U.S. Department of the Interior
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HYDROGEOLOGY OF, WATER WITHDRAWAL FROM, AND WATER LEVELS AND CHLORIDE CONCENTRATIONS IN THE MAJOR COASTAL PLAIN AQUIFERS OF GLOUCESTER AND SALEM COUNTIES, NEW JERSEY

Water-Resources Investigations Report 98-4136

Prepared in cooperation with the

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

USGS
science for a changing world

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U.S. DEPARTMENT OF THE INTERIOR

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CONVERSION FACTORS, VERTICAL DATUM, AND ABBREVIATED WATER-QUALITY UNITS

Multiply	By	To obtain
	Length	
inch (in.)	25.4	millimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
	Area	
square mile (mi^2)	2.590	square kilometer
	Volume	
gallon (gal)	3.785	liter
	Flow	
foot per day (ft / d)	0.3048	meter per day
gallon per day (gal / d)	0.003785	cubic meter per day
million gallons per day (Mgal / d)	0.04381	cubic meter per second
million gallons per year (Mgal / yr)	10.36411	cubic meter per day
	Hydraulic conductivity	
feet per day (ft / d)	0.305	meters per day
	Transmissivity	
foot squared per day (ft^2 / d)[1]	0.09290	meter squared per day

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

Water-quality abbreviation:

mg / L - milligrams per liter

[1] This unit is used to express transmissivity, the capacity of an aquifer to transmit water. Conceptually, transmissivity is cubic feet (of water) per day per square foot (of aquifer area) times feet (of aquifer thickness), or (ft^3 / d) / ft^2 x ft. In this report, this expression is reduced to its simplest form, ft^2 / d.

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ABSTRACT

Eight aquifers underlying Gloucester and Salem Counties in the southwestern Coastal Plain of New Jersey provide nearly all the drinking water for the 295,000 people who live in the area. Ground-water withdrawals in the two-county area and adjoining counties have affected water levels in several of these aquifers. Ground-water withdrawals in the two-county area also have affected the quality of water, increasing the chloride concentration in several of the aquifers as a result of saltwater intrusion. This report contains hydrologic data from the two-county area, including geometry and extent of hydrogeologic units, thickness and altitude of each aquifer, withdrawals from and water levels in major aquifers, and chloride concentrations in water from each aquifer.

Reported ground-water withdrawals in Gloucester and Salem Counties during 1975-95 averaged 7,800 Mgal/yr (million gallons per year) for public supply, 4,900 Mgal/yr for industrial use, 700 Mgal/yr for irrigation, 500 Mgal/yr for power plants, 50 Mgal/yr for commercial use, and about 40 Mgal/yr for mining. Withdrawals for domestic self-supply in 1994 are estimated to be about 2,600 Mgal/yr, but only about 20 percent (520 Mgal/yr) is thought to be consumptive use; the remainder is returned to the aquifer through septic systems. The most heavily used aquifer in Salem and Gloucester Counties is the Upper Potomac-Raritan-Magothy aquifer, followed by, in decreasing order of use, the Middle Potomac-Raritan-Magothy aquifer, the Lower Potomac-Raritan-Magothy aquifer, the Kirkwood-Cohansey aquifer system, and the Wenonah-Mount Laurel aquifer. Reported withdrawals from these aquifers during 1975-95 averaged 5,000, 3,700, 3,200, 1,200, and 330 Mgal/yr, respectively.

Withdrawals from the Wenonah-Mount Laurel aquifer in Gloucester County increased during 1993-96 because of New Jersey Department of Environmental Protection restrictions on new withdrawals from the deeper Potomac-Raritan-Magothy aquifer system. Because of the increased rate of withdrawal, water-level altitudes in the Wenonah-Mount Laurel aquifer in some parts of the two counties in 1996 were from 5 to 40 ft lower than water levels measured in 1993 and previous years, reaching a low of almost 40 ft below sea level in Washington Township, Gloucester County. Ground water in the Upper, Middle, and Lower Potomac-Raritan-Magothy aquifers in the study area is withdrawn from the outcrop areas near the Delaware River downdip to the Glassboro vicinity. Water-level altitudes in 1993 in the three aquifers were near sea level in

the outcrop areas near the Delaware River, but were as low as 80 ft below sea level in parts of Gloucester County that were affected by withdrawals in Camden County and were 20 to 60 ft below sea level near major withdrawal centers in the study area.

Chloride concentrations in water samples from selected wells in seven aquifers throughout Gloucester and Salem Counties have been monitored since 1949. These aquifers include the Kirkwood-Cohansey aquifer system, the Vincentown and Wenonah-Mount Laurel aquifers, the Englishtown aquifer system, and the Upper, Middle, and Lower Potomac-Raritan-Magothy aquifers. The results of chloride analyses of 4,221 samples from 496 wells indicate the extent and magnitude of saltwater intrusion in these aquifers, six of which have been affected to varying degrees by saltwater intrusion. The confined Piney Point aquifer and the unconfined Kirkwood-Cohansey aquifer system show no measurable effects of saltwater intrusion in the study area. Chloride concentrations in water from selected public-supply wells screened in the Upper, Middle, and Lower Potomac-Raritan-Magothy aquifers have increased over time in communities along the Delaware River and further inland in both Gloucester and Salem Counties. Elevated chloride concentrations in the Potomac-Raritan-Magothy aquifer system are widespread in this area but rarely exceed the drinking-water standard of 250 milligrams per liter.

INTRODUCTION

Gloucester and Salem Counties, New Jersey (fig. 1), have experienced varying degrees of population growth and development that is expected to continue in the future. As the population of this area continues to increase, the demand for potable water will increase. Both counties currently (1997) derive nearly all their drinking-water supplies from ground water. The primary source of ground water is the Potomac-Raritan-Magothy aquifer system. Smaller amounts are withdrawn from the Kirkwood-Cohansey aquifer system and the Wenonah-Mount Laurel aquifer.

Declining water levels in the Potomac-Raritan-Magothy aquifer system in southern New Jersey prompted the State of New Jersey to establish Water Supply Critical Area II in 1993. Most of Gloucester County and a small part of eastern Salem County are within Water Supply Critical Area II (fig. 1). Major water users in this area are required to reduce withdrawals from the Potomac-Raritan-Magothy aquifer system by an average of 22 percent of their 1990 withdrawals (New Jersey Assembly, 1993, section 6).

Municipalities and industries both inside and outside the Critical Area that rely on the aquifer system also have concerns about saltwater contamination of the aquifer. The western part of the two-county area along the Delaware River is highly industrialized and lies on the outcrop area of the Potomac-Raritan-Magothy aquifer system. This aquifer system is the source of water for all the industry and residential communities in the area. Water purveyors have noted increasing chloride concentrations in areas where heavy pumping has induced saline water from the Delaware River to flow into the aquifers. In addition, some shallow wells in Salem County are at risk for saltwater contamination because the tidal influence from the Delaware River and Bay extends some distance inland.

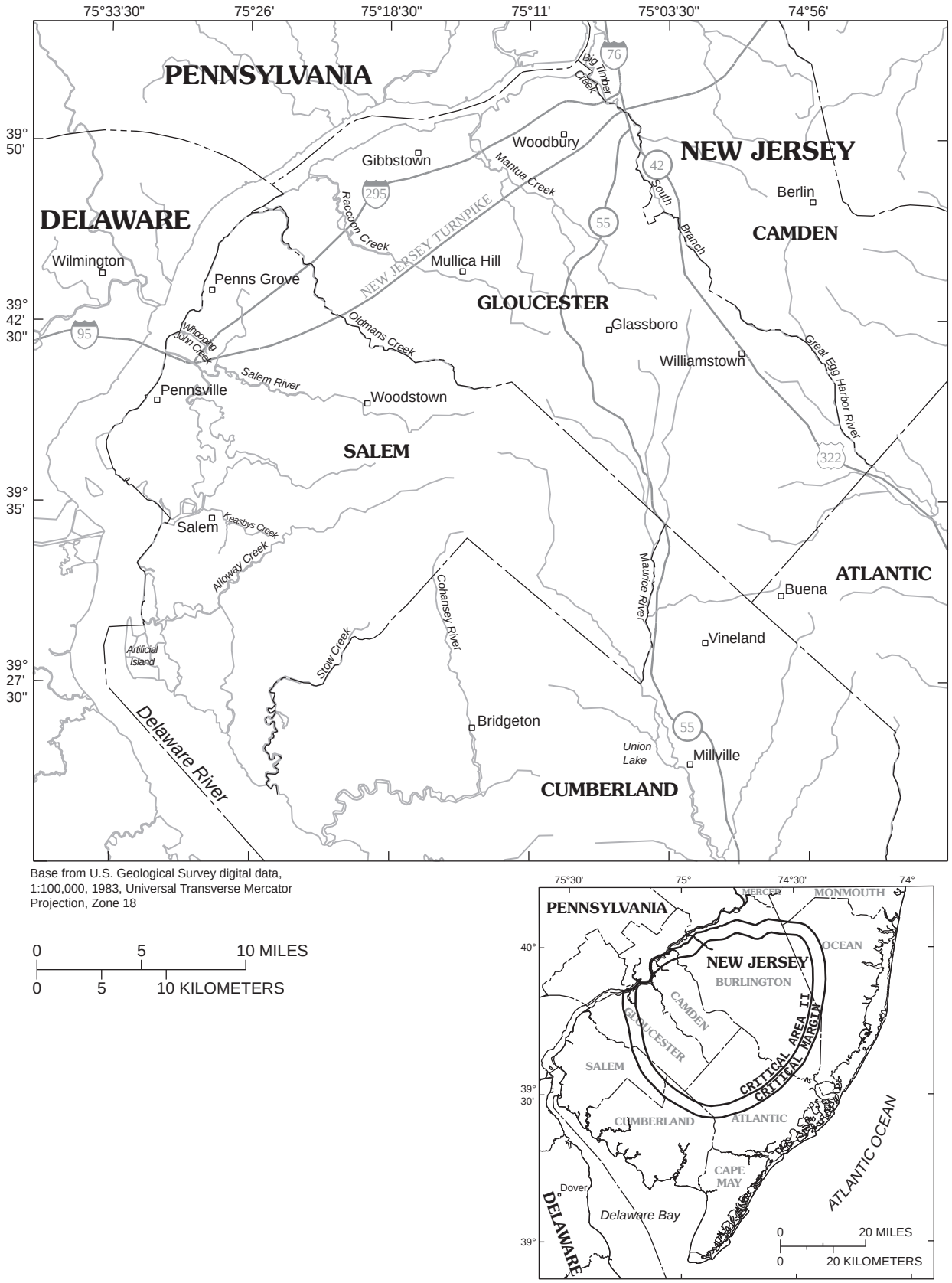


Figure 1. Location of Gloucester and Salem Counties and Water Supply Critical Area II in southern New Jersey.

The Potomac-Raritan-Magothy aquifer system beneath interior communities in both counties is affected by older saline water from downdip. Major water users have had to seek out other sources of potable water. Increased reliance on the Wenonah-Mount Laurel aquifer or the Kirkwood-Cohansey aquifer system is problematic. Wells completed in the Wenonah-Mount Laurel aquifer have low yields, causing high drawdowns and well-field interference, and contain water bearing high concentrations of dissolved iron. The Kirkwood-Cohansey aquifer system is sufficiently thick to support large withdrawals of water only in the eastern part of the study area. As the region's unconfined water-table aquifer, it is subject to various types of point- and nonpoint-source contamination, and increased withdrawals from it could decrease stream baseflow. Withdrawals from the Piney Point and Vincentown aquifers may be possible in some parts of the Critical Area, but both these aquifers are limited in extent and little is known about their ability to supply large quantities of water.

To address these concerns, the U.S. Geological Survey (USGS), in cooperation with the New Jersey Department of Environmental Protection (NJDEP), investigated the ground-water resources of Gloucester and Salem Counties. A study of the available sources of ground water in the two-county area is necessary to assess the potential for future supplies of potable water. Of particular importance is determining the feasibility of increasing ground-water withdrawals to meet increasing demand without adversely reducing stream baseflow.

Purpose and Scope

This report summarizes the ground-water resources of Gloucester and Salem Counties, New Jersey. It describes the hydrogeology of Gloucester and Salem Counties, documents ground-water withdrawals and their effect on water levels in the primary aquifers in the two-county area, and presents information on saltwater intrusion in the aquifers.

Site Description

Gloucester and Salem Counties cover about 684 mi^2 in southwestern New Jersey. They are bounded on the west by the Delaware River and on the east by Atlantic and Cumberland Counties (fig. 1). Salem County is also bounded by the Delaware Bay to the south, and Gloucester County is bounded by Camden County to the north. Land-surface elevation in the two-county area ranges from sea level near the Delaware River and Bay to more than 170 ft in parts of southeastern Washington Township, Gloucester County (fig. 2). Streams in the eastern part of the two-county area drain to the Delaware Bay and the Atlantic Ocean, whereas streams in the western part drain to the Delaware River. The area receives about 44 in. of precipitation per year.

Land use is more than 70 percent agricultural and forested, with a large band of industrial development along the Delaware River. The completion of State Highway 55 through central Gloucester County has resulted in increased residential development in this part of the State. The 1990 census recorded approximately 230,000 residents in Gloucester County and 65,000 residents in Salem County (New Jersey Department of Labor, 1991).

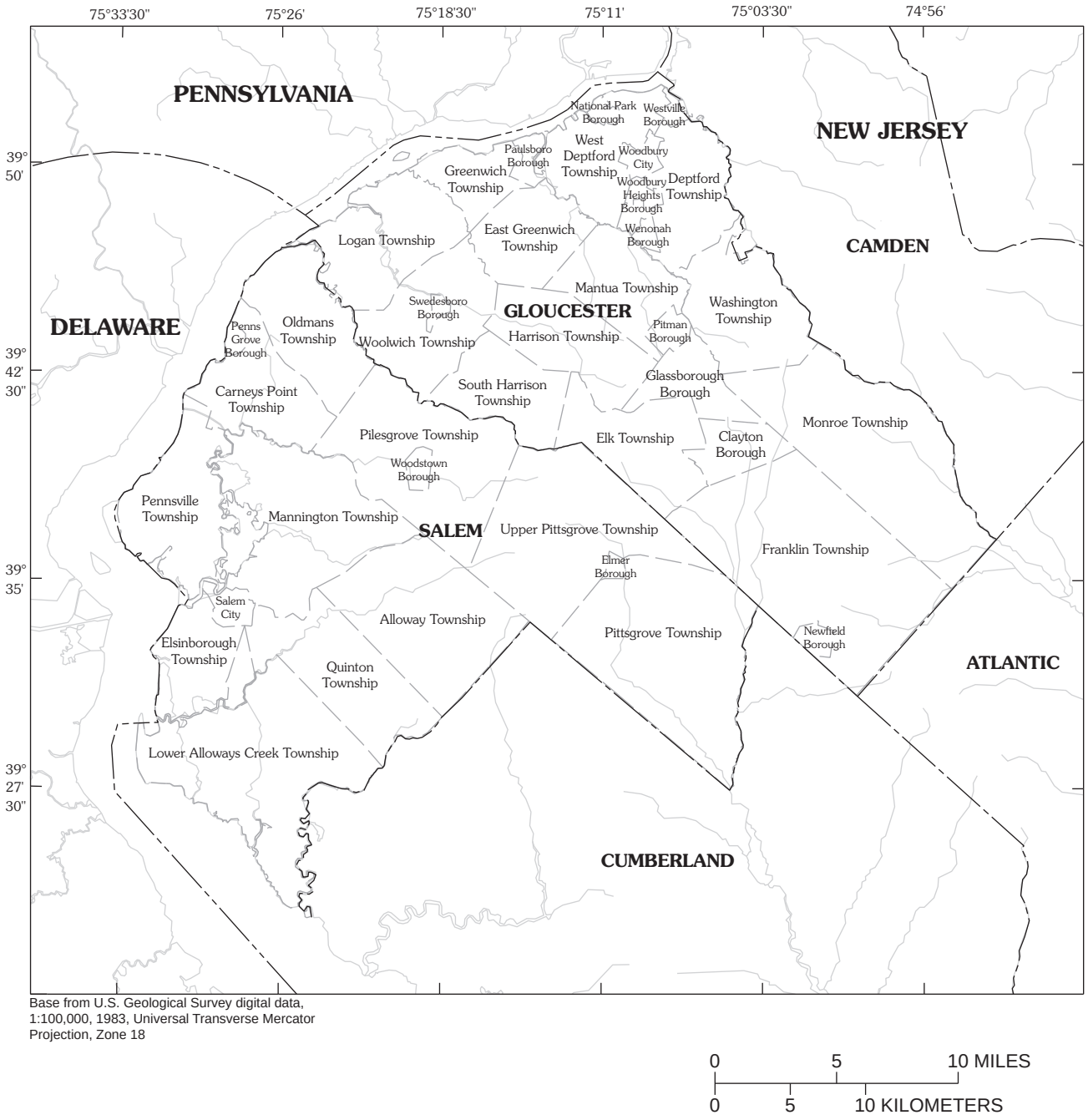


Figure 2. Location of townships in Gloucester and Salem Counties, New Jersey.

Previous Investigations

Several ground-water-resource studies have been undertaken in the two-county area. Barksdale and others (1958) studied the water resources of southwestern New Jersey, southeastern Pennsylvania, and northern Delaware. In compliance with the 1958 Water Supply Law, a series of reports was written examining the water resources of the counties in New Jersey. The Gloucester County report was completed by Hardt and Hilton (1969), and the Salem County report was completed by Rosenau and others (1969).

Hydrologic studies of the unconfined aquifer system have covered most of Salem County and the southwestern and the eastern parts of Gloucester County (Johnson and Charles, 1997; Lacombe and Rosman, 1995; E. G. Charles, U. S. Geological Survey, written commun., 1998). A detailed study of the hydrogeology in and around Greenwich Township, Gloucester County, was completed by Barton and Kozinski (1991), and Lewis and others (1991) examined the hydrogeology and ground-water quality in and around Logan Township, Gloucester and Salem Counties. A comprehensive report describing the hydrogeology of the entire Coastal Plain of New Jersey can be found in Zapecza (1989). The geology of the Kirkwood Formation is described in Isphording (1970), and the geology of more recent surficial deposits is described in Owens and Minard (1979). The geology of Gloucester and Salem Counties is described in detail in Owens and others (1995a) and Owens and others (1995b). The surficial geology of Salem County and most of Gloucester County is described in detail in Newell and others (1996).

The presence and distribution of chloride in the aquifers that underlie Gloucester and Salem Counties were described by several authors as part of larger, regional studies (Barksdale and others, 1958; Parker and others, 1964). Chloride concentrations in all aquifers across the Coastal Plain of New Jersey have been the focus of Seaber (1963) and Schaefer (1983). County and township-scale investigations of the hydrogeology and water resources of Gloucester County (Hardt and Hilton, 1969), Salem County (Rosenau and others, 1969), and Logan Township in Gloucester County (Lewis and others, 1991) have examined the effects of saltwater intrusion in their respective areas. Investigations of salty ground water in the northern Atlantic Coastal Plain have explored the relation between fresh and salty ground water (Upson, 1966) and the presence, extent, and geochemistry of salty ground water (Meisler, 1989).

Well-Numbering System

The well-numbering system used in this report and accompanying plates has been used by the USGS in New Jersey since 1978. The well number consists of a county code number and a sequence number assigned to the well in the county. County code numbers used in this report are 1--Atlantic, 7--Camden, 11--Cumberland, 15--Gloucester, and 33--Salem. For example, well 33-354 is the 354th well inventoried in Salem County.

HYDROGEOLOGY

Gloucester and Salem Counties are in the Atlantic Coastal Plain physiographic province and are underlain by a series of unconsolidated sediments that are Early Cretaceous to Holocene in age. These sediments generally consist of gravel, sand, silt, and clay, and represent a variety of continental, coastal, and marine depositional environments. These sediments comprise a seaward-dipping wedge of alternating sands and clays that have formed the region's aquifers and confining units. The Coastal Plain sediments of New Jersey have been studied by many investigators over the past 50 years. This report follows the hydrogeologic nomenclature of Zapecza (1989). This nomenclature is presented in table 1 in stratigraphic order from the youngest sediments (at the top) to the oldest (at the bottom of the table). Major aquifers and aquifer systems in the two-county area include the Kirkwood-Cohansey aquifer system, the Wenonah-Mount Laurel aquifer, and the Upper, Middle, and Lower aquifers of the Potomac-Raritan-Magothy aquifer system. Aquifers that are less important because they are thin and (or) of limited geographic extent include the Piney Point aquifer, the Vincentown aquifer, and the Englishtown aquifer system. The subsurface geometry of all the aquifers and intervening confining units is presented in two intersecting hydrogeologic sections on plate 1.

Kirkwood-Cohansey Aquifer System

The Kirkwood-Cohansey aquifer system is unconfined in Gloucester and Salem Counties. It is composed of the Pensauken and Bridgeton Formations of late Miocene age, the Cohansey Formation of middle Miocene age, and the Shiloh Marl (Owens and others, 1995a, p. 9, 28) and Kirkwood Formation of early Miocene age. The Pensauken and Bridgeton Formations were deposited in a fluvial environment and are typically thin and patchy (Owens and Minard, 1979). The Pensauken Formation is composed of interbedded arkosic sand and coarse, gravelly sands, and is present in a narrow band near the Delaware River (Owens and Minard, 1979). The Bridgeton Formation is an arkosic sand that locally contains lenses of fine gravel. These formations are present in the upland areas of the two counties, roughly 6 to 8 mi inland from the Delaware River and Bay (Owens and Minard, 1979).

The Cohansey Formation is a white, yellow, or grey medium sand that weathers to yellow, brown, red, or orange (Owens and others, 1995a, p. 6, 7, 24) and contains discontinuous interbedded clays. The Shiloh Marl is a massive, grey clay and sand that is present in the subsurface only in the extreme southwestern corner of the study area. It overlies the Kirkwood Formation where the Cohansey Formation has been removed (Owens and others, 1995a, p. 9, 28). The Kirkwood Formation is a fine to medium, white to pale grey sand that weathers to dark yellow, orange, brown, or red (Owens and others, 1995a, p. 9, 29). In the subsurface, the formation is principally a dark-grey, massive clay.

Table 1. Geologic and hydrogeologic units in the Coastal Plain of New Jersey

[Modified from Zapecza, 1989, table 2]

SYSTEM	SERIES	GEOLOGIC UNIT	LITHOLOGY	HYDROGEOLOGIC UNIT	HYDROLOGIC CHARACTERISTICS
Quaternary	Holocene	Alluvial deposits	Sand, silt, and black mud.	Undifferentiated	Surficial material, commonly hydraulically connected to underlying aquifers. Locally some units may act as confining units. Thicker sands are capable of yielding large quantities of water.
		Beach sand and gravel	Sand, quartz, light-colored, medium- to coarse-grained, pebbly.		
	Pleistocene	Cape May Formation	Sand, quartz, light-colored, heterogeneous, clayey, pebbly.		
Tertiary	Miocene	Pensauken Formation		Kirkwood-Cohansey aquifer system	A major aquifer system. Ground water generally is present under unconfined conditions. In Cape May County, the Cohansey Sand is under artesian conditions.
		Bridgeton Formation			
		Beacon Hill Gravel	Gravel, quartz, light-colored, sandy.		
		Cohansey Sand	Sand, quartz, light-colored, medium- to coarse-grained, pebbly, local clay beds.		
		Shiloh Marl	Clay, grey, massive.		
		Kirkwood Formation	Sand, quartz, gray and tan, very fine to medium-grained, micaceous, and dark-colored diatomaceous clay.	Confining unit	Thick diatomaceous clay bed occurs along coast and for a short distance inland. A thin water-bearing sand is present in the middle of this unit.
				Rio Grande water-bearing zone	
				Confining unit	
				Atlantic City 800-foot sand	A major aquifer along the coast.
				Composite confining unit	Poorly permeable sediments.
	Oligocene	Piney Point Formation	Sand, quartz and glauconite, fine- to coarse-grained.	Piney Point aquifer	Yields moderate quantities of water.
	Eocene	Shark River Formation			
		Manasquan Formation	Clay, silty and sandy, glauconitic, green, gray, and brown, contains fine-grained quartz.		Poorly permeable sediments.
	Paleocene	Vincentown Formation	Sand, quartz, gray and green, fine- to coarse-grained, glauconitic, and brown clayey, very fossiliferous, glauconite and quartz calcarenite.	Vincentown aquifer	Yields small to moderate quantities of water in and near its outcrop area.
		Hornerstown Sand	Sand, clayey, glauconitic, dark green, fine- to coarse-grained.		Poorly permeable sediments.
Cretaceous	Upper Cretaceous	Tinton Sand	Sand, quartz, glauconitic, brown and gray, fine- to coarse-grained, clayey, micaceous.	Red Bank Sand	Yields small quantities of water in and near its outcrop area.
		Red Bank Sand			
		Navesink Formation	Sand, clayey, silty, glauconitic, green and black, medium- to coarse-grained.		Poorly permeable sediments.
		Mount Laurel Sand	Sand, quartz, brown and gray, fine- to coarse-grained, slightly glauconitic.	Wenonah-Mount Laurel aquifer	A major aquifer.
		Wenonah Formation	Sand, very fine- to fine-grained, gray and brown, silty, slightly glauconitic.	Marshalltown-Wenonah confining unit	A leaky confining unit.
		Marshalltown Formation	Clay, silty, dark greenish-gray; contains glauconitic quartz sand.		
		Englishtown Formation	Sand, quartz, tan and gray, fine- to medium-grained; local clay beds.	Englishtown aquifer system	A major aquifer. Two sand units in Monmouth and Ocean Counties.
		Woodbury Clay	Clay, gray and black, and micaceous silt.	Merchantville-Woodbury confining unit	A major confining unit. Locally the Merchantville Formation may contain a thin water-bearing sand.
		Merchantville Formation	Clay, glauconitic, micaceous, gray and black; locally very fine-grained quartz and glauconitic sand are present.		
		Magothy Formation	Sand, quartz, light gray, fine- to coarse-grained. Local beds of dark gray lignitic clay. Includes Old Bridge Sand Member.	Potomac-Raritan-Magothy aquifer system: Upper aquifer	A major aquifer system. In the northern Coastal Plain, the upper aquifer is equivalent to the Old Bridge aquifer and the middle aquifer is equivalent to the Farrington aquifer. In the Delaware River Valley, three aquifers are recognized. In the deeper subsurface, units below the upper aquifer are undifferentiated.
				Confining unit	
		Raritan Formation	Sand, quartz, light gray, fine- to coarse-grained, poorly arkosic; contains red, white, and variegated clay. Includes Farrington Sand Member.	Middle aquifer	
				Confining unit	
	Lower Cretaceous	Potomac Group	Alternating clay, silt, sand, and gravel.	Lower aquifer	
Pre-Cretaceous		Bedrock	Precambrian and lower Paleozoic crystalline rocks, schist and gneiss; locally Triassic sandstone and shale, and Jurassic diabase are present.	Bedrock confining unit	No wells obtain water from these consolidated rocks, except along Fall Line.

