.5	1.8	.0	.0	17	2	5.1		W	
7	.0	2.5	.0	1.2	16	4	4.7		W	
0	2.0	3.1	0.0	5.2	23	2	4.3	0	U	
123	5.3	7.0	.0	.1	136	110	7.3	1	U	
48	10	2.2	.1	.1	84	44	6.8	6	U	
0	16	1.0	.1	.2	38	10	4.5	2	U	
2	.5	14	.2	37	93	35	4.9	7	U	
0	1.4	3.0	.0	2.4	16	2	4.5	0	U	
11	2.0	.6	.0	.6	25	7	5.9	6	U	Top screen at 265 ft.
2	7.8	4.3	.0	.1	29	5	5.3	1	U	Top screen at 336 ft.
95	1.0	4.4	.4	.4	102	2	6.9	0	U	
1	3.4	9.0	.2		34	9	5.4		W	Top screen at 110 ft.
12	6.2	2.8	.1	.6	36	2	6.1	1	U	Top screen at 240 ft.
147	7.7	3.0	1.9	0.9	207	6	8.7	7	U	
219	7.2	3.3	2.2	.2	231	5	8.5		U	
205	4.2	4.5	1.6	.3	277	10	9.1	15	U	Top screen at 310 ft.
160	9.5	15	1.8	.0	212	11	8.4	5	U	
173	11	5.2	.8	.1	202	3	9.1		U	
190	9.8	9.3	1.1	.1	224	14	7.8	15	U	Top screen at 320 ft.
350	5.2	31	2.0	.5	371	6	8.8	5	U	
380	7.2	10	2.3	.1	400	5	8.3	10	U	
158	6.8	3.9	.9	.6	180	6	8.5	40	U	
108	13	5.5	.1		126	101	8.0		W	Open hole below 79 ft.