The altitude of the base of the Kirkwood-Cohansey aquifer system (fig. 3) ranges from land surface at the western extent of the outcrop area to 150 ft below sea level at the southeastern boundary of Gloucester County. The aquifer system thins to a featheredge at the western extent of the outcrop area and thickens to 250 ft at the Gloucester County/Atlantic County boundary (fig. 4).

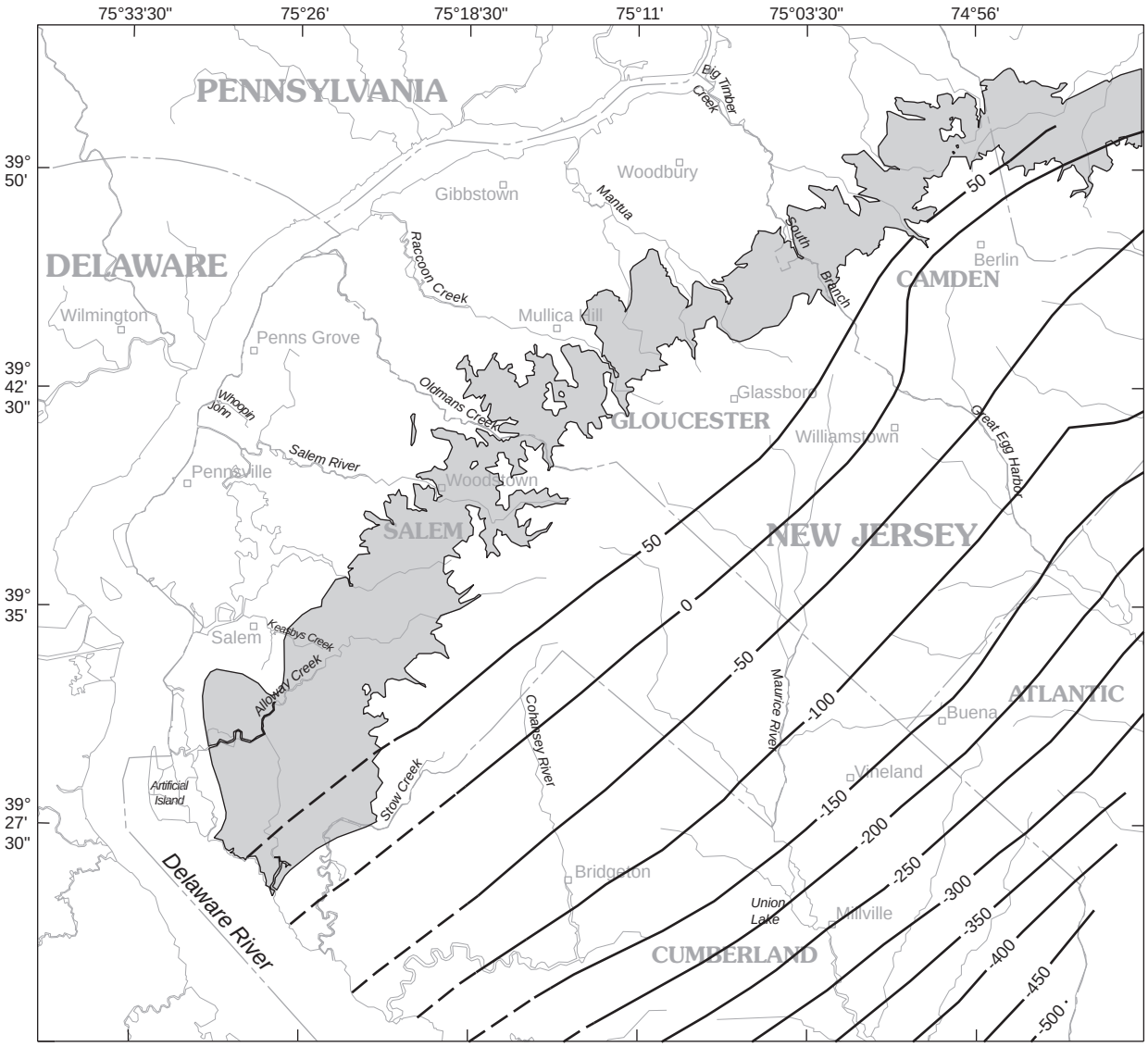
On the basis of aquifer tests conducted in Gloucester and Salem Counties, the transmissivity of the Kirkwood-Cohansey aquifer system in this area ranges from 4,000 to 8,300 ft^2/d (Rhodehamel, 1973). The same tests indicated hydraulic conductivities ranging from 90 to 250 ft/d and storage coefficients of 3×10^{-4} and 1.0×10^{-3}.

Composite Confining Unit

Below the Kirkwood-Cohansey aquifer system is the composite confining unit, which contains the Alloway Clay Member of the Kirkwood Formation; the Shark River, Manasquan, Hornerstown, and Navesink Formations; and the less permeable parts of the Piney Point and Vincentown Formations. The more permeable parts of the Piney Point and Vincentown Formations make up two small aquifers, the Piney Point aquifer and the Vincentown aquifer, both of which lie within the composite confining unit. Between the Kirkwood-Cohansey aquifer system and the Piney Point aquifer is the Alloway Clay Member of the Kirkwood Formation. The Alloway Clay Member is a massive, dark grey to dark brownish-grey clay or clay silt that lies at the base of the Kirkwood Formation (Owens and others, 1995a, p. 9, 29). Between the Piney Point aquifer and the Vincentown aquifer are the Shark River and Manasquan Formations. The Shark River Formation is a clayey to very clayey dark green to grey sand (Owens and others, 1995a, p. 33). The Manasquan Formation is a green to grey-green clay and clay-silt (Owens and others, 1995a, p. 33). Below the Vincentown aquifer are the Hornerstown and Navesink Formations, which are clayey, glauconitic, grey-green sands that weather to yellow or red-brown (Owens and others, 1995a, p. 10, 11, 35). Laboratory and aquifer tests performed on various clay units that make up the composite confining unit indicate vertical hydraulic conductivities that vary with the location and the geologic formation (table 2).

Table 2. Hydraulic characteristics of the composite confining unit in Cumberland, Gloucester, and Salem Counties, New Jersey

Geologic unit	Vertical hydraulic conductivity (feet per day)	Test type	Location	Reference
Alloway Clay	2.0×10^{-5} to 5.2×10^{-5}	Laboratory test	Cumberland County	Nemickas and Carswell, 1976
Hornerstown Sand	4	Laboratory test	Gloucester County	Rosenau and others, 1969
Navesink Formation and Hornerstown Sand	5.6×10^{-2}	Aquifer test	Salem County	Rosenau and others, 1969
Navesink Formation	9	Laboratory test	Gloucester County	Rosenau and others, 1969



EXPLANATION

OUTCROP AREA OF THE KIRKWOOD FORMATION (From Owens and others, 1995a, 1995b)

-50 STRUCTURE CONTOUR–Shows altitude of base of the Kirkwood-Cohansey aquifer system (Modified from Zapecza, 1989, pl. 23). Dashed where approximate. Interval 50 feet. Datum is sea level

Figure 3. Altitude of the base of the Kirkwood-Cohansey aquifer system in Gloucester and Salem Counties, New Jersey.

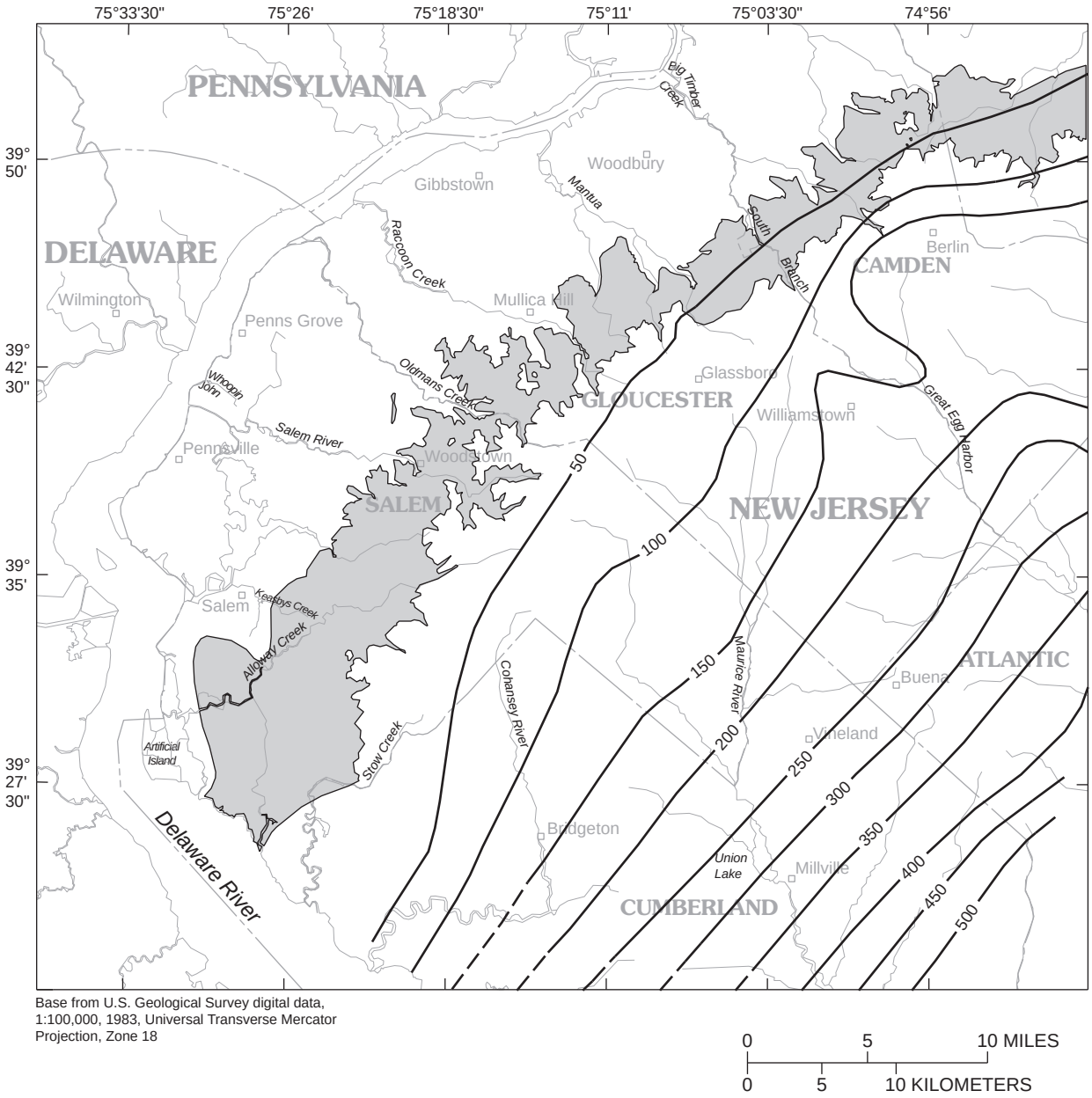


Figure 4. Thickness of the Kirkwood-Cohansey aquifer system in Gloucester and Salem Counties, New Jersey.

Piney Point Aquifer

The Piney Point aquifer has been associated with several geologic formations of different ages, including the middle Eocene Shark River Formation, the early Eocene Manasquan Formation, and the late Eocene Piney Point Formation found in Maryland (Zapecza, 1989, p. B16). Others have dated "Piney Point" sediments in New Jersey as late Oligocene (Olsson and others, 1980, in Zapecza, 1989, p. B16). To avoid confusion, some have discontinued the use of the name "Piney Point" to describe the sediments in New Jersey (Owens and others, 1988, p. 16). Owens and others (1995a) have called comparable sediments found in two boreholes in Atlantic County the To_2 cycle. These sediments consist of glauconitic quartz sand and shell beds with some local sandy silts and clays (Owens and others, 1995a, p. 30). The aquifer yields moderate amounts of water locally, but may be capable of supplying larger quantities of water in some areas (Zapecza, 1989, p. B16).

The Piney Point aquifer does not crop out in New Jersey; the altitude of the top of the aquifer in the subsurface ranges from 50 to almost 250 ft below sea level (fig. 5). The aquifer is present in the southeastern part of the two-county area; its thickness in this area reaches a maximum of 140 ft at the southern tip of Salem County (fig. 6).

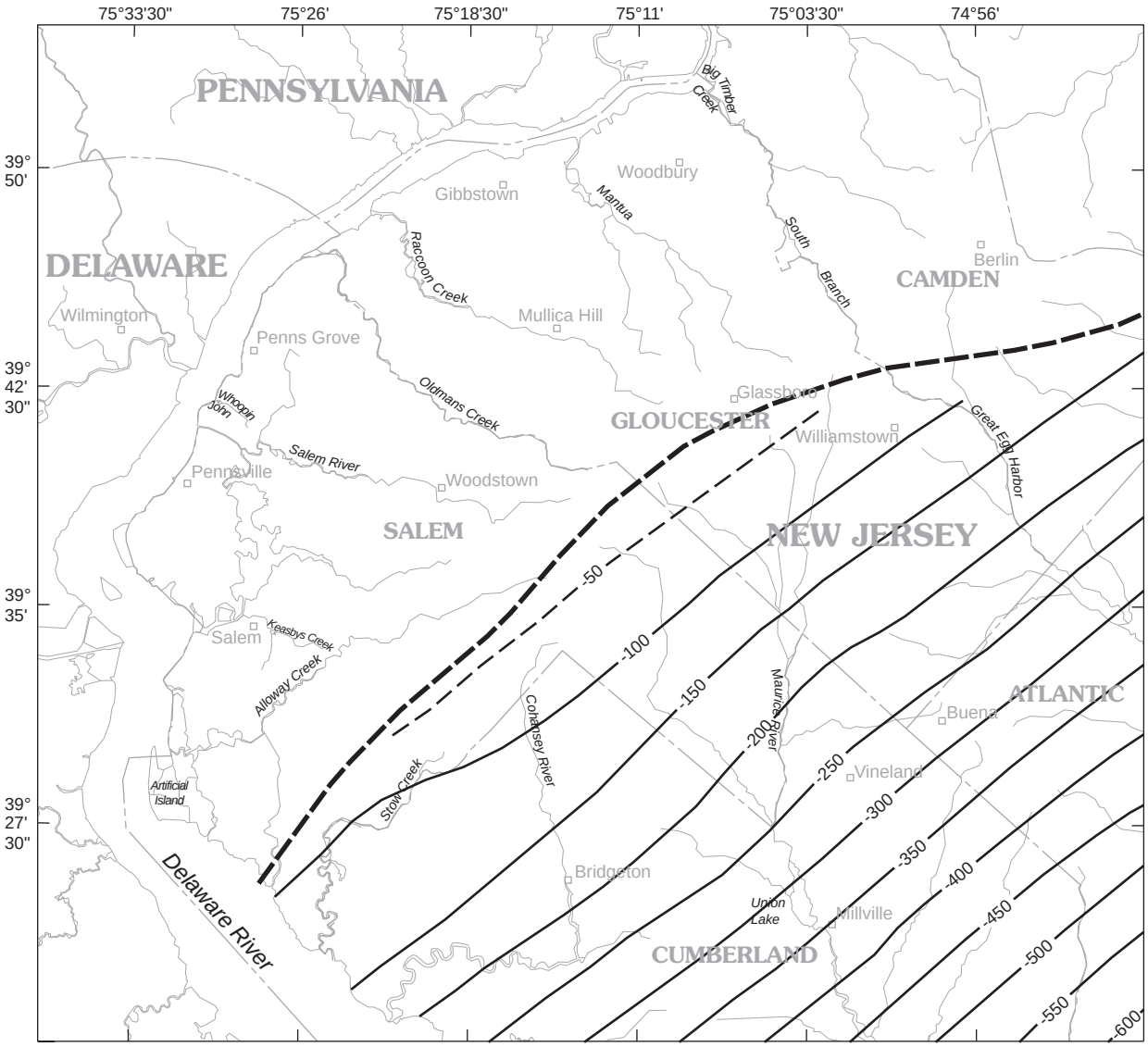
The transmissivity of the Piney Point aquifer is 1,400 ft^2/d, as determined from an aquifer test in Camden County (Rush, 1968). The same test indicated a hydraulic conductivity of 23 ft/d and a storage coefficient of 3×10^{-4}.

Vincentown Aquifer

The Vincentown aquifer is composed of the Vincentown Formation, which is a medium- to fine-grained, slightly to very clayey sand that is late Paleocene in age. The sediments are dusky yellow to grey, and weather to an orange or red-brown. The sediments also contain some glauconite. (See Owens and others, 1995a, p. 10, 34). In its outcrop area and about 8 to 10 mi downdip, the Vincentown Formation is moderately permeable and is an aquifer (Zapecza, 1989, p. B15). Farther downdip the Vincentown Formation is finer grained and more clayey and is part of the composite confining unit.

The Vincentown aquifer is exposed along the central part of the two-county area. The top of the aquifer ranges from more than 50 ft above sea level along the outcrop area to about 200 ft below sea level in southern Salem County, where it is more clayey (fig. 7). The aquifer thickness ranges from near zero in the outcrop area to 60 ft along Alloway Creek from Quinton west to its mouth near Artificial Island (fig. 8).

The transmissivity of the Vincentown aquifer, determined in a laboratory test of sediments from a site in Burlington County, is 530 ft^2/d (Rush, 1968). The hydraulic conductivity of the Vincentown aquifer at this site is 21 ft/d.



EXPLANATION

APPROXIMATE UPDIP LIMIT OF PINEY POINT AQUIFER IN THE SUBSURFACE

-50 STRUCTURE CONTOUR–Shows altitude of top of the Piney Point aquifer (Modified from Zapecza, 1989, pl. 20). Dashed where approximate. Interval 50 feet. Datum is sea level

Figure 5. Altitude of the top of the Piney Point aquifer in Gloucester and Salem Counties, New Jersey.

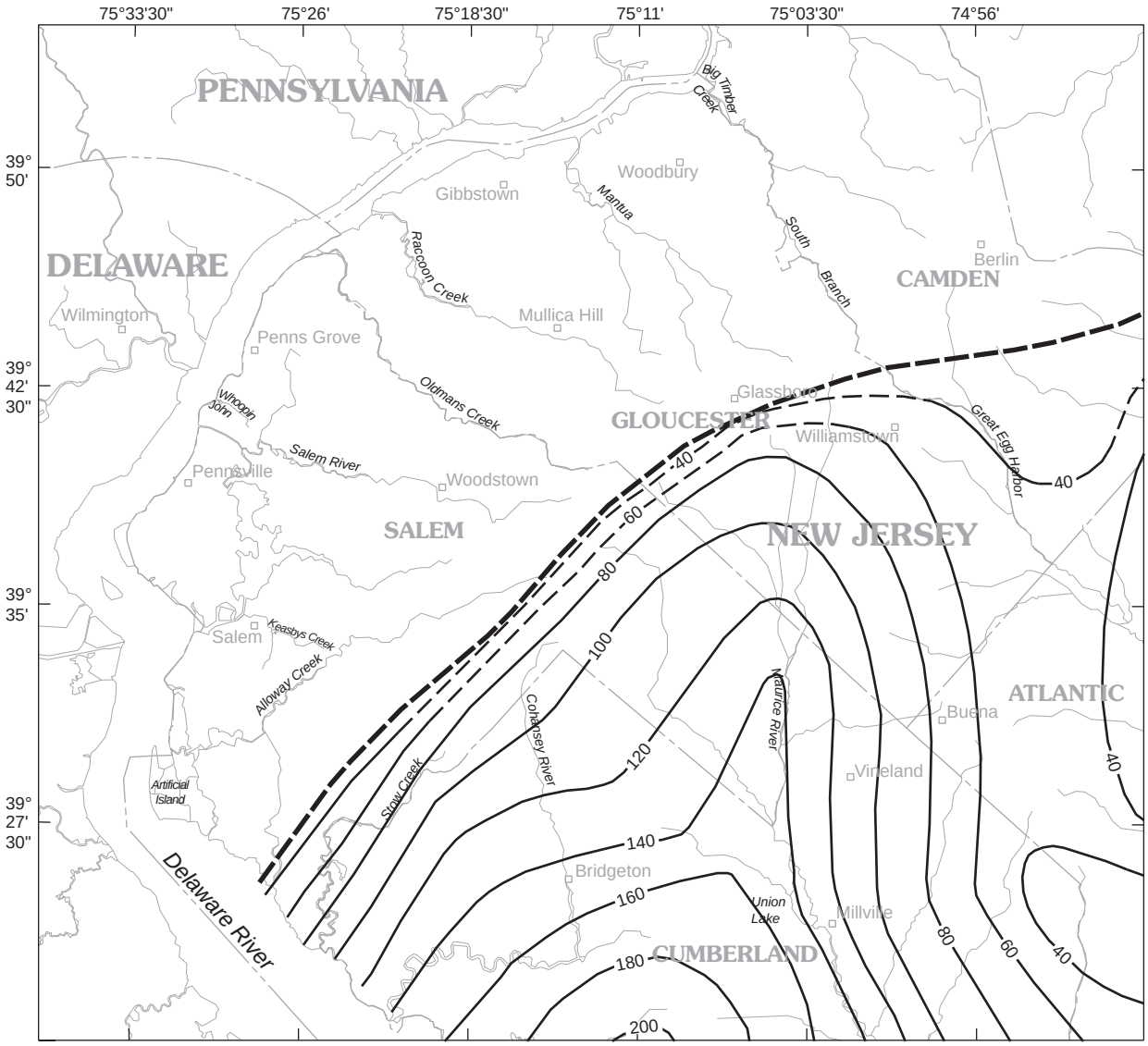
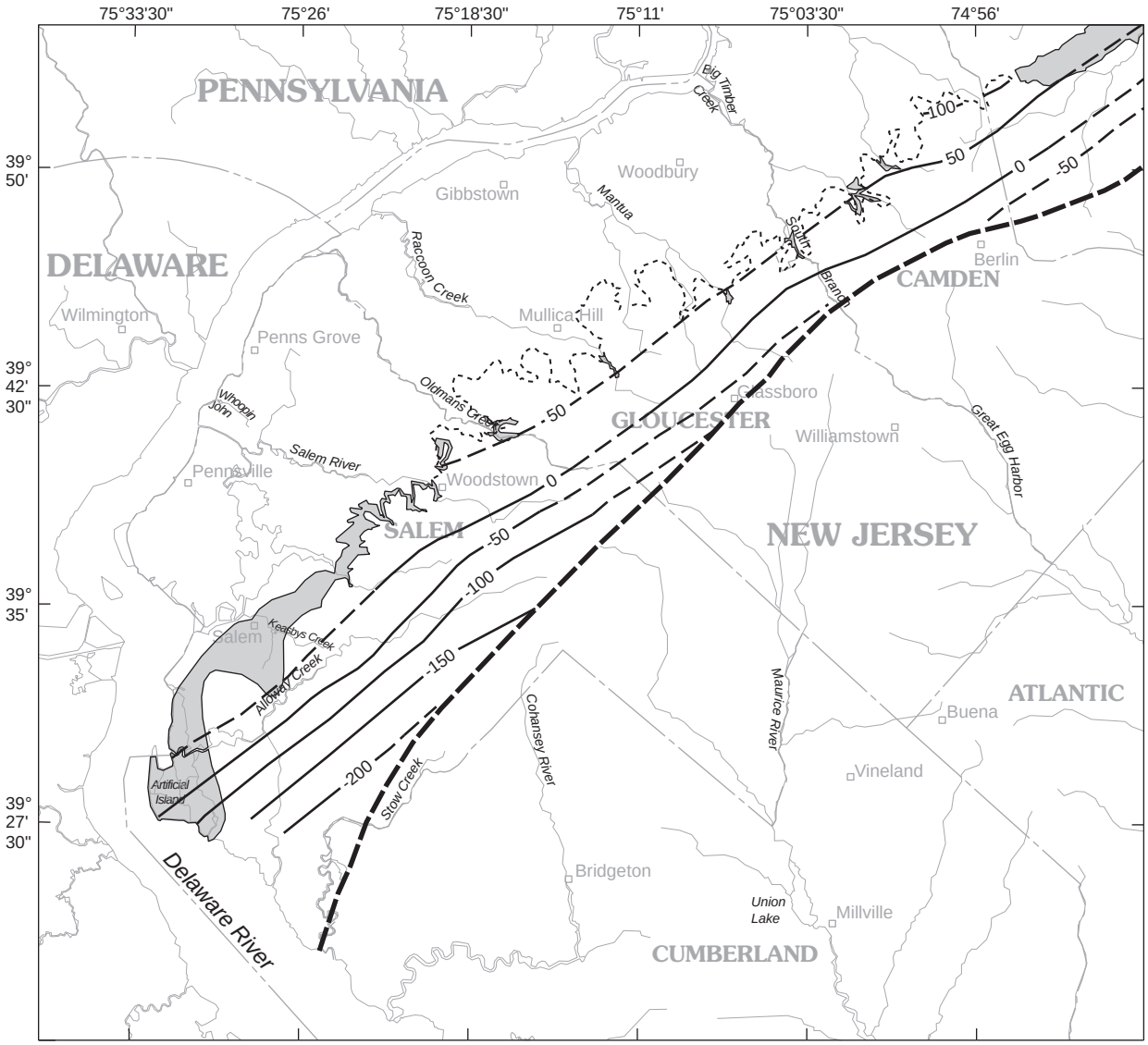


Figure 6. Thickness of the Piney Point aquifer in Gloucester and Salem Counties, New Jersey.



EXPLANATION

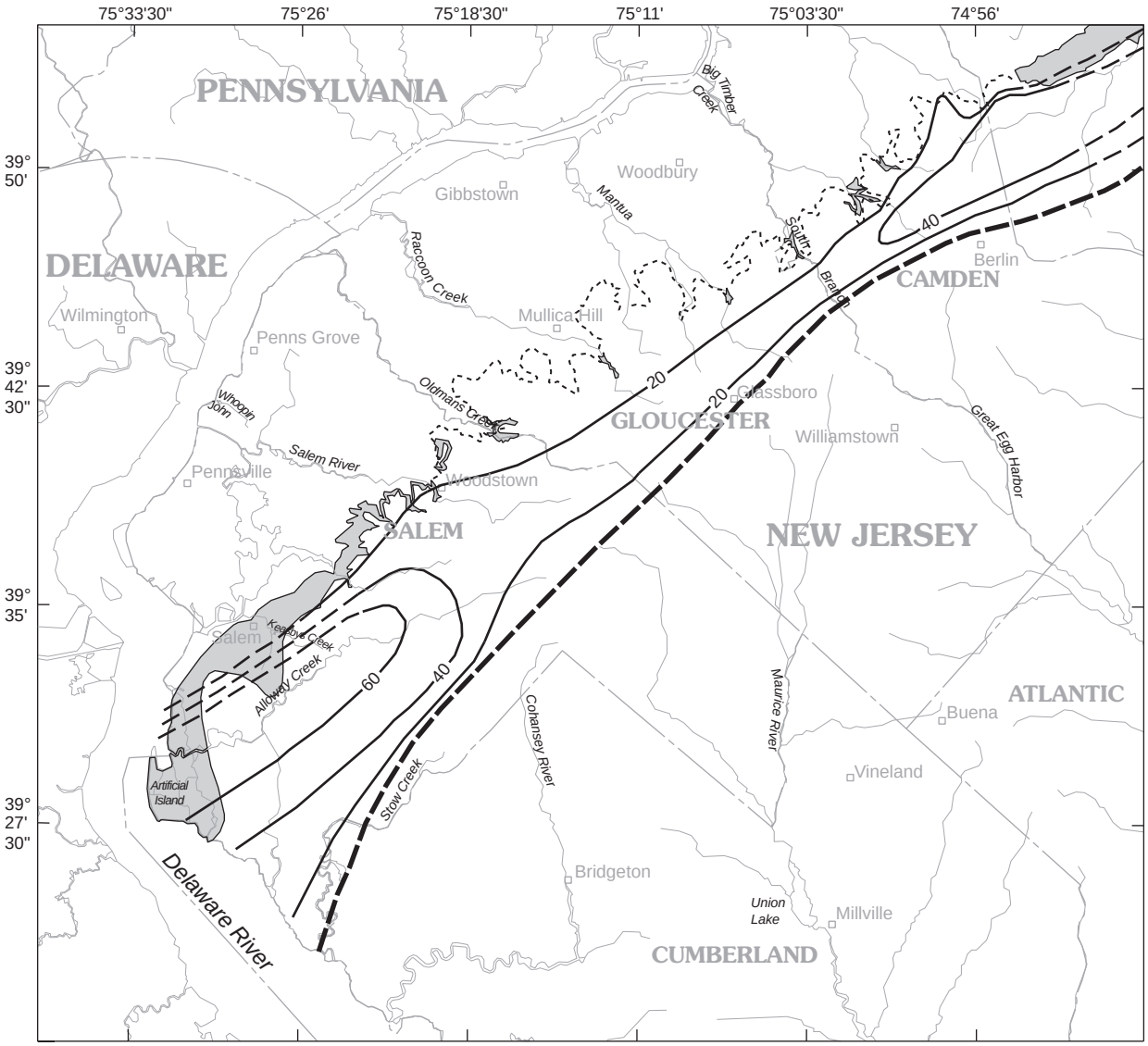
OUTCROP AREA OF THE VINCENTOWN FORMATION (From Owens and others, 1995a, 1995b)

DOWNDIP LIMIT OF THE VINCENTOWN AQUIFER IN THE SUBSURFACE

UPDIP LIMIT OF THE VINCENTOWN FORMATION SUBCROP

-50 STRUCTURE CONTOUR–Shows altitude of the top of the Vincentown aquifer (Modified from Zapecza, 1989, pl. 19A). Dashed where approximate. Interval 50 feet. Datum is sea level

Figure 7. Altitude of the top of the Vincentown aquifer in Gloucester and Salem Counties, New Jersey.



EXPLANATION

OUTCROP AREA OF THE VINCENTOWN FORMATION
(From Owens and others, 1995a, 1995b)

DOWNDIP LIMIT OF THE VINCENTOWN AQUIFER IN THE SUBSURFACE

UPDIP LIMIT OF THE VINCENTOWN FORMATION SUBCROP

-50

LINE OF EQUAL THICKNESS OF THE VINCENTOWN AQUIFER
(Modified from Zapecza, 1989, pl. 19B)–Dashed where approximate.
Interval 20 feet.

Figure 8. Thickness of the Vincentown aquifer in Gloucester and Salem Counties, New Jersey.

Wenonah-Mount Laurel Aquifer

The Wenonah-Mount Laurel aquifer lies below the composite confining unit and is composed of the Mount Laurel Sand and the coarse-grained, upper fraction of the Wenonah Formation, both Late Cretaceous in age (Zapecza, 1989, p. B14). It is a grey, glauconitic, quartz sand that weathers to a light brown to red-brown to light greenish-grey (Owens and others, 1995a, p. 11, 12, 36). The top of the Wenonah-Mount Laurel aquifer ranges from just above sea level where the aquifer crops out to 750 ft below sea level in the extreme southeastern corners of Gloucester and Salem Counties (fig. 9). The aquifer's thickness ranges from near zero at the edge of the outcrop area to a maximum of 120 ft from Clayton to Williamstown in Gloucester County and from Quinton to Alloway Township in Salem County (fig. 10).

The transmissivity of the Wenonah-Mount Laurel aquifer ranged from 940 to 1,200 ft^2/d and the hydraulic conductivity ranged from 13 to 19 ft/d in aquifer tests conducted in Salem County (Rosenau and others, 1969; Farlekas and others, 1976). The storage coefficient was reported as 3.5×10^{-5} (Rosenau and others, 1969).

Marshalltown-Wenonah Confining Unit

The Marshalltown-Wenonah confining unit lies below the Wenonah-Mount Laurel aquifer and is composed of the fine-grained, lower part of the Wenonah Formation and the Marshalltown Formation, both Late Cretaceous in age (Zapecza, 1989, p. B13). It is a fine- to medium-grained, clayey, glauconitic sand (Owens and others, 1995a, p. 12, 36). Farlekas and others (1976) report a vertical hydraulic conductivity of 1.3×10^{-1} ft/d for the Marshalltown and Wenonah Formations from a laboratory test of sediments from a site in Camden County.

Englishtown Aquifer System

The Englishtown aquifer system lies below the Marshalltown-Wenonah confining unit and is composed of the Late Cretaceous Englishtown Formation. In Gloucester and Salem Counties, the Englishtown is a minor aquifer; the sands tend to be fine to very fine and clayey and are relatively thin. The sands are medium to dark grey, weathering to light brown, yellow, or reddish-brown (Owens and others, 1995a, p. 13, 38).

The top of the Englishtown aquifer system ranges from just above sea level where it crops out to about 800 ft below sea level in the southeastern corner of Salem County (fig. 11). The Englishtown aquifer system ranges in thickness from near zero in the outcrop area to a maximum of 40 ft in several areas (fig. 12) and is rarely used for water supply in the two-county area. The transmissivity of the Englishtown aquifer system determined from an aquifer test at a site in Camden County is 2,100 ft^2/d and the storage coefficient is 2.7×10^{-4} (Farlekas and others, 1976).

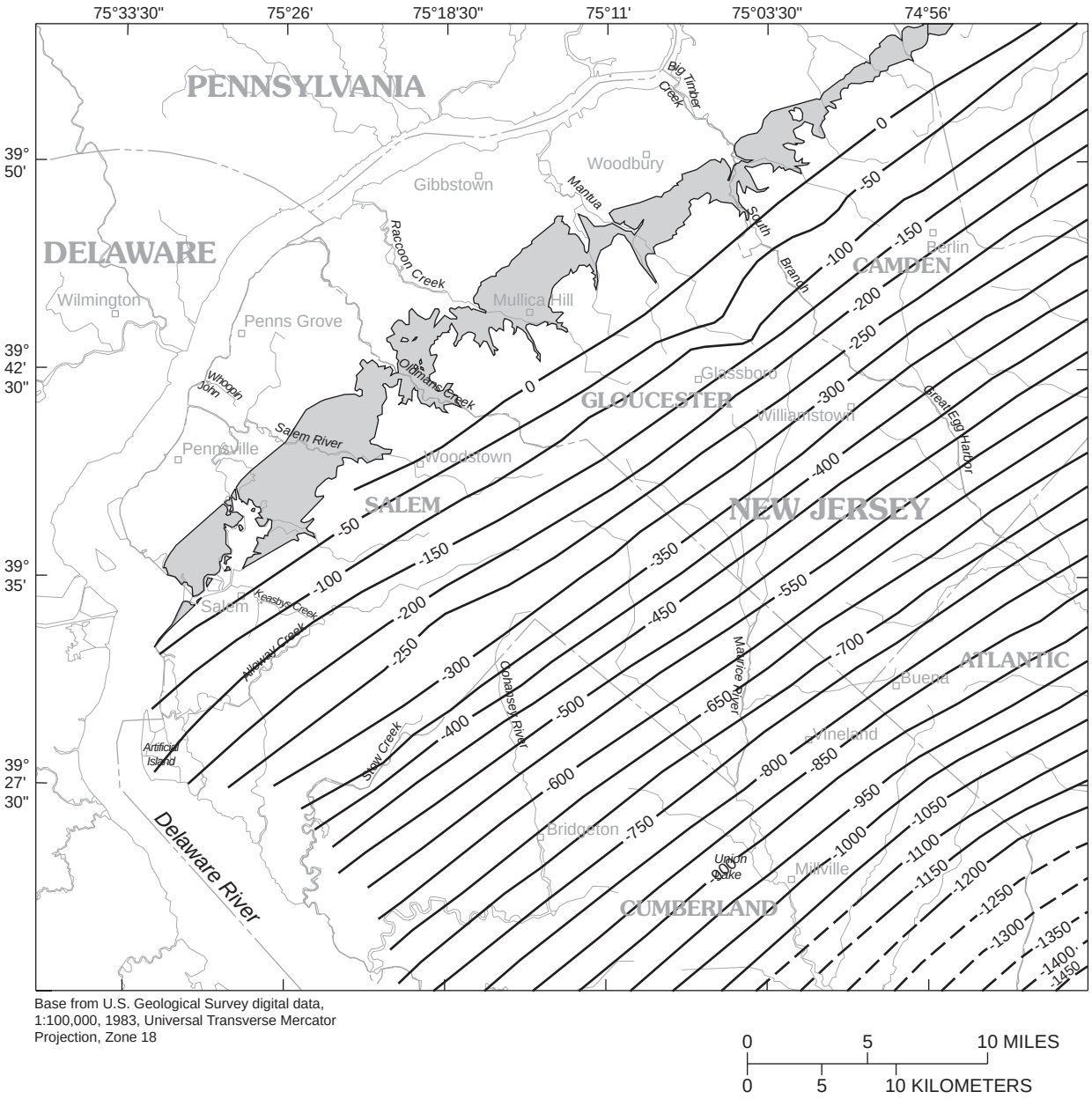


Figure 9. Altitude of the top of the Wenonah-Mount Laurel aquifer in Gloucester and Salem Counties, New Jersey.

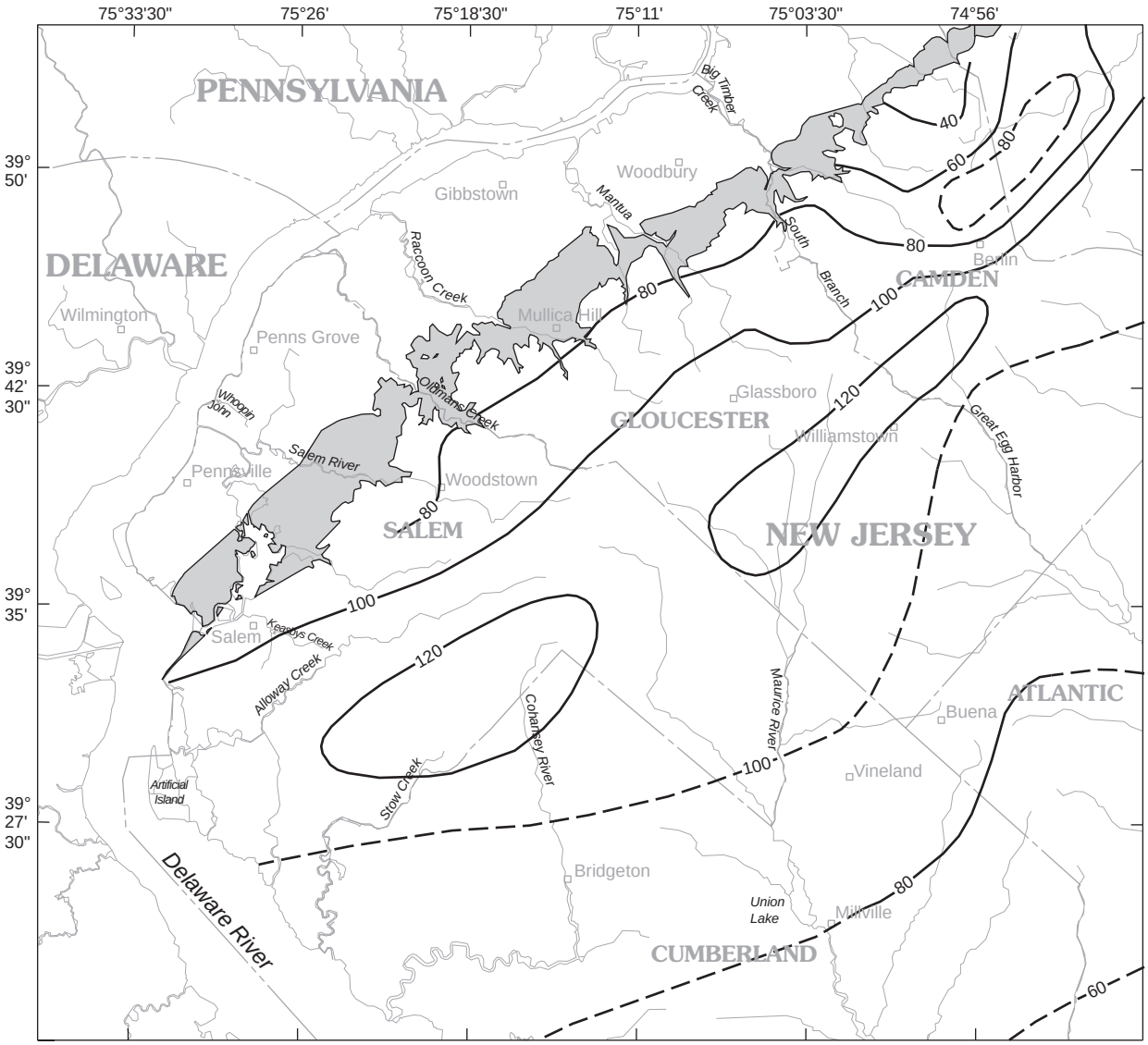
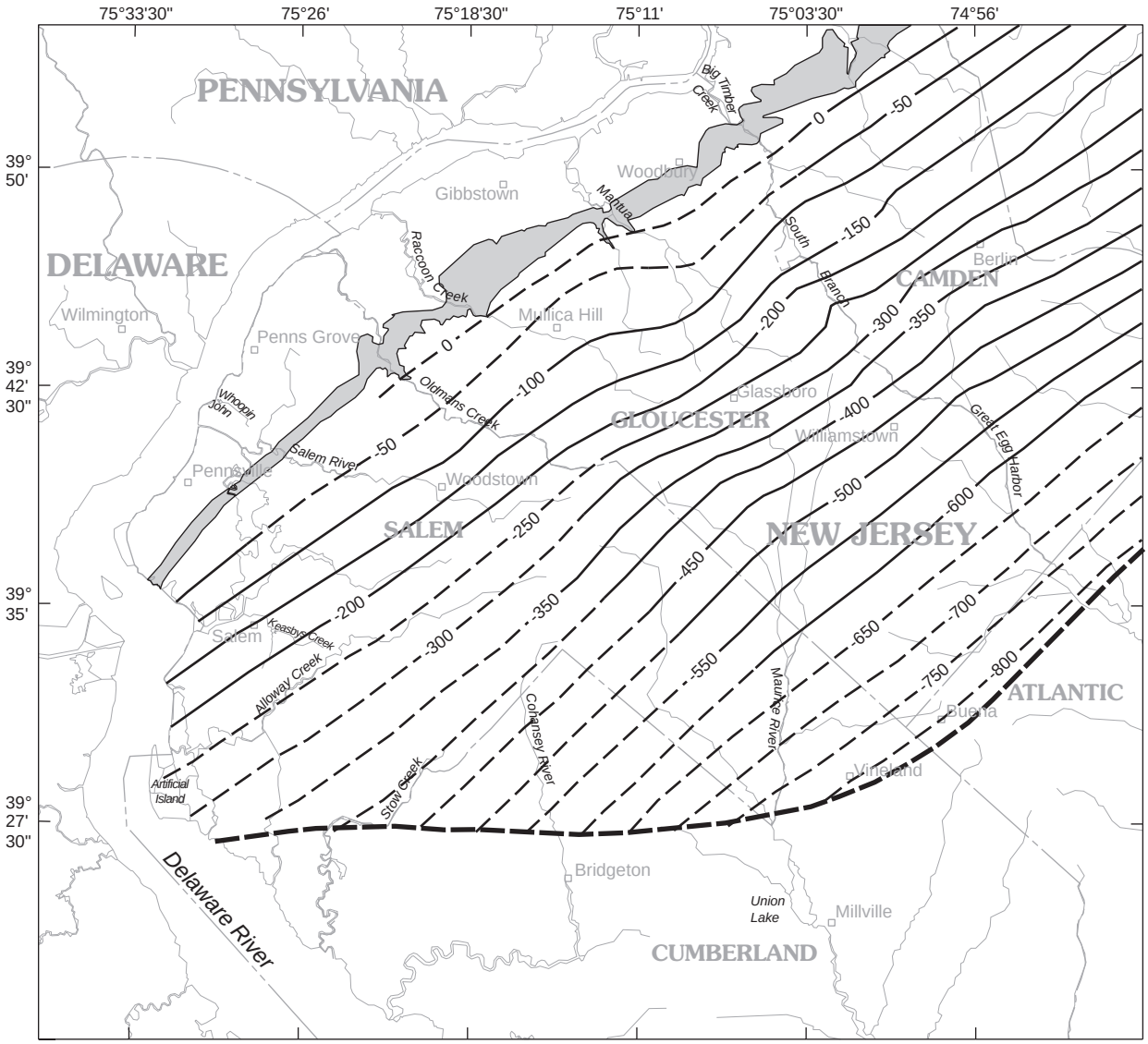


Figure 10. Thickness of the Wenonah-Mount Laurel aquifer in Gloucester and Salem Counties, New Jersey.



EXPLANATION

OUTCROP AREA OF THE ENGLISHTOWN FORMATION (From Owens and others, 1995a, 1995b)

APPROXIMATE DOWNDIP LIMIT OF THE ENGLISHTOWN AQUIFER SYSTEM IN THE SUBSURFACE

-50 STRUCTURE CONTOUR–Shows altitude of top of the Englishtown aquifer system (Modified from Zapecza, 1989, pl. 13). Dashed where approximate. Interval 50 feet. Datum is sea level

Figure 11. Altitude of the top of the Englishtown aquifer system in Gloucester and Salem Counties, New Jersey.

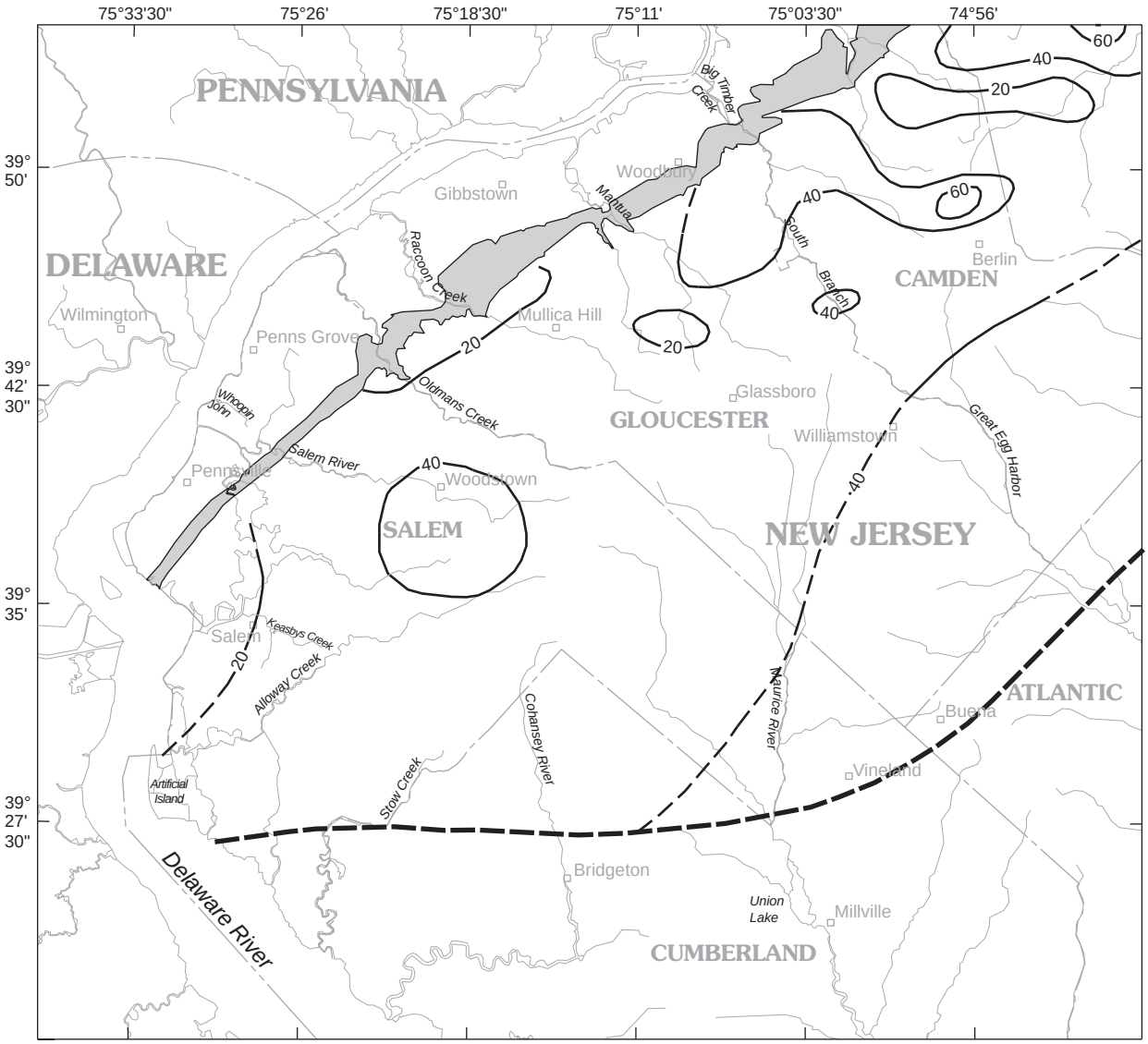


Figure 12. Thickness of the Englishtown aquifer system in Gloucester and Salem Counties, New Jersey.

Merchantville-Woodbury Confining Unit

The Merchantville-Woodbury confining unit lies below the Englishtown aquifer system and is composed of the Late Cretaceous Merchantville Formation, a very silty and clayey, glauconitic quartz sand that is greenish-grey weathering to moderate brown (Owens and others, 1995a, p. 13, 38) and the Woodbury Clay, a clayey silt that in the study area is present only in the northern part of Gloucester County (Zapecza, 1989, p. B12). Two laboratory tests of sediments from sites in Camden County indicated vertical hydraulic conductivities of 1.0×10^{-4} to 4.0×10^{-4} and 1.0×10^{-4} to 5.0×10^{-2} ft/d for the Merchantville Formation and Woodbury Clay, respectively (Farlekas and others, 1976).

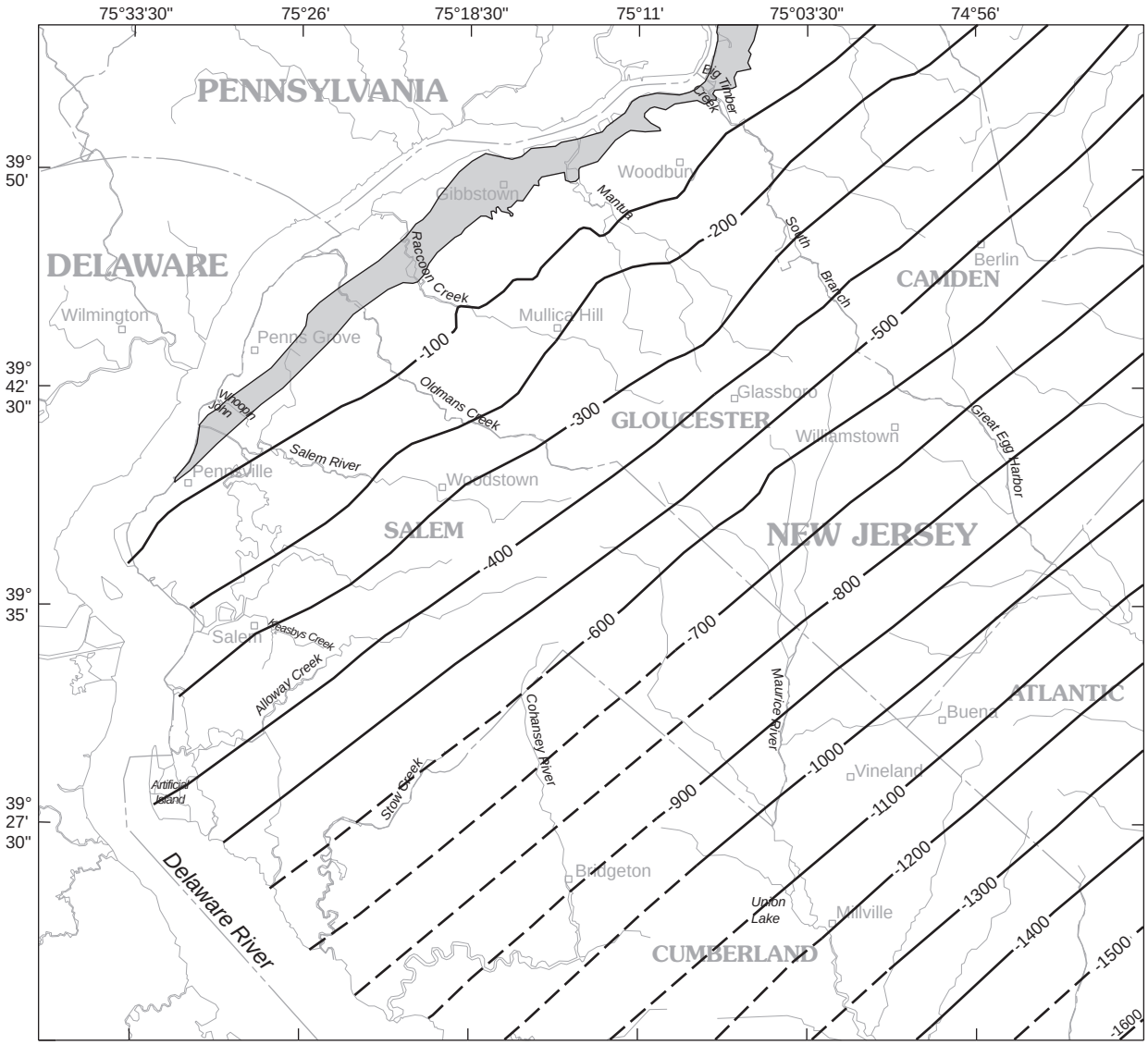
Potomac-Raritan-Magothy Aquifer System

The Potomac-Raritan-Magothy aquifer system lies below the Merchantville-Woodbury confining unit and is composed of the Late Cretaceous Potomac Formation (Unit III) and the Raritan and Magothy Formations. These formations are made up of fine to coarse sands with interbedded clay layers. The Potomac and Raritan Formations do not crop out in Gloucester and Salem Counties, and they become more clayey downdip to the east. Any natural outcrops of the Magothy Formation are overlain by alluvium from the Delaware River. (See Owens and others, 1995a, p. 14, 39, 40.)

The deposits of the Potomac, Raritan, and Magothy Formations are divided into five hydrogeologic units--the Upper, Middle, and Lower Potomac-Raritan-Magothy aquifers and the two confining units that lie between them--that make up the Potomac-Raritan-Magothy aquifer system. The boundaries of the hydrogeologic units do not necessarily coincide with the boundaries of the geologic units. The confining unit between the Middle and Lower Potomac-Raritan-Magothy aquifers pinches out and is absent in parts of Logan Township, Gloucester County (Lewis and others, 1991). Where the confining unit is absent, the Middle and Lower Potomac-Raritan-Magothy aquifers are in direct hydraulic connection and are designated the undifferentiated Potomac-Raritan-Magothy aquifer (Lewis and others, 1991). This unit is referred to in this report as the undifferentiated Middle/Lower Potomac-Raritan-Magothy aquifer.

Upper Potomac-Raritan-Magothy Aquifer

The Upper Potomac-Raritan-Magothy aquifer underlies nearly all of Gloucester and Salem Counties. The top of the aquifer ranges from near sea level in the subsurface at the Delaware River to almost 1,000 ft below sea level at the southeastern border of the two counties (fig. 13). The aquifer reaches a thickness of more than 100 ft in the eastern half of Gloucester County (fig. 14). An aquifer test in Camden County indicated a transmissivity of 16,600 ft^2/d, hydraulic conductivity of 240 ft/d, and storage coefficient of 1.0×10^{-3} for this aquifer (Barksdale and others, 1958).



Base from U.S. Geological Survey digital data, 1:100,000, 1983, Universal Transverse Mercator Projection, Zone 18

0 5 10 MILES
0 5 10 KILOMETERS

EXPLANATION

OUTCROP AREA OF THE MAGOTHY FORMATION (From Owens and others, 1995a, 1995b)

-500

STRUCTURE CONTOUR–Shows altitude of top of the Upper Potomac-Raritan-Magothy aquifer (Modified from Zapecza, 1989, pl. 10). Dashed where approximate. Interval 100 feet. Datum is sea level

Figure 13. Altitude of the top of the Upper Potomac-Raritan-Magothy aquifer in Gloucester and Salem Counties, New Jersey.

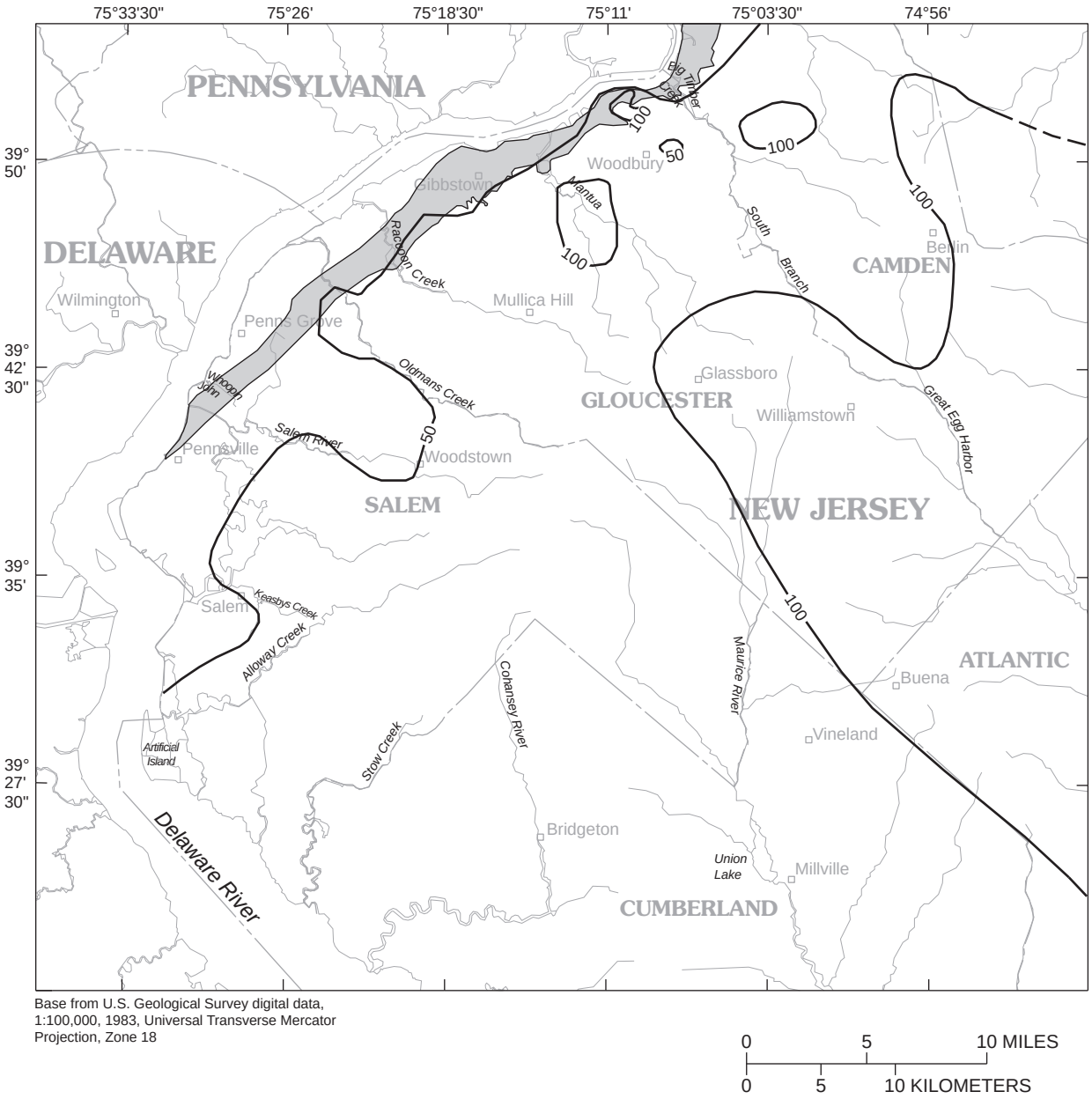


Figure 14. Thickness of the Upper Potomac-Raritan-Magothy aquifer in Gloucester and Salem Counties, New Jersey.

Middle Potomac-Raritan-Magothy Aquifer

The Middle Potomac-Raritan-Magothy aquifer is heavily developed in the northwestern half of the study area. The altitude of the top of the aquifer ranges from less than 100 ft below sea level near the Delaware River to 500 ft below sea level in the central part of the two-county area (fig. 15). The aquifer reaches a maximum thickness of approximately 200 ft between Pennsville and the City of Salem in Salem County (fig. 16). Aquifer tests in Gloucester and Camden Counties indicated transmissivities ranging from 6,300 to 8,300 ft^2/d, hydraulic conductivities ranging from 200 to 350 ft/d, and storage coefficients of 1.5×10^{-4} and 1.2×10^{-3} (Barksdale and others, 1958).

Lower Potomac-Raritan-Magothy Aquifer

The Lower Potomac-Raritan-Magothy aquifer is of limited use in southwestern Gloucester and western Salem Counties because of the high chloride content of the water (Zapecza, 1989, p. B10). The top of the aquifer ranges from less than 100 ft below sea level near the Delaware River to 700 ft below sea level southeast of the river (fig. 17). The aquifer thickens to more than 250 ft from near Pennsville, Salem County, to northern Washington Township in Gloucester County (fig. 18). Aquifer tests in Gloucester County indicated transmissivities ranging from 6,800 to 9,100 ft^2/d, hydraulic conductivities ranging from 140 to 190 ft/d, and storage coefficients of 9.0×10^{-5} and 1.7×10^{-4} (Barksdale and others, 1958).

Bedrock Confining Unit

In Gloucester and Salem Counties, the Wissahickon Formation underlies the deposits of the Potomac-Raritan-Magothy aquifer system. The Wissahickon Formation is primarily Precambrian metamorphic gneiss and schist (Hardt and Hilton, 1969, p. 9; Rosenau and others, 1969, p. 23). Although fractures in the Wissahickon could potentially hold and transmit water, the transmissivity is much lower than that of the overlying Coastal Plain sediments, so the bedrock is a confining unit. The altitude of the top of the Wissahickon Formation ranges from just less than 100 ft below sea level along the Delaware River to more than 3,000 ft below sea level in southeastern Gloucester County (fig. 19).

GROUND-WATER WITHDRAWALS AND GROUND-WATER LEVELS

Withdrawals from the Potomac-Raritan-Magothy aquifer system in Gloucester and Camden Counties have resulted in water-level drawdowns of more than 100 ft in some areas, leading to the creation of Water Supply Critical Area II (New Jersey Assembly, 1993). The establishment of Water Supply Critical Area II includes a requirement that purveyors reduce withdrawals from the Potomac-Raritan-Magothy aquifer system by an average of 22 percent of 1990 totals. The legislated reduction of withdrawals from the Potomac-Raritan-Magothy aquifer system has led to increased withdrawals from and subsequent drawdowns in the Wenonah-Mount Laurel aquifer and the Kirkwood-Cohansey aquifer system.

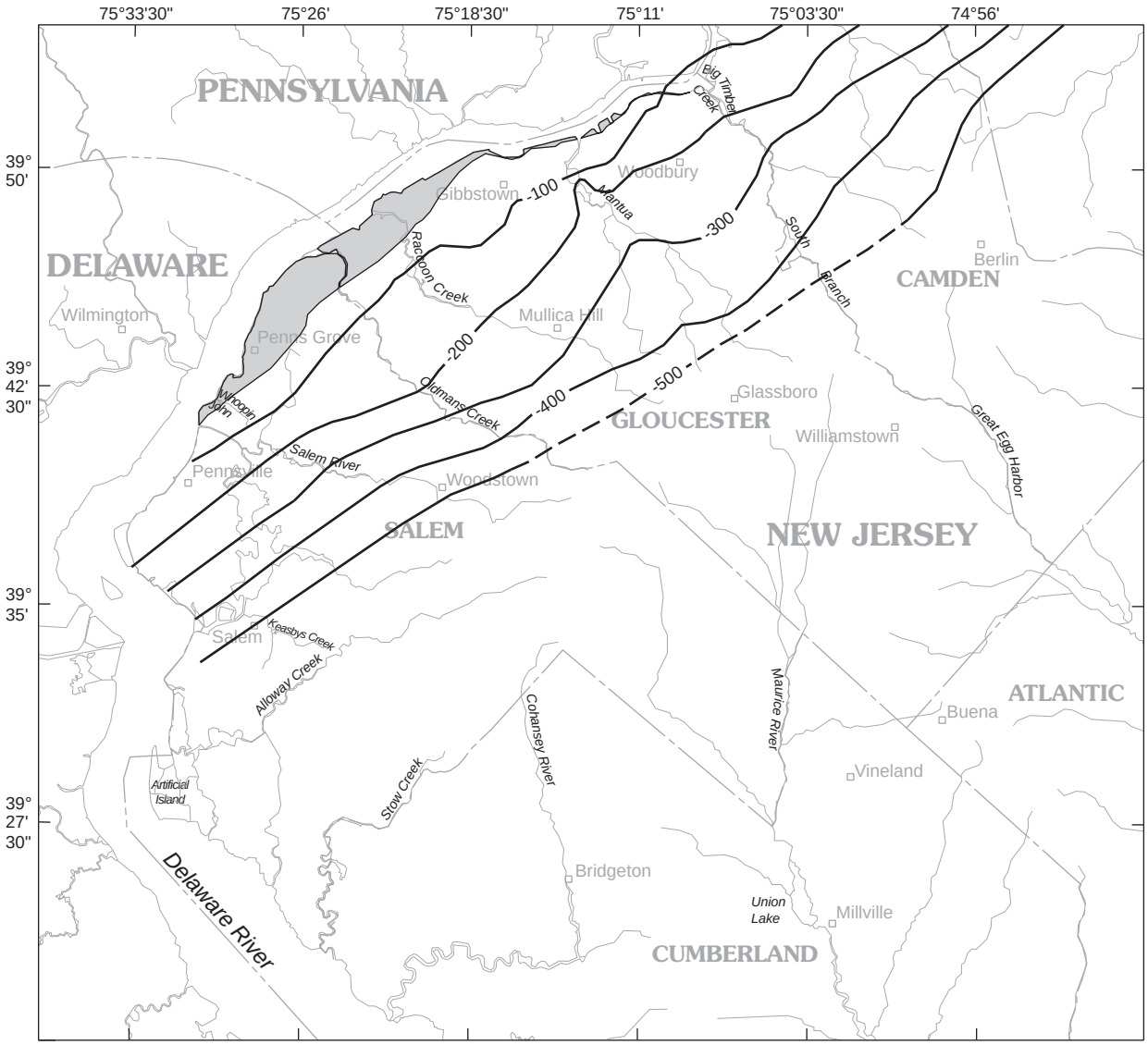


Figure 15. Altitude of the top of the Middle Potomac-Raritan-Magothy aquifer in Gloucester and Salem Counties, New Jersey.

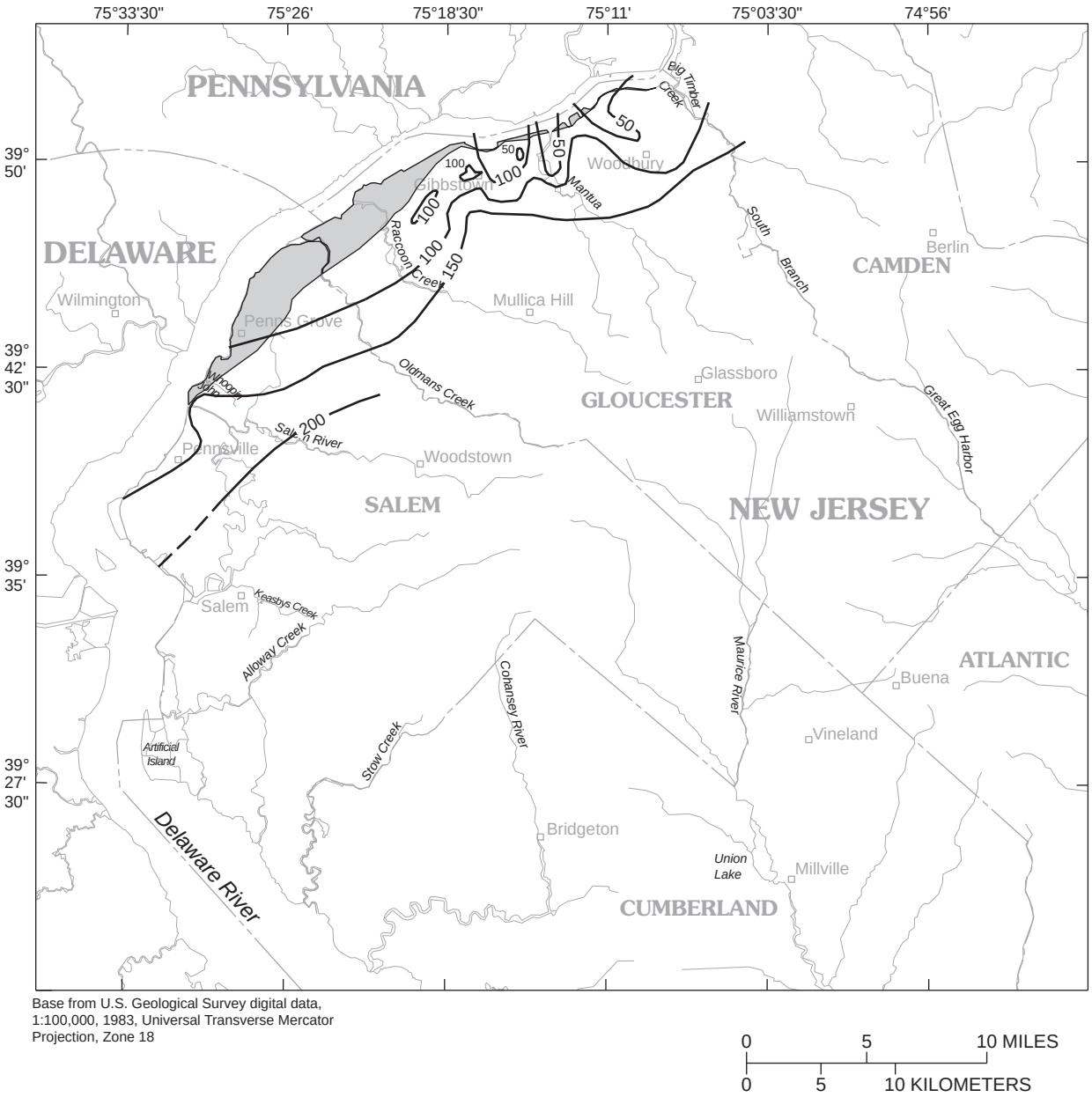
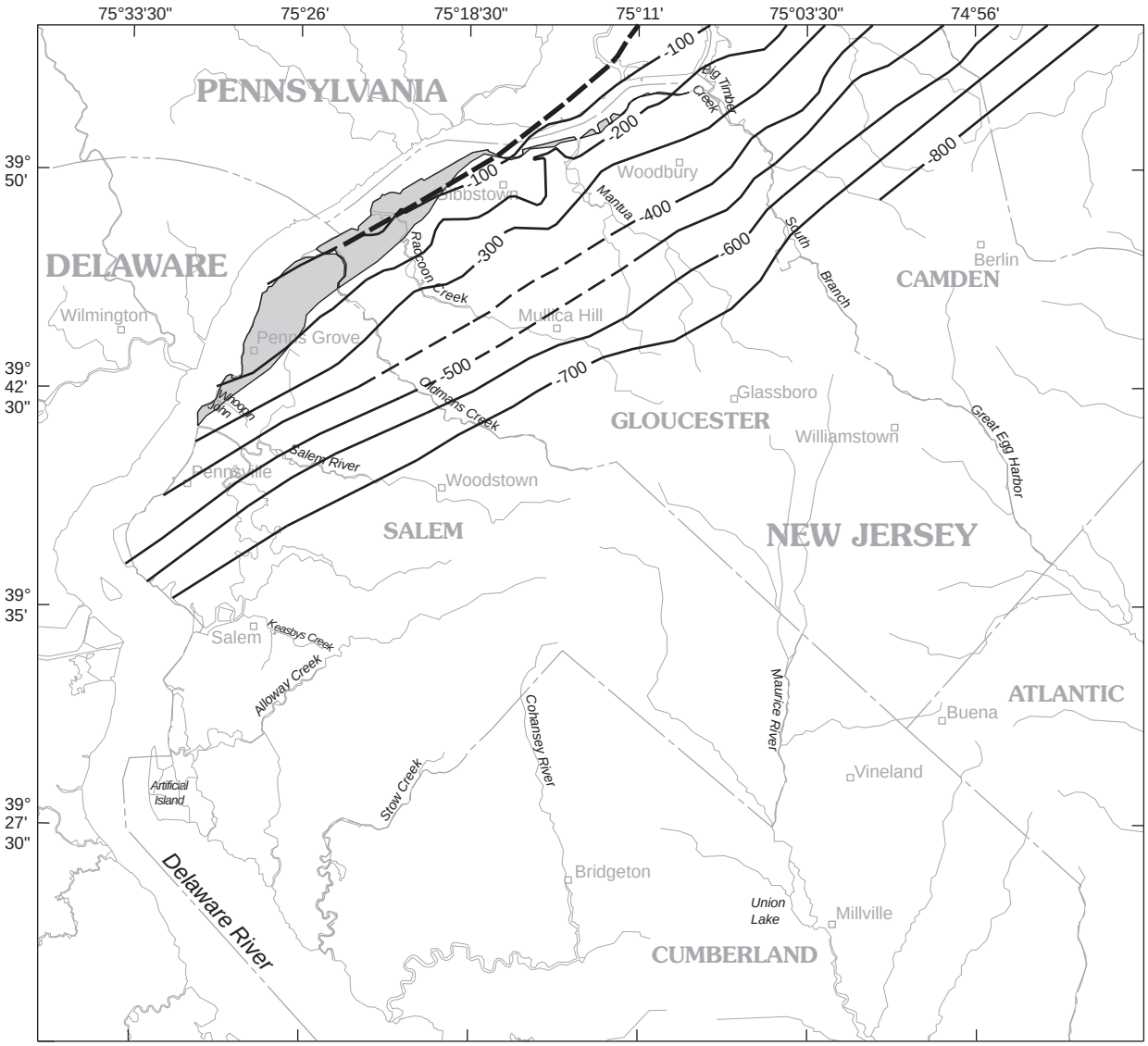


Figure 16. Thickness of the Middle Potomac-Raritan-Magothy aquifer in Gloucester and Salem Counties, New Jersey.



EXPLANATION

OUTCROP AREA OF THE POTOMAC FORMATION, UNIT III (From Owens and others, 1995a, 1995b)

APPROXIMATE UPDIP LIMIT OF THE LOWER POTOMAC-RARITAN-MAGOTHY AQUIFER

-100 STRUCTURE CONTOUR–Shows altitude of top of the Lower Potomac-Raritan-Magothy aquifer (Modified from Zapecza, 1989, pl. 6A). Dashed where approxiamte. Interval 100 feet. Datum is sea level

Figure 17. Altitude of the top of the Lower Potomac-Raritan-Magothy aquifer in Gloucester and Salem Counties, New Jersey.

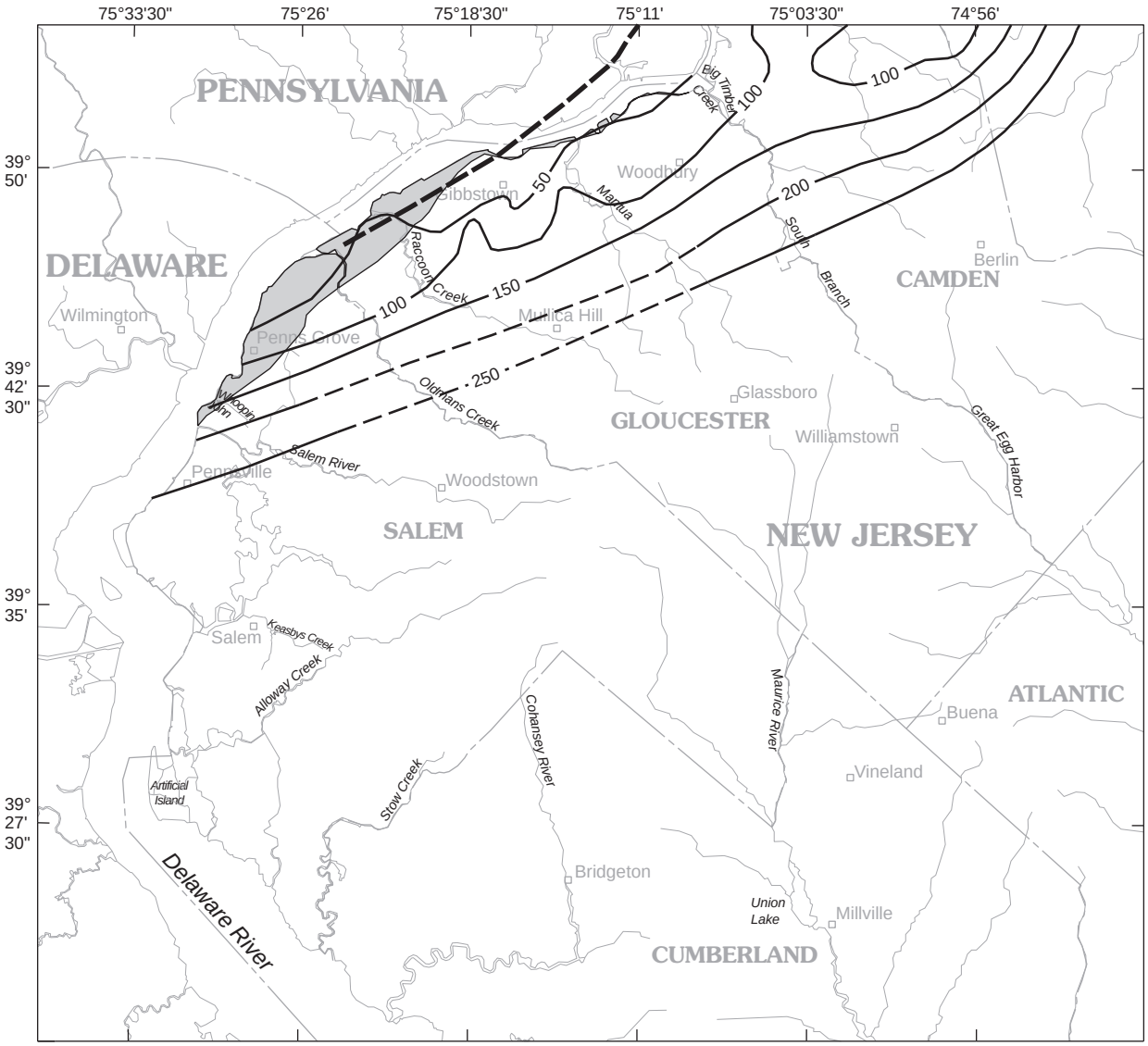
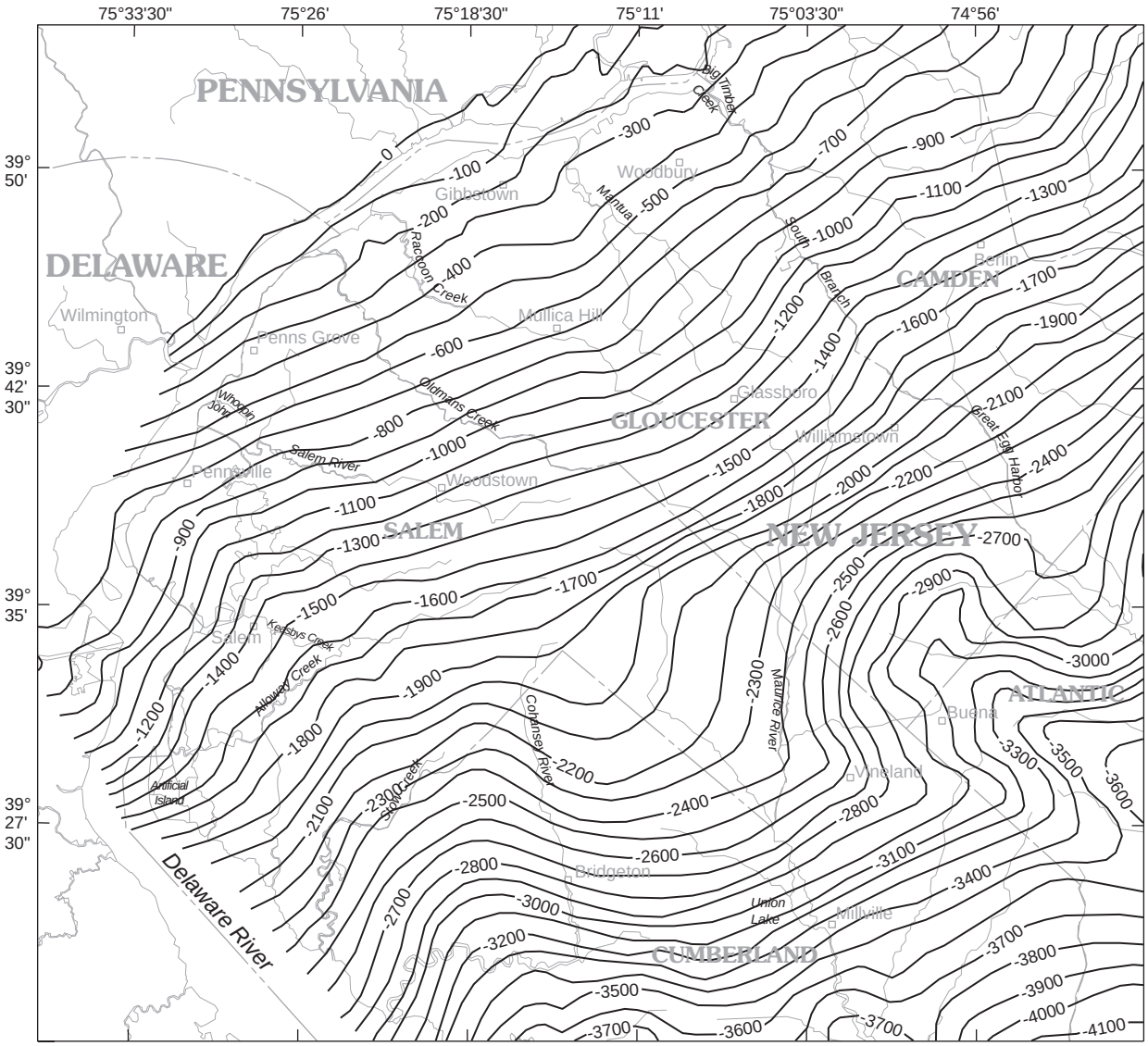


Figure 18. Thickness of the Lower Potomac-Raritan-Magothy aquifer in Gloucester and Salem Counties, New Jersey.



Base from U.S. Geological Survey digital data, 1:100,000, 1983, Universal Transverse Mercator Projection, Zone 18

0 5 10 MILES

0 5 10 KILOMETERS

EXPLANATION

-500 STRUCTURE CONTOUR–Shows altitude of top of the bedrock surface (Modified from Zapecza, 1989, pl. 23). Interval 100 feet. Datum is sea level

Figure 19. Altitude of the top of the bedrock surface beneath the Coastal Plain sediments in Gloucester and Salem Counties, New Jersey.

Water-withdrawal and water-level maps for the Kirkwood-Cohansey aquifer system, the Piney Point and Wenonah-Mount Laurel aquifers, and the Upper, Middle, and Lower Potomac-Raritan-Magothy aquifers are presented and discussed in the following sections. Although the Vincentown aquifer and Englishtown aquifer system are present in parts of Gloucester and Salem Counties, they are minor aquifers in this area; therefore, no significant withdrawals were reported and no 1993 water-level data are available.

Average reported withdrawals from all aquifers in the two counties during 1975-95 ranged from 13,100 to 15,800 Mgal/yr, with an average of 14,400 Mgal/yr for the 21-year period (fig. 20). The annual totals generally increased during 1989-95. The most heavily used aquifer in Gloucester and Salem Counties is the Upper Potomac-Raritan-Magothy aquifer, followed by, in decreasing order of use, the Middle Potomac-Raritan-Magothy aquifer, the Lower Potomac-Raritan-Magothy aquifer, the Kirkwood-Cohansey aquifer system, and the Wenonah-Mount Laurel aquifer. Average annual reported withdrawals from these aquifers during 1975-95 were 5,000, 3,700, 3,200, 1,200, and 300 Mgal/yr, respectively. Some withdrawals from the Potomac-Raritan-Magothy aquifer system are attributed to the undifferentiated Potomac-Raritan-Magothy aquifer system and are not identified as originating from either the Upper, Middle or Lower aquifers. Withdrawals from Quaternary deposits were made near the Delaware River, where these deposits probably are hydraulically connected to the Upper Potomac-Raritan-Magothy aquifer.

Average reported ground-water withdrawals in Gloucester and Salem Counties during 1975-95 were 7,800 Mgal/yr for public supply, 4,900 Mgal/yr for industrial use, 700 Mgal/yr for irrigation, 500 Mgal/yr for power plants (fig. 21), 50 Mgal/yr for commercial use, and about 40 Mgal/yr for mining purposes (not shown in fig. 21). Major nonagricultural water users are required to meter and report their water use. Agricultural water users are required to estimate but not meter water use; therefore, agricultural water-use values have a greater potential for error than other water-use data.

Withdrawals for domestic self-supply (not shown in fig. 21) are estimated to be between about 2,200 and 2,600 Mgal/yr in the two counties (Nawyn and Clawges, 1995; Nawyn, 1998; Nawyn, 1997a; Nawyn, 1997b), of which about 440 to 520 Mgal/yr is estimated to be consumptive use (table 3). (Consumptive use constitutes water that is withdrawn and not returned to the aquifer.) In 1990, about 23 percent of Gloucester and 40 percent of Salem County residents were self-supplied. Nawyn and Clawges (1995, p. 13) estimated the volume of withdrawals by calculating the product of the estimated self-supplied population and a water-use coefficient of 75 gal/d per person.

Many homes that are self-supplied also have on-site septic systems. Consequently, much of the water withdrawn is returned to the ground-water system. In these cases, it is estimated that about 20 percent of the water withdrawn is consumed and that 80 percent returns to the unconfined aquifer (J.P. Nawyn, U.S. Geological Survey, written commun., 1997). In areas where domestic wells are open to a confined aquifer or the homes are served by sewers, withdrawals are an exportation of water from the aquifer in which the well is screened. For example, the Borough

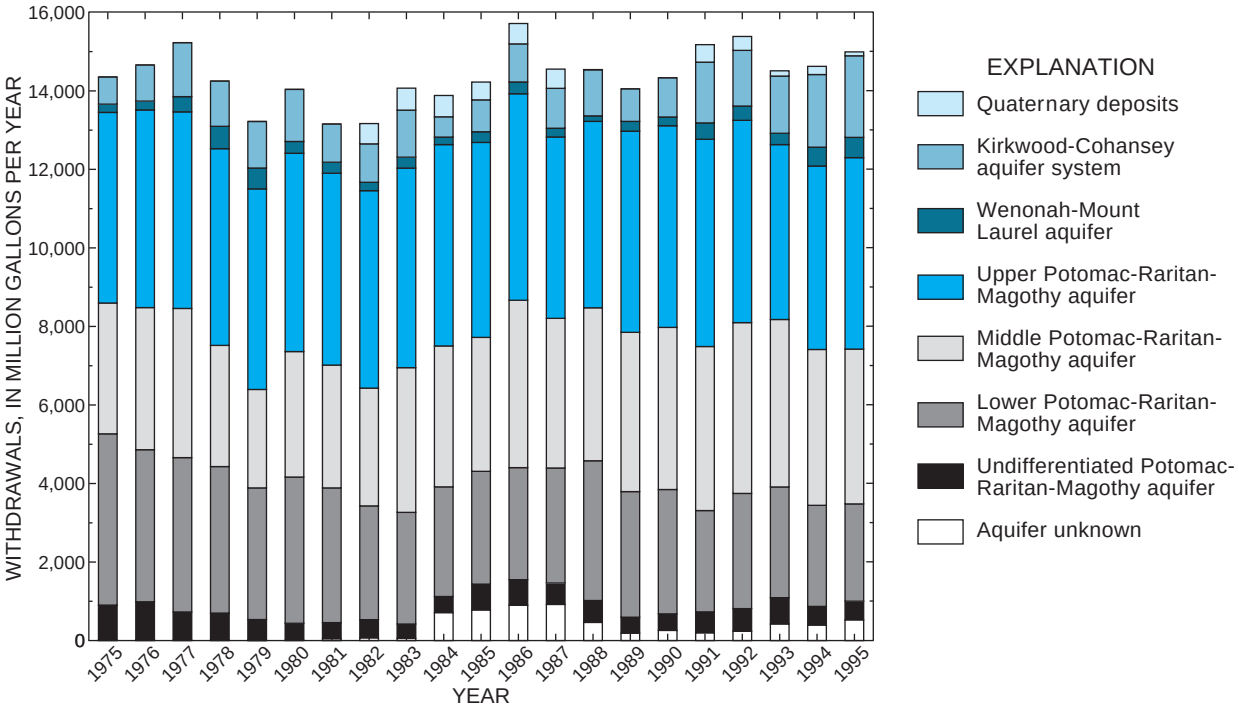


Figure 20. Ground-water withdrawals by aquifer, Gloucester and Salem Counties, New Jersey, 1975- 95.

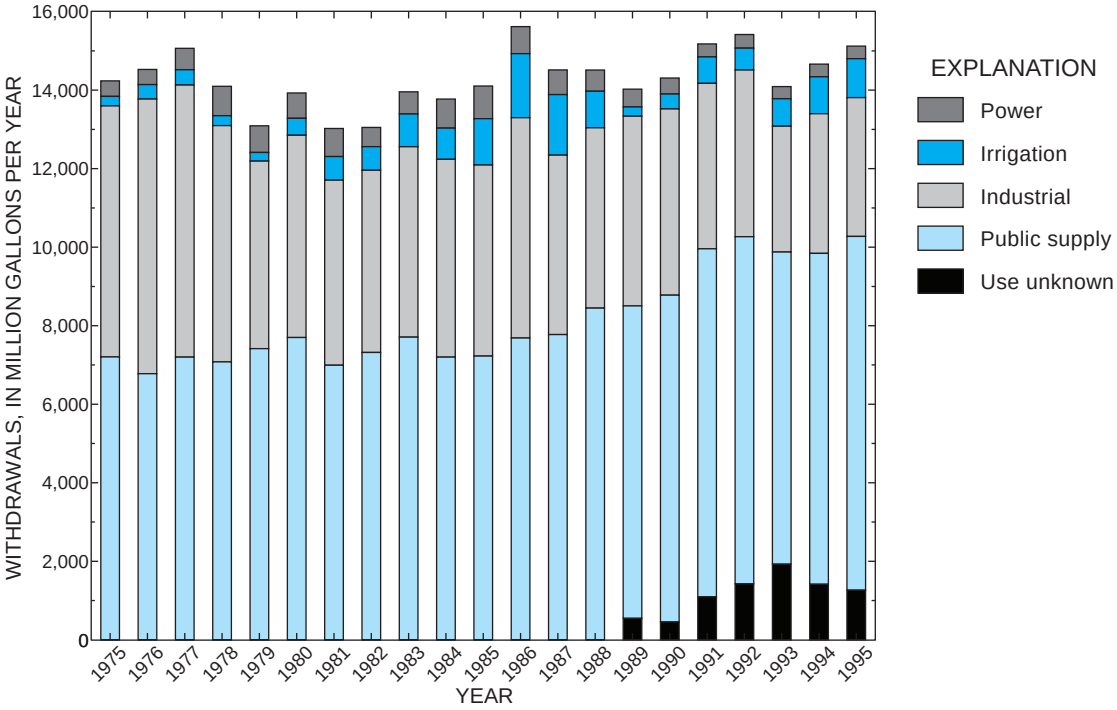


Figure 21. Ground-water withdrawals by type of water use, Gloucester and Salem Counties, New Jersey, 1975-95.

of Elmer in Salem County does not have a sewer system but does have a public-water-supply system. Water withdrawn from the confined Wenonah-Mount Laurel aquifer is exported to the unconfined Kirkwood-Cohansey aquifer system through the septic systems, except for the amount that is consumed through evaporation and other processes. Information on the location of sewered areas in the two counties in 1988 (Steven Karp, New Jersey Office of State Planning, written commun., 1992) and 1991 (Roy F. Weston, Inc., 1993) indicates that public water supply and sewer service approximately correspond in both counties. The unsewered areas in Gloucester County are found primarily in the southern and eastern parts of the county, whereas only a few areas in Salem County, including Salem City, Woodstown, Pennsville, and Penns Grove, are sewered.

Table 3. Estimated total and consumptive domestic self-supply withdrawals in Gloucester and Salem Counties, New Jersey, 1989-94
[From Nawyn and Clawges, 1995; Nawyn, 1998; Nawyn,1997a; Nawyn, 1997b]

	1989	1990	1991	1992	1993	1994
Estimated withdrawals (million gallons)	2,200	2,200	2,600	2,600	2,600	2,600
Estimated consumptive use (million gallons)	440	440	520	520	520	520

Maps showing the estimated location and approximate volume of withdrawals in 1993 and water-level maps for the principal aquifers in the two counties are presented below. The withdrawal data are from the U.S. Geological Survey's Site Specific Water-Use Data System (SSWUDS). The water-level map of the Kirkwood-Cohansey aquifer system is a compilation of data from four studies conducted during 1986-95. The confined-aquifer water-level maps, modified from Lacombe and Rosman (1997), are based on data collected in 1993, except for the map of the Wenonah-Mount Laurel aquifer, which is based on data collected in 1996 for this study. Water levels in the unconfined aquifer typically are a subdued replica of the topography because water-level highs are found in recharge areas, commonly topographically high areas, and water-level lows are found in discharge areas, commonly streams and wetlands. Water levels in the confined aquifers in the study area typically are affected by withdrawals; therefore, water-level highs are found in the outcrop area of the aquifers and water-level lows are found around pumping centers.

Kirkwood-Cohansey Aquifer System

Ground water is withdrawn from the Kirkwood-Cohansey aquifer system in the southeastern parts of Gloucester and Salem Counties (fig. 22). Withdrawals from this aquifer are recorded in the SSWUDS as high as 2,100 Mgal/yr, but actual withdrawals are much higher. Some agricultural withdrawals are not reported; neither are withdrawals of about 2,600 Mgal/yr through domestic wells, most of which are screened in the Kirkwood-Cohansey aquifer system.

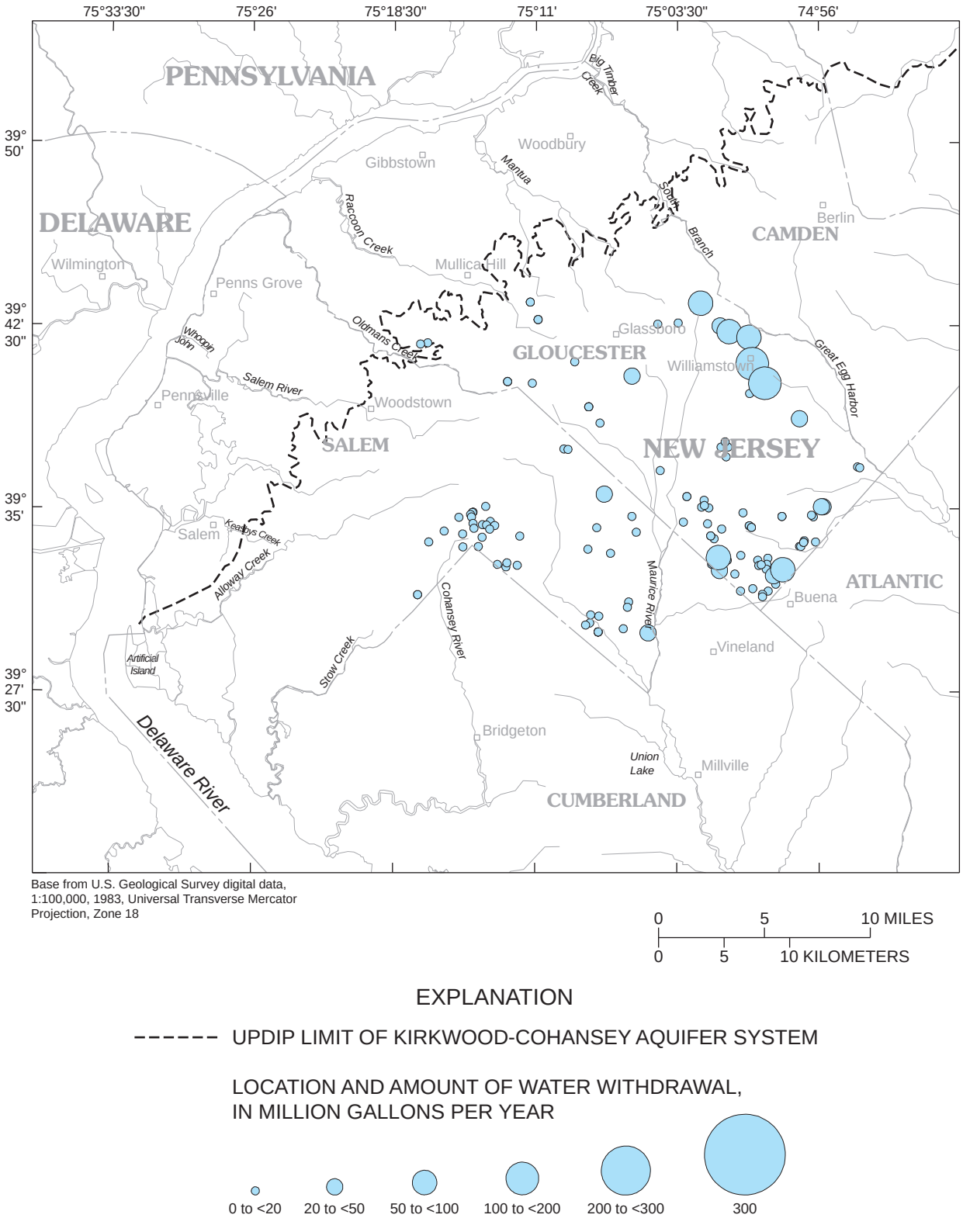


Figure 22. Withdrawals from the Kirkwood-Cohansey aquifer system, Gloucester and Salem Counties, New Jersey, 1993.

An approximate water-level map for the Kirkwood-Cohansey aquifer system is shown in figure 23. This map includes water-level data from four studies conducted during 1986-95 covering adjacent areas in Gloucester and Salem Counties as well as parts of Camden, Atlantic, and Cumberland Counties (Watt and Johnson, 1992; Lacombe and Rosman, 1995; Johnson and Charles, 1997; and E. G. Charles, U.S. Geological Survey, written commun., 1998). The interpreted water-table contours from the four studies listed above are based on data collected during different seasons in different years and interpreted by different investigators, yet are quite similar where they overlap. They have been combined to produce a single, generalized map that shows the approximate altitude and configuration of the water table, from which ground-water-flow directions can be inferred. The water-table gradient (slope of the water table) is steeper (contours are closer together) in the northwestern part of the study area than elsewhere because the sediments are less permeable and the stream valleys are more deeply incised there. Although withdrawals from the aquifer are substantial in some areas, no regional cones of depression are observed because of the high storage and recharge rate typical of unconfined aquifers. Uses of the water withdrawn from the surficial aquifer are not all 100 percent consumptive. Some of the water withdrawn for domestic use is returned to the aquifer through on-site septic systems. To a smaller extent, some water withdrawn for irrigation is returned through surface infiltration.

Piney Point Aquifer

The Piney Point aquifer is not used significantly in Gloucester and Salem Counties because it is present only in the extreme southeastern part of each county where it attains a maximum thickness of 100 ft, except along the southeastern boundary of Salem County, where it is about 140 ft thick. No withdrawals in the study area are recorded in the SSWUDS. Water levels are below prepumping levels, however, because of withdrawals in the vicinity of Dover, Delaware, and Buena, Atlantic County, New Jersey (fig. 24). Water-level altitudes may be as much as 40 ft below sea level in the southernmost corner of Salem County and at sea level in the southernmost corner of Gloucester County because of withdrawals in the Dover and Buena areas, respectively. Water levels decreased from 1988 to 1993 in areas affected by withdrawals in Delaware (Rosman and others, 1996; Lacombe and Rosman, 1997).

Wenonah-Mount Laurel Aquifer

Withdrawals from the Wenonah-Mount Laurel aquifer in Gloucester and Salem Counties increased during 1993-95 because of NJDEP restrictions on withdrawals from the deeper Potomac-Raritan-Magothy aquifer system (New Jersey Assembly, 1993). In 1995 (the most recent year for which complete data are available), major withdrawals from the aquifer in and near the study area were primarily in central Gloucester and Camden Counties (fig. 25). Total withdrawals from the aquifer in Gloucester and Salem Counties averaged 300 Mgal/yr during 1975-92, then increased to 440, 550, and 660 Mgal/yr in 1993, 1994, and 1995, respectively. The 660-Mgal/yr withdrawal in 1995 is the largest for any year on record.

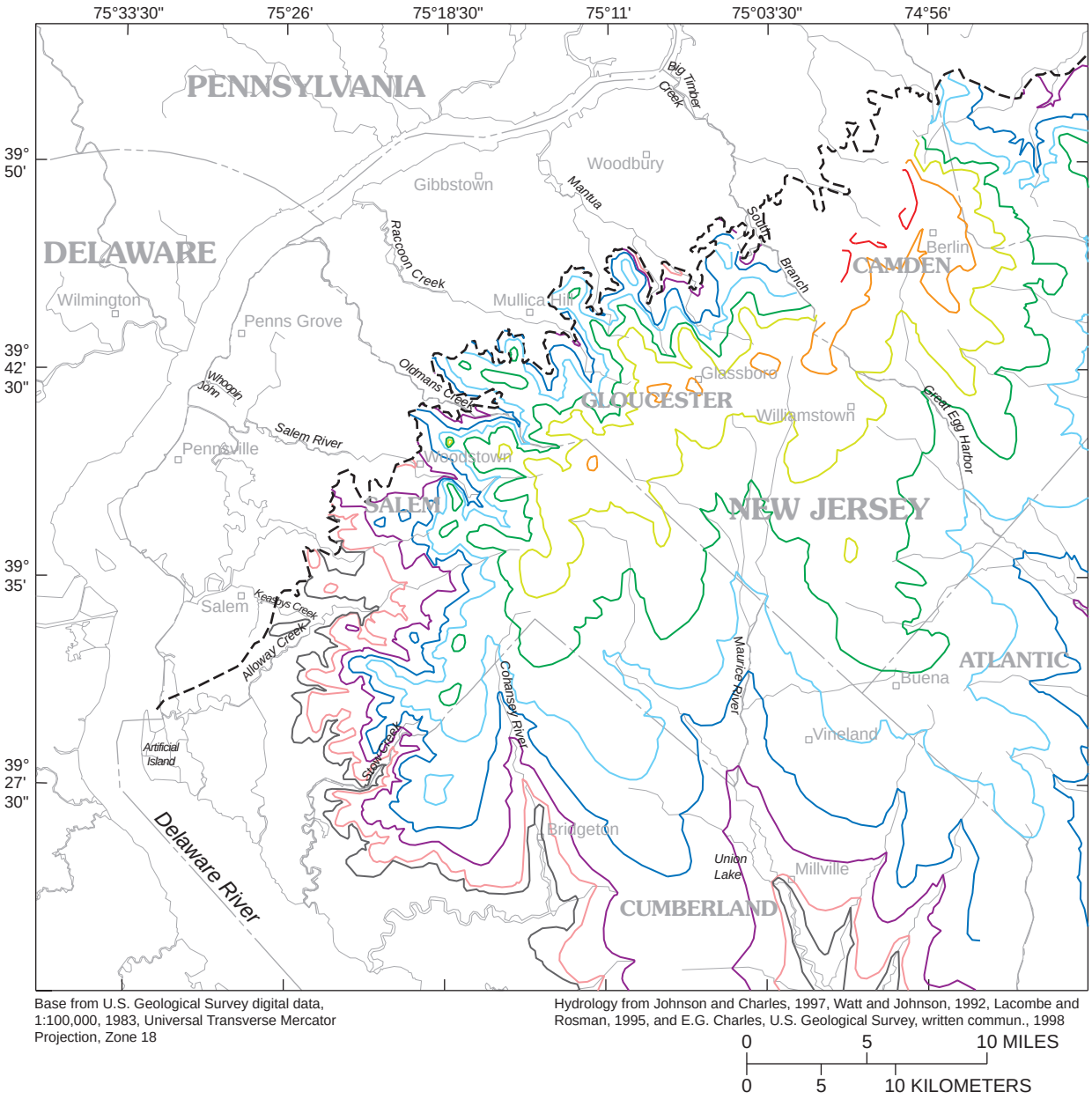
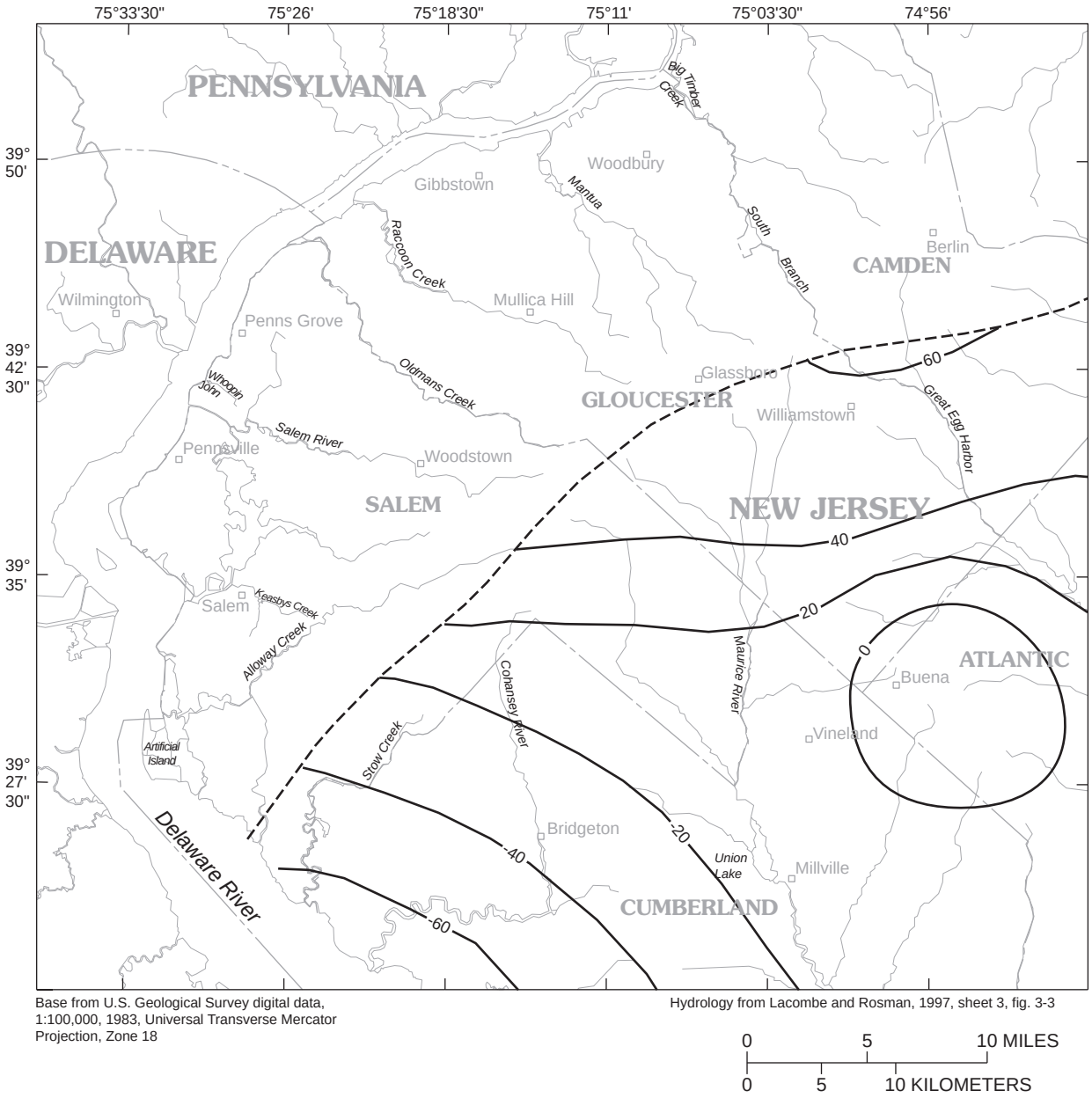


Figure 23. Approximate water-table altitude in the Kirkwood-Cohansey aquifer system, Gloucester and Salem Counties, New Jersey.



EXPLANATION

APPROXIMATE UPDIP LIMIT OF PINEY POINT AQUIFER

100 POTENTIOMETRIC CONTOUR–Shows altitude at which water would have stood in tightly cased wells. Contour interval 20 feet. Datum is sea level

Figure 24. Potentiometric surface of the Piney Point aquifer, Gloucester and Salem Counties, New Jersey, 1993.

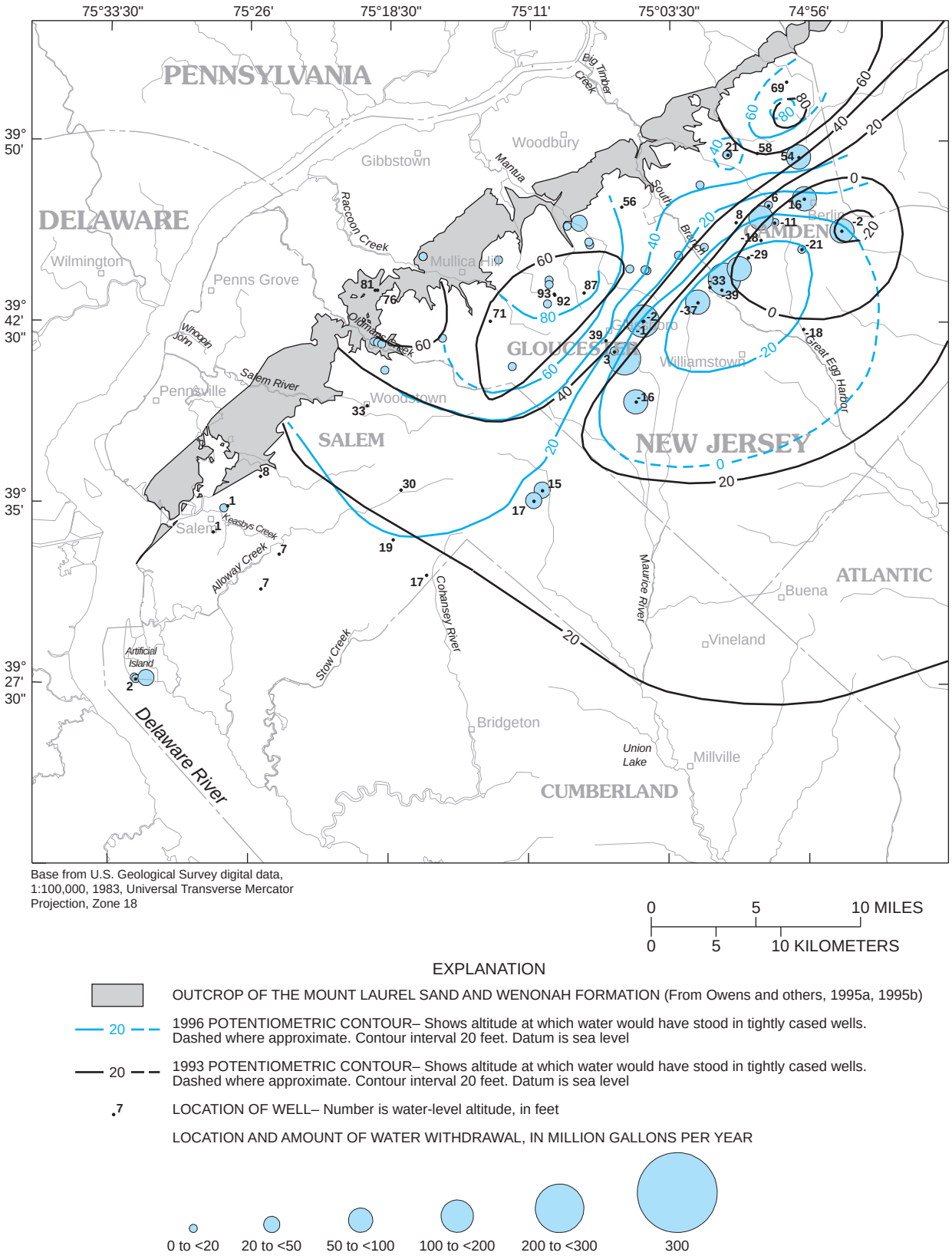


Figure 25. Withdrawals in 1995, and potentiometric surfaces in 1993 and 1996, Wenonah-Mount Laurel aquifer, Camden, Gloucester, and Salem Counties, New Jersey.

Water levels were measured in wells open to the Wenonah-Mount Laurel aquifer during November and December 1996 (table 4, fig. 25) to document changes from measurements made in 1993 by Lacombe and Rosman (1997). Water levels in this aquifer respond dramatically to changes in withdrawals because the hydraulic conductivity and storage coefficient of the sediments that compose the Wenonah-Mount Laurel aquifer are lower than those of stratigraphically adjacent aquifers. Water levels in central Gloucester County and southwest-central Camden County were 20 to 40 ft lower in 1996 than in 1993, with altitudes nearly as low as 40 ft below sea level, as a result of increased withdrawals from the aquifer in these areas. Water levels also were below sea level in much of the southeastern half of the two counties. In contrast, water levels were as much as 20 ft higher near Berlin, Camden County, because of reduced withdrawals in this area. The effect of withdrawals in Gloucester County extends as far as Elmer, Salem County, where water levels in 1996 were about 5 ft lower than in 1993 and previous years. Water levels in 1996 were highest in the outcrop area in central to northwestern Gloucester County and decreased to the southwest and southeast. The decrease to the southwest is related to the physical configuration of the aquifer: the altitude of the top of the aquifer is lower in the outcrop belt in southwestern Salem County than in Gloucester County; therefore, water levels in and near the outcrop area decrease to the southwest. Water levels in or near the outcrop of the aquifer and in areas unaffected by withdrawals were 1 to 2 ft higher than in 1993 because of the unusually high precipitation and recharge to the aquifer in 1996.

Upper Potomac-Raritan-Magothy Aquifer

The Upper Potomac-Raritan-Magothy aquifer is the most heavily used aquifer in Gloucester and Salem Counties. Withdrawals from this aquifer in the study area are made from the outcrop area downdip to the Glassboro vicinity (fig. 26). Average withdrawals in Gloucester and Salem Counties during 1975-92 were about 5,000 Mgal/yr, but were lower, averaging about 4,700 Mgal/yr, during 1993-95 (in part because of pumping restrictions).

Water-level altitudes in the Upper Potomac-Raritan-Magothy aquifer in 1993 were near or above sea level in the outcrop area near the Delaware River but were as low as 80 ft below sea level in parts of Gloucester County (fig. 26). Water-level altitudes in parts of Gloucester County were affected by withdrawals in Camden County, where water levels were more than 100 ft below sea level in some locations. The centers of the multiple cones of depression include the locations of high-volume withdrawals from one or more municipal wells.

Middle Potomac-Raritan-Magothy Aquifer

The Middle Potomac-Raritan-Magothy aquifer is the second most heavily used aquifer in Gloucester and Salem Counties. Withdrawals from this aquifer are made primarily within 8 mi of the Delaware River (fig. 27). Average withdrawals in Gloucester and Salem Counties during 1975-92 were about 3,600 Mgal/yr. Although average withdrawals during 1993-95, about 4,100 Mgal/yr, were greater than the 1975-92 average, withdrawals during 1994 and 1995 were the smallest since 1985.

Table 4. Water levels in the Wenonah-Mount Laurel aquifer in Camden, Gloucester, and Salem Counties, New Jersey, 1996

[Altitudes are in feet above sea level; bls, below land surface; US, United States; USGS, U.S. Geological Survey; NJ, New Jersey; CNTY, County; TWP, Township; BORO, Borough; MUA, Municipal Utilities Authority; WD, Water Department; WC, Water Company; CO, Company; BD ED, Board of Education; REG'L, Regional; L, Lower; --, no data]

USGS well number	Owner	Local name and well number	New Jersey well-permit number	Altitude of land surface (feet)	Depth to water (feet bls)	Date measured (1996)	1996 water-level altitude (feet)	1993 water-level altitude (feet)
07- 22	BERLIN WD	BWD 8	31-00513	147.00	130.75	11/21	16	-7
07- 118	NJ/AMERICAN WATER CO	HUTTON HILL 2 OBS	31-04898	157.53	88.14	12/03	69	68
07- 228	CAMDEN CNTY BD ED	VOC&TECH H S 1	31-05139	145.00	163.39	12/02	-18	-5
07- 308	NJ/AMERICAN WATER CO	LAUREL 10	51-00014	77.00	56.10	11/18	21	55
07- 391	L CAMDEN CNTY REG'L	OVERBROOK HS 1	31-05628	160.00	171.39	11/18	-11	-6
07- 401	PINE VALLEY GOLF CLUB	GOLF CLUB	31-02371	85.00	78.79	11/19	6	9
07- 414	NJ/AMERICAN WATER CO	ELM TREE 26	51-00010	150.00	94.19	11/18	54	51
07- 449	WINSLOW WC	WINSLOW TWP 5	31-04749	159.00	161.27	11/19	-2	-22
07- 478	US GEOLOGICAL SURVEY	NEW BROOKLYN PARK 3 OBS	--	111.45	128.95	11/18	-18	3
07- 513	JOHNS-MANVILLE	3	31-07766	166.40	187.70	11/19	-21	-19
07- 526	LINDENWOLD BORO MUA	SEWAGE PL2	--	78.00	19.95	11/21	58	62
07- 599	GARDEN STATE WC	GSWC 9	31-20169	183.00	175.30	12/02	8	--
07- 685	GARDEN STATE WC	GSWC 10 ERIAL	31-22273	144.00	172.56	12/02	-29	-4
07- 846	CONSUMERS NJ WC--BLACK-WOOD DIVISION	CNJWC BERLIN-CROSS KY 16	31-46606	170.00	208.98	12/02	-39	--
07- 847	CONSUMERS NJ WC--BLACK-WOOD DIVISION	CNJWC JOHNSON RD 17	31-36246	150.00	182.62	12/02	-33	--
15- 367	GANGEMI, VINCENT	1	30-00649	73.00	2.44	11/19	71	68
15- 542	RON SON MUSHROOM	1	31-16873	150.00	111.25	11/21	39	51
15- 953	WEHRAN ENGINEERING	KINSLEY 1 DW-2	31-06570	81.00	24.51	11/19	56	55
15-1038	GRASSO, JOSEPH S	GRASSO FOODS	30-02420	93.10	16.73	11/19	76	--
15-1104	GRASSO, JOSEPH S	GRASSO FOODS MW 3	30-02422-6	102.20	20.84	11/19	81	81
15-1126	GLASSBORO BORO	GLASSBORO ML-1 OBS	31-34033-4	145.95	142.77	11/20	3	--
15-1173	MANTUA TWP MUA	MANTUA MUA MW-8B	31-39282	139.00	45.89	11/19	93	--
15-1203	WASHINGTON TWP MUA	WTMUA MW-9	31-34604	147.00	148.29	11/19	-1	--
15-1204	WASHINGTON TWP MUA	WTMUA MW-10	31-34605	147.00	149.42	11/19	-2	--
15-1205	WASHINGTON TWP MUA	WTMUA MW-4	31-33645	163.00	199.92	11/19	-37	--
15-1206	MANTUA TWP MUA	MANTUA MUA MW-8A	31-39283	139.00	46.75	11/19	92	--
15-1224	CLAYTON BORO	CLAYTON BORO MW-2/OBS-2	31330944-1	136.00	152.37	11/19	-16	--
15-1223	CLAYTON BORO	CLAYTON BORO MW-3/OBS-1	31330933-2	137.00	152.60	11/19	-16	--
15-1338	PITMAN BORO	PITMAN BORO 5-1993	31-42098	124.00	37.23	11/19	87	--
33- 2	CUMBERLAND COUNTY	BOSTWICK NO 3	--	85.00	67.67	11/19	17	19
33- 8	STRANG, ARNOLD	STRANG 1	30-00030	70.00	51.06	11/19	19	18
33- 20	HORNER, EPHRAIM	HORNER OBS	--	76.75	47.03	11/19	30	28
33- 22	ELMER WC	EWC 6	31-04612	105.00	89.62	11/21	15	20
33- 32	PUBLIC SERVICE ELECTRIC AND GAS	PW 3	34-00758	12.00	10.36	11/19	2	1
33- 56	MANNINGTON T E S	MTES 1	--	25.00	16.57	11/19	8	7
33- 241	SALEM CITY WD	QUINTON	--	10.00	3.21	11/19	7	5
33- 252	US GEOLOGICAL SURVEY	SALEM 2 OBS	--	3.25	2.04	11/19	1	0
33- 351	LAZOZ, TED	SPINOSI 1/WOODSTOWN RES-TAURANT & DINER	30-00042	45.00	12.44	11/19	33	31
33- 381	MANNINGTON MILLS	MILLS 6	30-01505	10.00	8.97	11/19	1	1
33- 384	WILD OAK COUNTRY CLUB	1-IRR-73	30-01356	20.00	13.44	11/19	7	5
33- 456	ELMER WC	EWC 8	31-19206	125.00	108.37	11/21	17	22

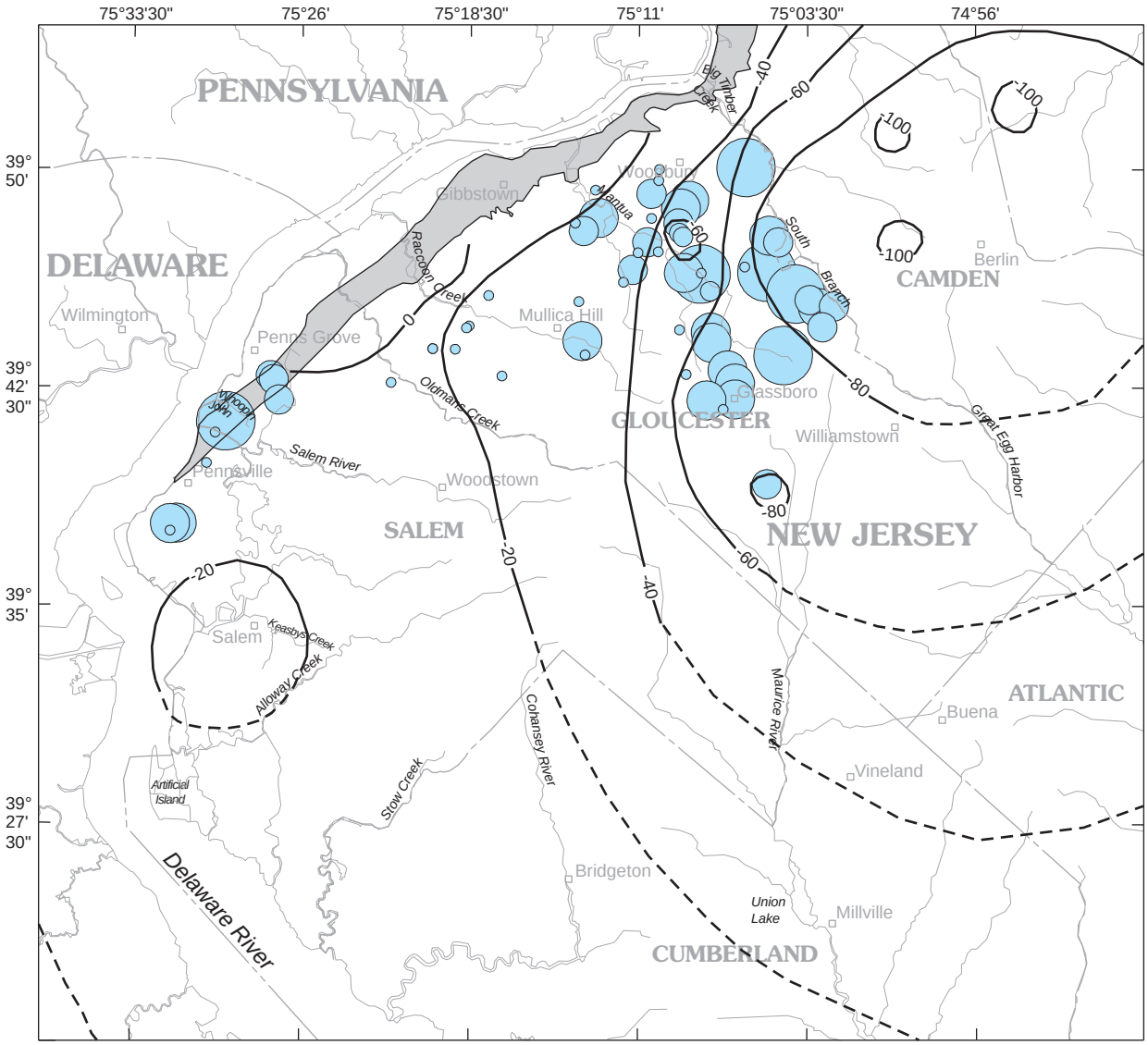


Figure 26. Withdrawals from, and potentiometric surface of, the Upper Potomac-Raritan-Magothy aquifer, Gloucester and Salem Counties, New Jersey, 1993.

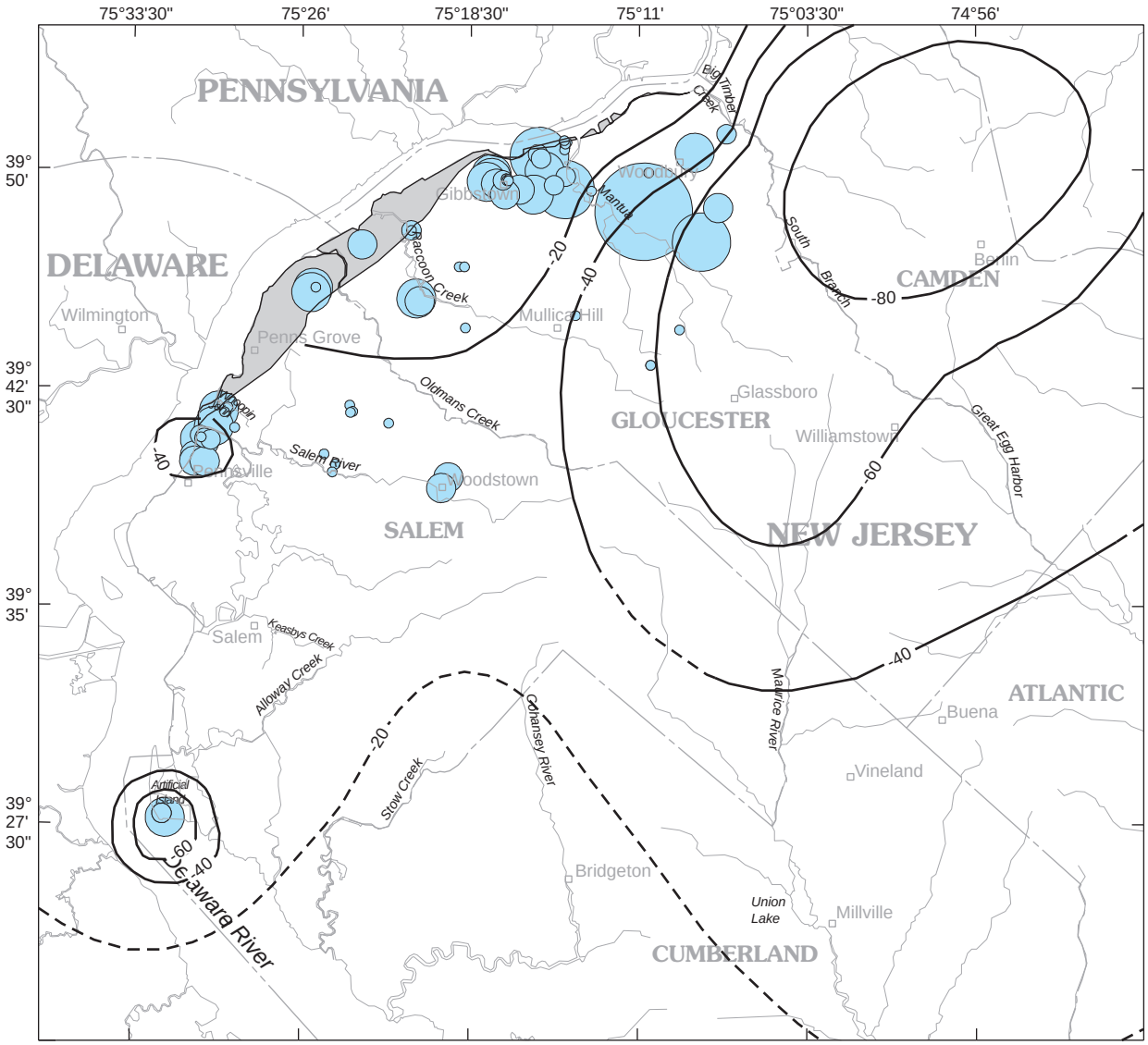


Figure 27. Withdrawals from, and potentiometric surface of, the Middle Potomac-Raritan-Magothy aquifer, Gloucester and Salem Counties, New Jersey, 1993.

Withdrawals from wells tapping the undifferentiated Middle/Lower Potomac-Raritan-Magothy aquifer are attributed to the undifferentiated Potomac-Raritan-Magothy aquifer in figure 20 and are shown along with Middle Potomac-Raritan-Magothy aquifer withdrawals in figure 27. Furthermore, withdrawals that are attributed to the Potomac-Raritan-Magothy aquifer system but the specific aquifer within the system is not known are also shown as undifferentiated Potomac-Raritan-Magothy aquifer withdrawals in figure 20 and are shown in figure 27. Undifferentiated Potomac-Raritan Magothy aquifer withdrawals averaged 600 Mgal/yr during 1975-95 and 500 Mgal/yr during 1993-95.

Water-level altitudes in the Middle Potomac-Raritan-Magothy aquifer in 1993 were slightly below sea level near the Delaware River but were more than 60 ft below sea level in central Gloucester County. The effect of withdrawals in Camden County, where water levels were more than 80 ft below sea level in some locations, has propagated into central Gloucester County (fig. 27). Although most withdrawals are made near the river, recharge from the outcrop area and induced recharge from the river mitigate the effect of these withdrawals on water levels. Therefore, water levels are lowest farther downdip (Navoy and Carleton, 1995, p. 33). Water levels of 20 to 60 ft below sea level were measured near pumping centers in Gibbstown, Woodbury, Pennsville, and Artificial Island.

Lower Potomac-Raritan-Magothy Aquifer

The Lower Potomac-Raritan-Magothy aquifer is the third most heavily used aquifer in Gloucester and Salem Counties. Withdrawals from this aquifer in the study area are made adjacent to the Delaware River, primarily in northern Gloucester County (fig. 28). Average withdrawals in Gloucester and Salem Counties were about 3,300 Mgal/yr during 1975-92, but were lower during 1993-95, averaging about 2,600 Mgal/yr.

Water-level altitudes in the Lower Potomac-Raritan-Magothy aquifer in 1993 were as much 60 ft below sea level in Gloucester County and were affected by withdrawals in Camden County and the State of Delaware (fig. 28). Water levels were more than 40 ft below sea level along the Delaware River around pumping centers in Woodbury and Pennsville. Withdrawals in Camden County lowered water levels in the aquifer in Gloucester and Salem Counties to 20 to 60 ft below sea level, and withdrawals in Delaware lowered water levels in Salem County to 40 to 60 ft below sea level.

CHLORIDE CONCENTRATIONS IN GROUND WATER

The USGS and the NJDEP jointly conduct an ongoing program to monitor the effects of saltwater intrusion in susceptible aquifers in the Coastal Plain of New Jersey. Chloride concentrations in samples from selected production and observation wells in seven aquifers or aquifer systems have been monitored since 1949 throughout Gloucester and Salem Counties. Aquifers in the two-county area from which water is sampled periodically include the Kirkwood-

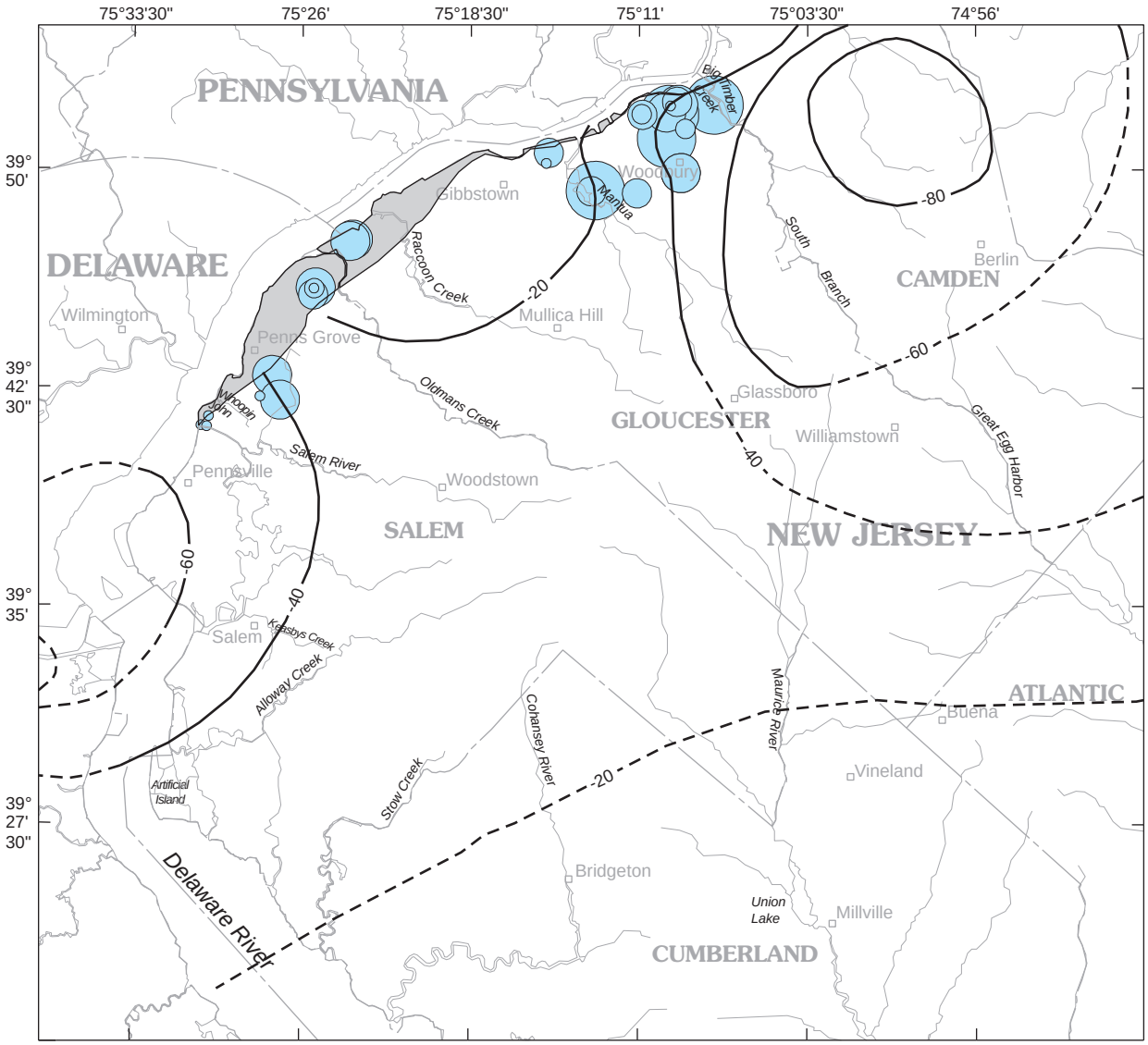


Figure 28. Withdrawals from, and potentiometric surface of, the Lower Potomac-Raritan-Magothy aquifer, Gloucester and Salem Counties, New Jersey, 1993.

Cohansey aquifer system, Vincentown aquifer, Wenonah-Mount Laurel aquifer, Englishtown aquifer system, Upper Potomac-Raritan-Magothy aquifer, Middle Potomac-Raritan-Magothy aquifer, and Lower Potomac-Raritan-Magothy aquifer.

The results of analyses of 4,221 samples from 496 wells are presented in table 5 (at end of report). The data presented are a compilation of chloride-concentration data collected over 46 years by the USGS and the NJDEP. The maximum chloride concentration recorded at each sampled well is presented on maps (pls. 2-6) that depict the locations of all wells by aquifer. Chloride concentrations over time are shown (figs. 29-36) for wells with a sufficiently long period of record (15 or more years). Well-location and well-construction data are presented in table 6 (at end of report). The potable-water standard of 250 mg/L for chloride concentration was exceeded in at least one sample from 30 of the 496 wells. Several production wells in this area were abandoned and sealed due to elevated chloride concentrations.

Kirkwood-Cohansey Aquifer System

One hundred seventy-three samples from 102 wells screened in the Kirkwood-Cohansey aquifer system were analyzed for chloride. Most of the samples were collected and analyzed from the mid-1980's through the early 1990's, although a few samples date from the 1950's. The maximum chloride concentration in samples from each well is shown on plate 2. Chloride concentrations in most samples were less than 30 mg/L. Chloride concentrations in samples from 18 wells screened 94 ft or more below land surface ranged from 1.9 to 20 mg/L. Those in samples from seven wells screened within 75 ft or less of land surface were greater than 30 mg/L; the highest chloride concentration (83 mg/L) was measured in water from well 15-1057. These wells show the effect of surface contaminants, such as highway deicing salts, which have leached down to the water table. The vertical distribution of chloride concentrations resulting from surface contamination is illustrated at a nest of four wells in Washington Township, Gloucester County (table 7). These wells are located within several feet of the shoulder of a two-lane road and receive recharge from road runoff. The inverse relation of chloride concentration with depth indicates that the contaminant source is at the land surface. Available water-quality analysis results (table 5) do not indicate any measurable effect of saltwater intrusion in the Kirkwood-Cohansey aquifer system in the two-county area.

Vincentown Aquifer

No trends are discernible in the results of analyses of samples from 10 wells screened in the Vincentown aquifer, primarily in Salem County, for chloride because the analyses are infrequent and dated. Most of the samples were collected from the late 1950's to the early 1970's; only one sample, from well 33-699, was collected recently (1994). Chloride concentrations were at background levels at eight of these wells, with values ranging from 2.1 to 7.0 mg/L. Water from well 33-248 in Salem City contained 170 mg/L chloride, indicative of infiltration of brackish water into the aquifer from a nearby saline water body. This well is within several hundred feet of Keasbeys Creek, a tidally influenced tributary of Salem River, and has a shallow screen (20-24 ft

Table 7. Vertical distribution of chloride concentrations in the Kirkwood-Cohansey aquifer system, Washington Township, Gloucester County, New Jersey

USGS well number	Depth of screened interval (feet below land surface)	Date sampled	Chloride concentration (milligrams per liter)
15-1057	22-27	3/22/91	83
		12/19/91	83
15-1063	35-40	3/21/91	20
		12/17/91	23
15-1058	70-75	3/21/91	12
		12/27/91	11
15-1059	95-100	3/20/91	2.1
		12/17/91	2.1

below land surface). Rosenau and others (1969) report the presence of saltwater in the Vincentown aquifer in the Salem City area; they cite chloride concentrations ranging from 10 to 2,850 mg/L in four wells sampled during 1964-66.

Wenonah-Mount Laurel Aquifer

Water from the Wenonah-Mount Laurel aquifer was sampled at 45 wells from which 316 samples were collected periodically during 1950-96. The maximum chloride concentration in samples from each well is shown on plate 3. The median concentration of chloride in the most recent samples from all wells screened in this aquifer was 6.6 mg/L. At 17 wells screened 96 ft or more below land surface, chloride concentrations fell into two ranges--between 0.15 and 14 mg/L, and greater than 100 mg/L. Concentrations in samples from wells in Lower Alloways Creek Township and Salem City fell in the higher range, indicative of the infiltration of brackish water into the Wenonah-Mount Laurel aquifer in this area. Wells for which long periods of record of chloride-concentration data are available include wells 33-32, 33-35, and 33-249 (fig. 29). Wells 33-32 and 33-35 are used to provide water for the Public Service Electric & Gas (PSE&G) Salem Nuclear Generating Station; pumping from these wells has induced saline water from the Delaware River to flow into the aquifer. Median chloride concentrations in these wells are 140 mg/L and 424 mg/L, respectively. Concentrations have fluctuated considerably in both wells since 1984, with a gradual downward trend at well 33-32 and a steep upward trend at well 33-35. Opposite trends in the chloride concentration at these wells probably are related to different pumping rates and (or) period of use at each well, although this information was not available. Chloride concentrations in well 33-249 in Salem City, used for public supply by the Salem Water Department, increased steadily from 1952 to 1964, with a gradual reversal of this trend from 1964 to 1996. A maximum chloride concentration of 140 mg/L was recorded on April 27, 1964, and concentrations have diminished gradually over time to a low of 5.0 mg/L on February 16, 1995. The most recently collected water sample from this well (December 30, 1995)

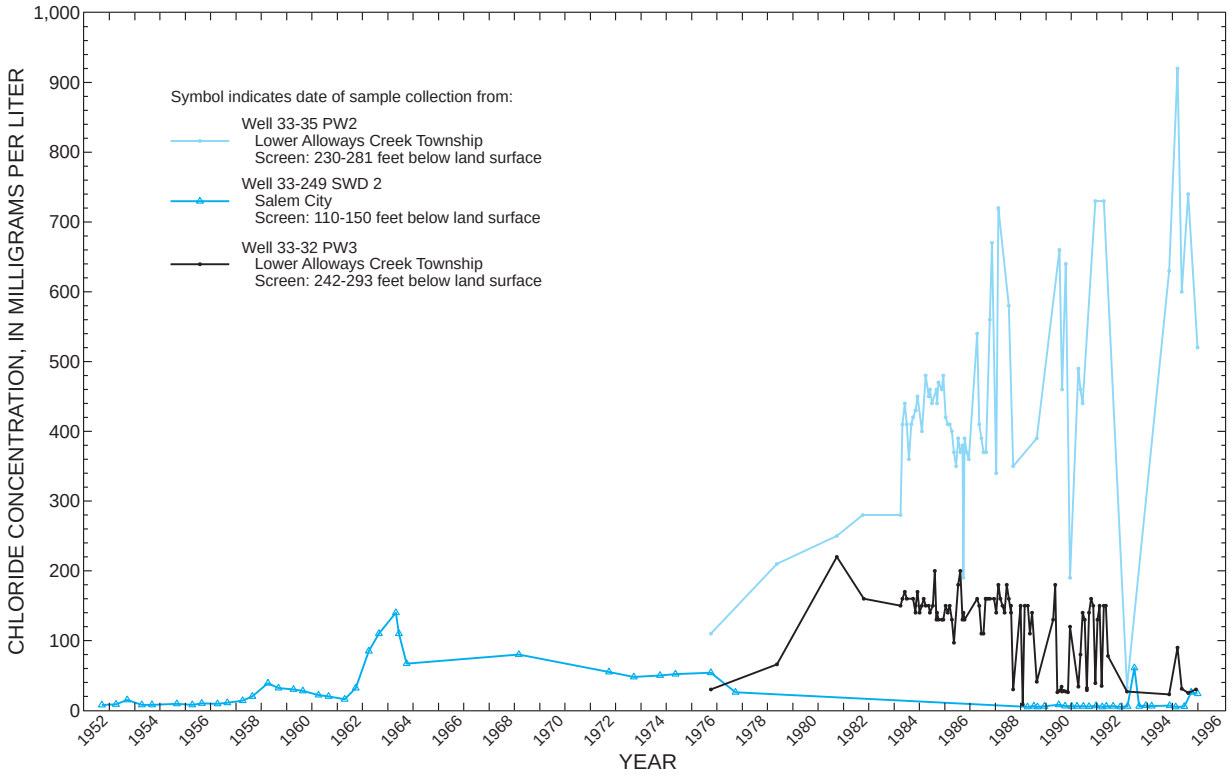


Figure 29. Chloride concentrations in water from the Wenonah-Mount Laurel aquifer, Salem County, New Jersey.

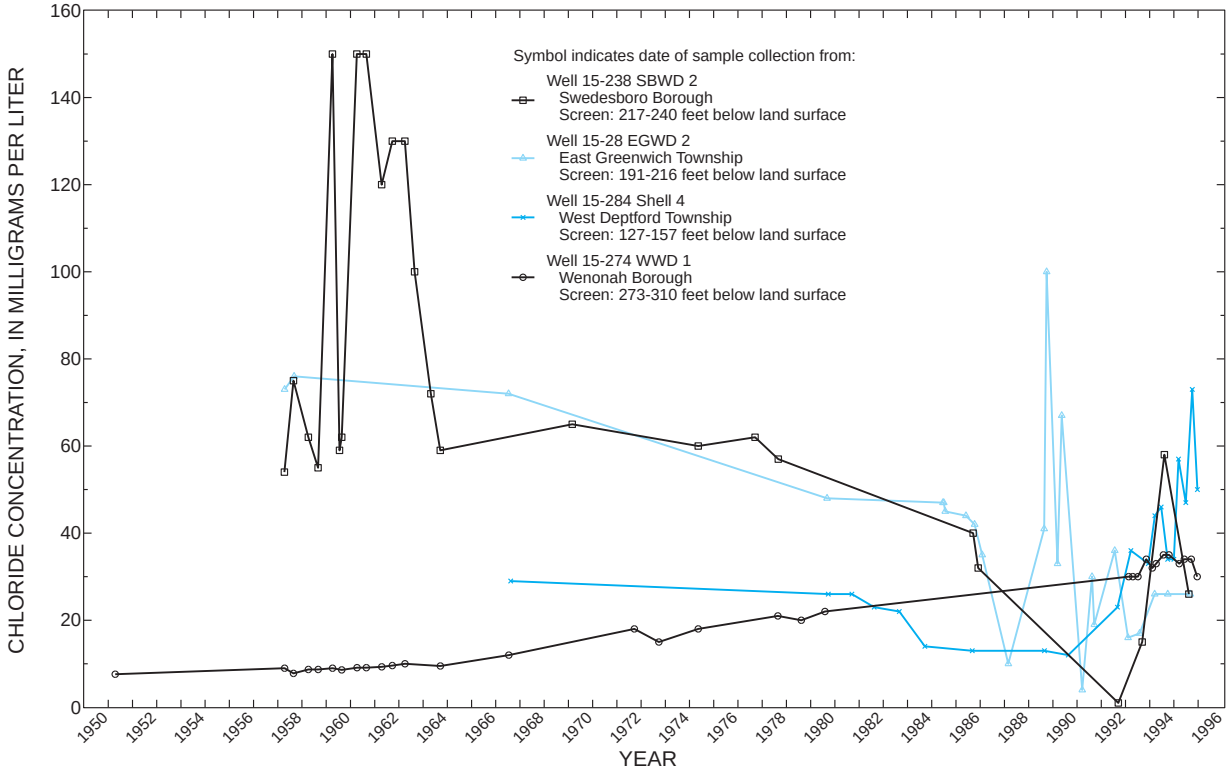


Figure 30. Chloride concentrations in water from the Upper Potomac-Raritan-Magothy aquifer, western Gloucester County, New Jersey.

contained 24 mg/L chloride. Rosenau and others (1969) attribute saltwater intrusion into the Wenonah-Mount Laurel aquifer to vertical leakage from the overlying Vincentown aquifer. Specifically, they indicate that the saltwater originated from tidal flooding of the unconfined aquifer during the drought of 1961-66, and that freshwater discharge to the tidal streams declined and may have ceased. In effect, the hydraulic gradient reversed. Before the drought, freshwater discharged to the tidally influenced streams and prevented brackish water from recharging the aquifer. As water levels in the surficial Vincentown aquifer dropped and base flow declined, the tidal, brackish water moved inland and infiltrated into the aquifer. As the drought ended and the water table rebounded, the hydraulic gradient reversed again, flushing the saltwater out of the aquifer over time. This explains both the increase and decrease in chloride concentrations in well 33-249.

Englishtown Aquifer System

Results of analysis of samples from six wells screened in the Englishtown aquifer system, five in Gloucester County and one in Salem County, indicate that chloride concentrations in this aquifer are low. Concentrations ranged from 1.8 to 4.5 mg/L in samples that date primarily from 1957; one sample was collected in 1986. Rosenau and others (1969) indicate that saltwater was present in the Englishtown aquifer system in a well located near the mouth of the Salem River in Salem City (not included in table 5). A sample collected from this well in 1964 contained 316 mg/L chloride. The limited available data indicate that saltwater intrusion in the Englishtown aquifer system is very localized in extent.

Upper Potomac-Raritan-Magothy Aquifer

The results of analysis of 1,355 samples collected from 138 wells screened in the Upper Potomac-Raritan-Magothy aquifer during 1950-95 for chloride are listed in table 5. One sample from well 15-225 was collected in 1929. The maximum chloride concentration in samples from each well is shown on plate 4. The potable-drinking-water standard of 250 mg/L was exceeded in 10 wells. The median of the chloride concentrations in the most recently collected sample from all wells screened in the Upper Potomac-Raritan-Magothy aquifer was 26 mg/L. The source of chloride is saline water from the Delaware River in areas where a hydraulic connection exists between the river and the aquifer such as in West Deptford Township, Gloucester County (Navoy and Carleton, 1995, pl. 1). Tidally affected tributaries (streams) in other communities near the river allow brackish water to flow inland across the outcrop area of the Potomac-Raritan-Magothy aquifer system. In Gloucester County, the river communities from National Park Borough to Logan Township have all been affected by elevated chloride concentrations in the Upper Potomac-Raritan-Magothy aquifer. This affected area extends from National Park Borough in the north through East Greenwich Township and from Swedesboro Borough in the east to Logan Township in the west and south (fig. 2). Not all wells screened in the Upper Potomac-Raritan-Magothy aquifer in this area contain high chloride concentrations, but results of point sampling have indicated that this area is susceptible to induced infiltration from the Delaware River as a result of reversed hydraulic gradients. In these instances, extensive water withdrawals draw the water level in the aquifer below sea level, causing freshwater-discharge

areas to become recharge areas for salty river water. In Salem County, analyses of samples from the Upper Potomac-Raritan-Magothy aquifer for chloride indicate that the aquifer has been affected by saltwater intrusion near the river communities of Pennsville Township, Carneys Point Township, and Salem City.

Chloride concentrations in well 15-028 in East Greenwich Township and well 15-238 in Swedesboro Borough declined from the early 1960's to the late 1980's (fig. 30). Results of periodic sampling during this time indicate that chloride concentrations in well 15-238 fell from 150 mg/L in 1961 to 1.0 mg/L in 1992. Likewise, concentrations in well 15-028 fell from 76 mg/L in 1958 to 4.0 mg/L in 1991. Chloride concentrations in these two wells have varied since the early 1990's; the most recent values (26 mg/L in both wells) are slightly above the lows for the period of record. The decline in chloride concentrations at these wells may be the result of a concurrent decline in use or withdrawal rates; however, the cause is not readily identifiable because detailed pumping records for these wells are not available. In contrast, chloride concentrations in well 15-274 in Wenonah Borough have increased steadily from 7.6 mg/L at the time of initial sampling in 1951 to 34 mg/L in 1995. Chloride concentrations in well 15-284 in West Deptford Township have increased rapidly during the 1990's, from a low of 12 mg/L in 1990 to the maximum recorded value of 73 mg/L in 1995.

Hardt and Hilton (1969) and Barksdale and others (1958) indicate that the freshwater-saltwater interface in the Upper Potomac-Raritan-Magothy aquifer in the southern part of Gloucester County extends from near the Salem-Gloucester County boundary near Woodstown northeastward toward Mullica Hill. The interface curves north of Mullica Hill and then continues southeast toward Clayton Borough (Hardt and Hilton, 1969, fig. 5, p. 16). The freshwater-saltwater interface represents a transition from freshwater in the aquifer that originated as precipitation to older saltwater that may be connate or derived from the ocean, as a remnant of higher eustatic sea level. Wells in the Upper Potomac-Raritan-Magothy aquifer in the interior part of Gloucester County from Mullica Hill (Harrison Township) and Mantua Township southeast through Pitman Borough, Glassboro Borough, and Clayton Borough show the effect of saltwater that has migrated updip from the southeast. Results of long-term sampling at wells 15-1 and 15-3 in Clayton Borough demonstrate the presence of elevated chloride concentrations, but these concentrations fluctuate and no trend is readily discernible (fig. 31). These fluctuations may be related to the rate and duration of pumping prior to sample collection. Well 15-3 was last sampled in 1988; the chloride concentration was at the low for the period of record, 70 mg/L, following a downward trend from a high of 150 mg/L in 1985. Chloride concentrations in well 15-1 have fluctuated from a low of 35.7 mg/L in 1991 to a maximum of 249.5 mg/L in 1994. The median chloride concentrations in samples from wells 15-1 and 15-3 are 133.6 mg/L and 110.5 mg/L, respectively. Chloride concentrations in wells 15-129 and 15-130 in Mullica Hill have increased gradually from their initial sampling until their most recent sampling in the 1990's, with median concentrations of 141 and 160 mg/L, respectively. The maximum chloride concentrations recorded at wells 15-130 in Mullica Hill and 15-1 in Clayton Borough were measured in 1994. Although chloride concentrations fluctuate over time at production wells, the recent measurement of the maximum values at both of these wells indicates that saltwater is advancing in this area. Likewise, maximum chloride concentrations in wells 15-227 in Pitman Borough and 15-192 in Mantua Township were recorded in 1994, following upward trends. Because sampling of nearby

wells 15-3 in Clayton Borough and 15-129 in Mullica Hill was discontinued in 1988 and 1991, respectively, it is unclear whether the freshwater-saltwater interface is moving updip or whether the wells in this part of Gloucester County are affected by upconing of older salty water at depth (fig. 31).

Middle Potomac-Raritan-Magothy Aquifer

A total of 1,667 samples were collected from 133 wells completed in the Middle Potomac-Raritan-Magothy aquifer for chloride analysis. The samples were collected intermittently during 1951-96. The maximum chloride concentration in samples from each well is shown on plate 5. Chloride concentrations in seven wells exceeded 250 mg/L. The median chloride concentration of the most recently collected sample from all wells screened in the Middle Potomac-Raritan-Magothy aquifer was 25 mg/L. Elevated chloride concentrations were found in wells in the Delaware River communities of West Deptford Township, Paulsboro Borough, Greenwich Township, and Logan Township in Gloucester County and Oldmans Township, Carneys Point Township, Pennsville Township, and Salem City in Salem County. Interior communities of Woodstown Borough and Pilesgrove Township in Salem are affected by the influx of older, saline water from downdip.

Chloride concentrations in the Middle Potomac-Raritan-Magothy aquifer have been monitored for as long as 44 years at four wells in Greenwich Township (fig. 32). The period of record of chloride concentrations in well 15-72 extends from 1952 to 1995. Concentrations in samples from this well increased steadily from the early 1950's (22 mg/L on April 6, 1953) until 1963 (110 mg/L on August 26, 1963). Results of periodic sampling of this well indicate stable chloride concentrations through the mid-1970's, after which concentrations fluctuated from a high of 140 mg/L to a low of 26 mg/L. The most recently collected sample (October 25, 1995) contained 95 mg/L chloride. Two other wells (15-79 and 15-81) in Greenwich Township also show large fluctuations in chloride concentrations over time. Chloride concentrations in samples from well 15-81 increased sporadically from 1967 through 1985, then declined from 1986 through 1987.

The cyclic nature of chloride concentrations at these wells may be related to the pumping cycle of the wells prior to sample collection and their proximity to saline water. A sample collected after a long period of pumping may contain more chloride ion than a sample collected prior to pumping because pumping may draw a slug of higher salinity water into the aquifer from a nearby source. As higher salinity water mixes with ambient ground water, the chloride concentration of the water being drawn into the well increases. If the same well is sampled after a period of inactivity (no pumping), the concentration of chloride in the ground water may decrease as a result of natural diffusion of the higher salinity water body with the lower salinity, ambient ground water. This relation coupled with periodic pumping cycles common at industrial and public-supply wells may explain the variability in chloride concentrations in samples from these wells. In addition, variability in sampling procedures and analytical methods used by individual industries and water purveyors may affect the quality of the chloride-concentration data.

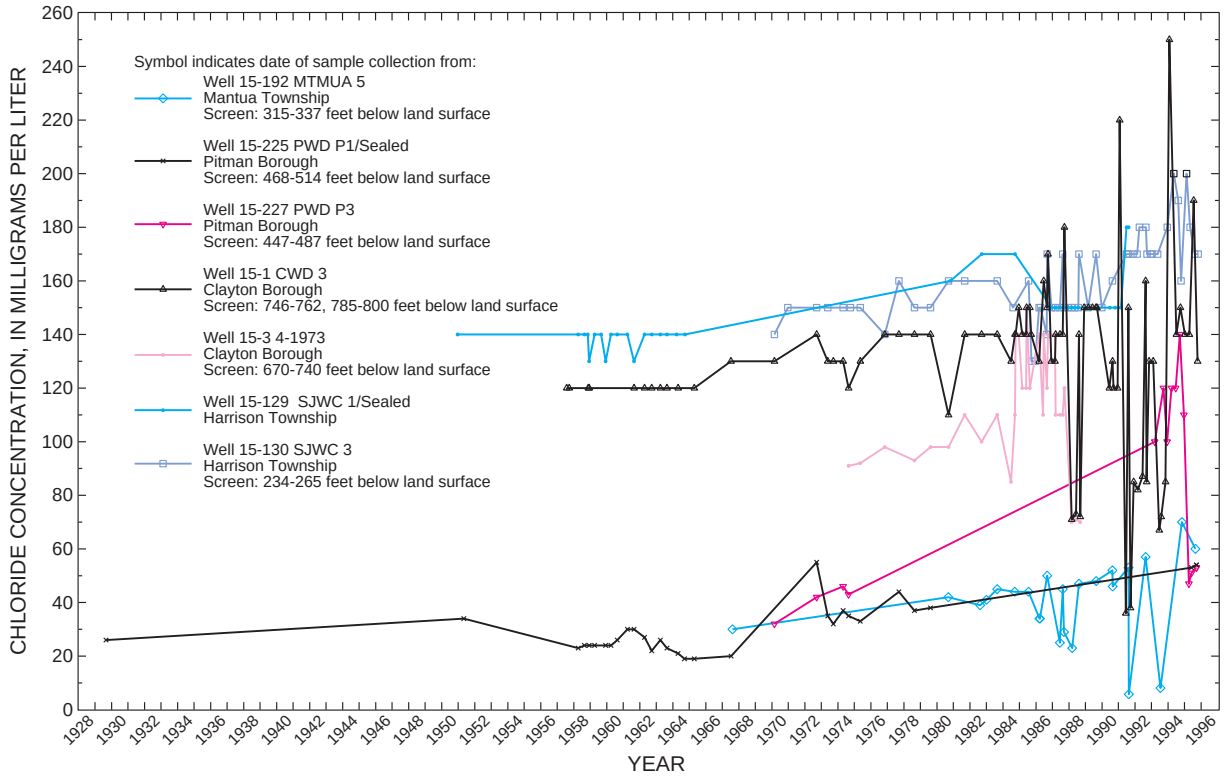


Figure 31. Chloride concentrations in water from the Upper Potomac-Raritan-Magothy aquifer, central Gloucester County, New Jersey.

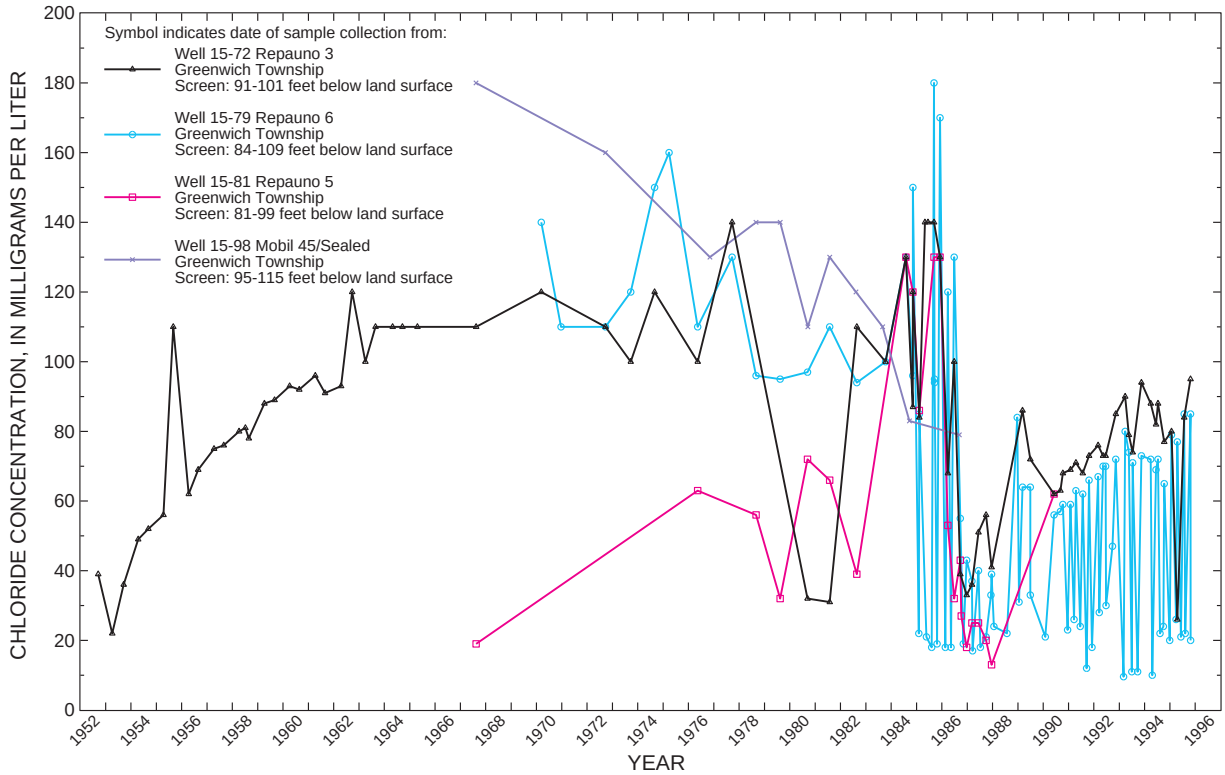


Figure 32. Chloride concentrations in water from the Middle Potomac-Raritan-Magothy aquifer, Greenwich Township, Gloucester County, New Jersey.

Whatever the cause, an overall decline in chloride concentrations in water from wells 15-72, 15-79, and 15-81 is evident during 1986, after which concentrations began to increase again. Chloride concentrations in well 15-98 decreased steadily from 180 mg/L in 1967 to 79 mg/L in 1979; eventually the well was sealed. Median chloride concentrations in water from wells 15-72, 15-79, 15-81, and 15-98 are 84, 62.5, 42.5, and 130 mg/L, respectively.

Chloride concentrations in wells screened in the Middle Potomac-Raritan-Magothy aquifer in Oldmans Township (33-83, 33-85), Carneys Point Township (33-328), and Pennsville Township (33-123, 33-125) in Salem County have increased from the time of their initial sampling in 1980, 1967, and 1967, respectively, until the time of their most recent sampling in the 1990's (figs. 33, 34, and 35). Although concentrations have fluctuated and sampling intervals were inconsistent, particularly at wells 33-328 (fig. 34) and 33-123 (fig. 35), an overall upward trend is clear. Median chloride concentrations in production wells 33-362, 33-353, and 33-354 in Woodstown Borough are 150, 142.5, and 176 mg/L, respectively. This area is affected by saline water from downdip. Woodstown Borough well 33-354 has the longest period of record, with chloride measurements dating from 1957 to the present (1996). Chloride concentrations in samples from this well have increased gradually over time.

Lower Potomac-Raritan-Magothy Aquifer

Six hundred eighty-one samples were collected from 62 wells screened in the Lower Potomac-Raritan-Magothy aquifer during 1950-96. The maximum chloride concentration in samples from each well is shown on plate 6. The potable-drinking-water standard of 250 mg/L chloride was exceeded at 19 percent (12) of these wells. The median chloride concentration in the most recently collected sample from all wells screened in the Lower Potomac-Raritan-Magothy aquifer is 79 mg/L. The Delaware River communities of West Deptford, Woodbury City, Paulsboro Borough, Greenwich Township, and Logan Township in Gloucester County and Oldmans Township, Carneys Point Township, Pennsgrove Township, and Pilesgrove Township further inland in Salem County are affected by saltwater intrusion into the Lower Potomac-Raritan-Magothy aquifer.

Results of analyses of samples collected periodically from wells 15-102, 15-109, and 15-118 in Greenwich Township during 1952-95 collectively indicate a downward trend in chloride concentrations in the Lower Potomac-Raritan-Magothy aquifer in this area (fig. 36). Sampling was discontinued at well 15-102 in 1973 and at well 15-109 in 1988, so it is unclear whether this trend continued. Chloride concentrations in well 15-118 have leveled off to approximately 100 mg/L during the 1990's. Despite the downward trend in some wells, median chloride concentrations at these wells are elevated--144, 104.5, and 110 mg/L at wells 15-102, 15-109, and 15-118, respectively. Chloride concentrations at well 15-320 (fig. 36) in West Deptford Township were constant (13-17 mg/L) from the time of initial sampling in 1950 through 1970. When periodic sampling was resumed in 1993, concentrations had increased, and reached a maximum of 38 mg/L in 1995.

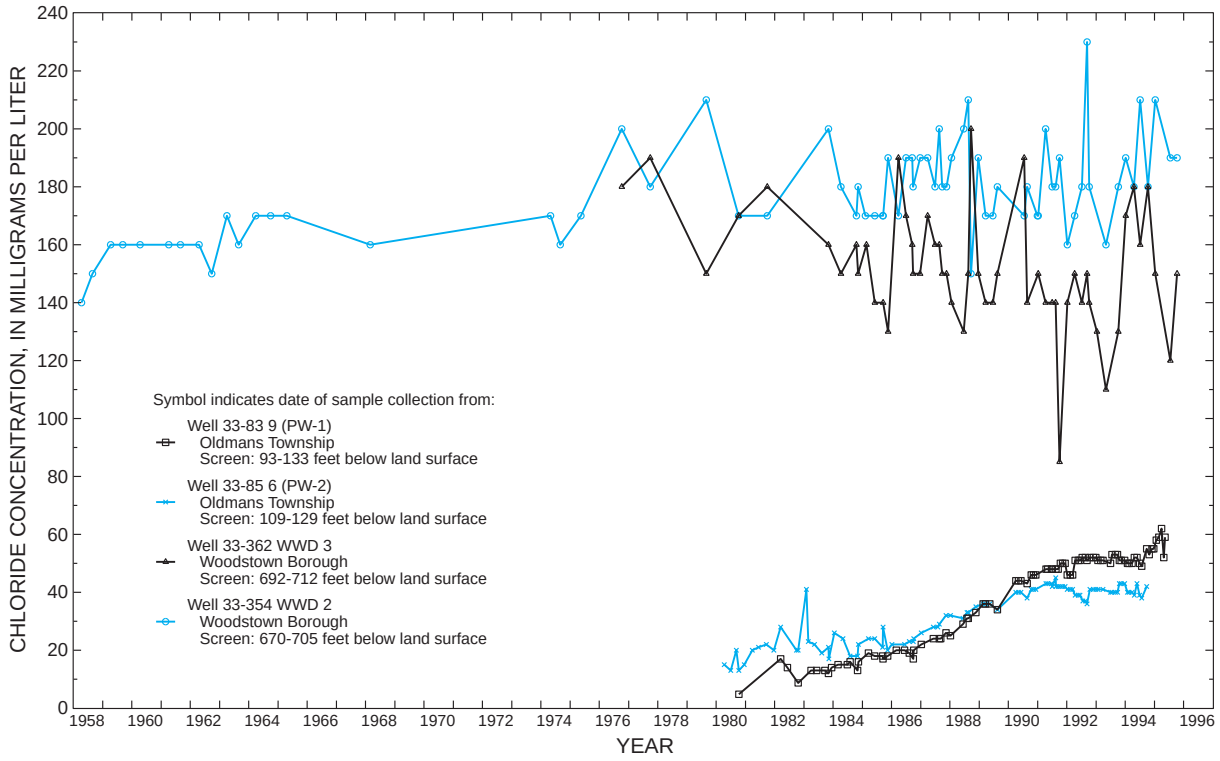


Figure 33. Chloride concentrations in water from the Middle Potomac-Raritan-Magothy aquifer, Salem County, New Jersey.

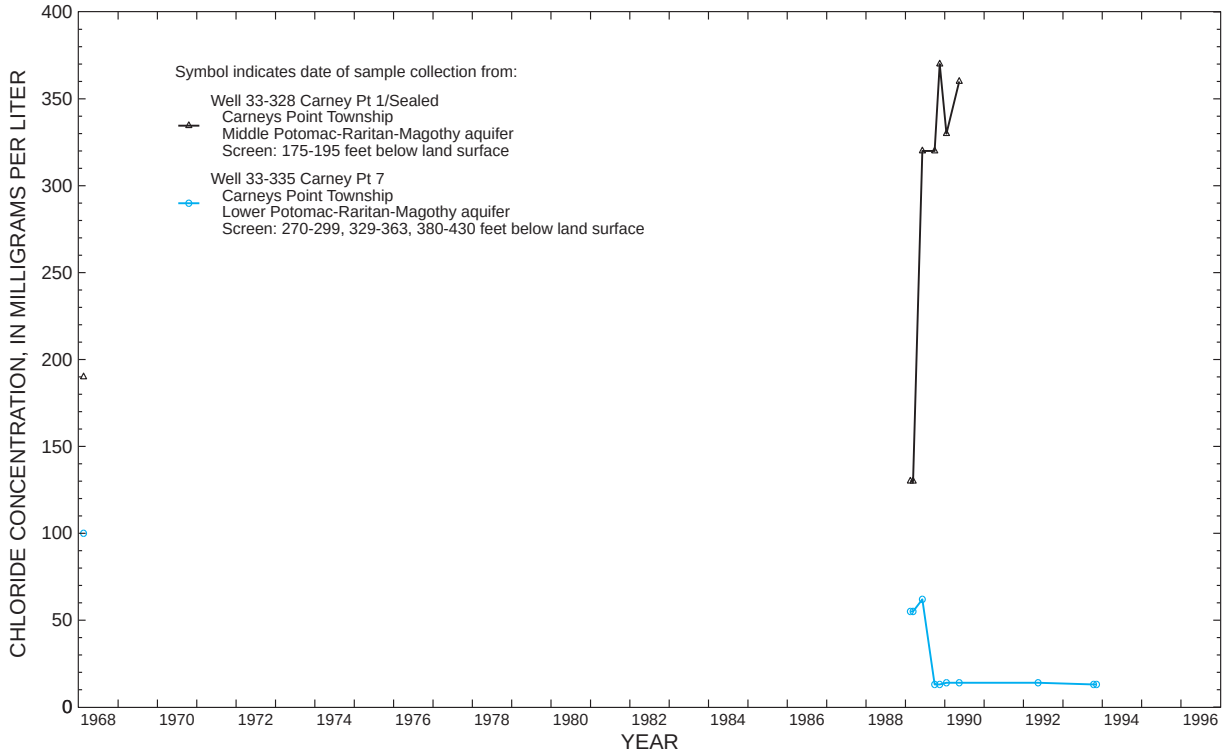


Figure 34. Chloride concentrations in water from the Middle and Lower Potomac-Raritan-Magothy aquifers, Carneys Point Township, Salem County, New Jersey.

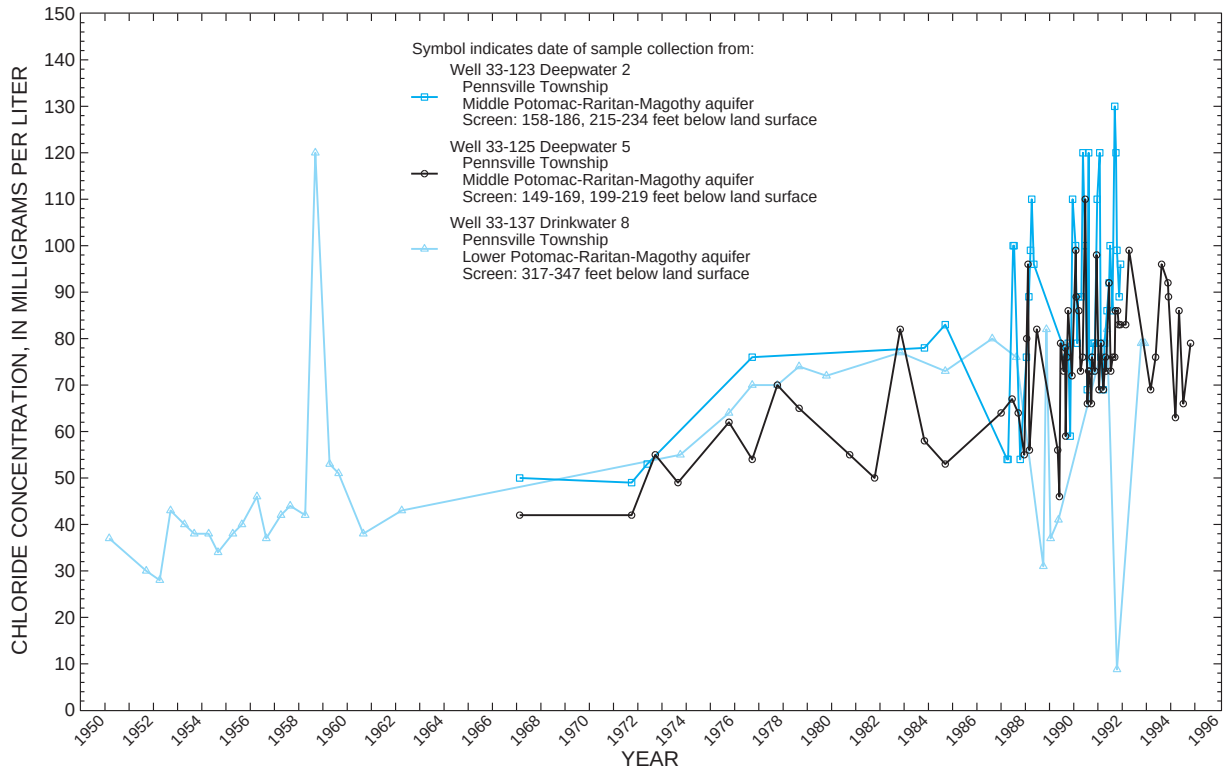


Figure 35. Chloride concentrations in water from the Middle and Lower Potomac-Raritan-Magothy aquifers, Pennsville Township, Salem County, New Jersey.

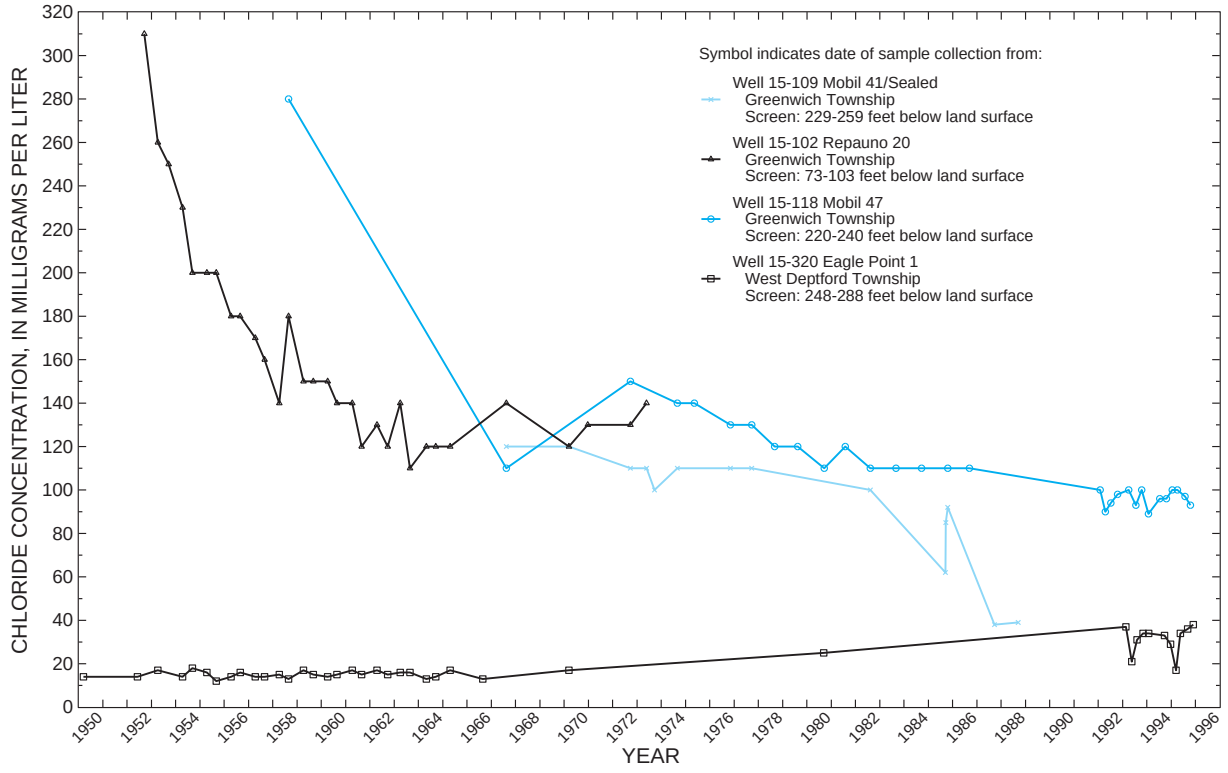


Figure 36. Chloride concentrations in water from the Lower Potomac-Raritan-Magothy aquifer, Greenwich and West Deptford Townships, Gloucester County, New Jersey.

Chloride concentrations in well 33-335, in Carneys Point Township, Salem County, declined from 1968 to 1993 (fig. 34). After initial sampling in 1968 indicated a chloride concentration of 100 mg/L, this well was not sampled for 21 years. After sampling was resumed, chloride concentrations declined from 62 mg/L in 1989 to 13 mg/L in 1993. The opposite trend was observed in well 33-328 in the Middle Potomac-Raritan-Magothy aquifer in the same area (fig. 34), where chloride concentrations increased from 130 mg/L in 1989 to 320 mg/L in 1992. Well 33-328 has a shallower screened interval (175-195 ft below land surface) than well 33-335 (uppermost screened interval 270-299 ft below land surface) and is located less than 1,000 ft from Whooping John Creek, a potential source of brackish water. Chloride concentrations in well 33-137 in Pennsville Township (fig. 35) increased from 1950 (37 mg/L) through 1987 (80 mg/L), after which their variability increased and the trend leveled off through 1993. The most recent chloride-concentration measurement in this well, made on December 7, 1993, was 79 mg/L.

SUMMARY AND CONCLUSIONS

Gloucester and Salem Counties are underlain by a series of unconsolidated sediments that are Early Cretaceous to Holocene in age. These sediments generally consist of gravel, sand, silt, and clay, and represent a variety of continental, coastal, and marine depositional environments. These deposits form a seaward-dipping wedge of alternating sands and clays that comprise the region's aquifers and confining units. Major aquifers and aquifer systems in the two-county area include the Kirkwood-Cohansey aquifer system, the Wenonah-Mount Laurel aquifer, and the Upper, Middle, and Lower aquifers of the Potomac-Raritan-Magothy aquifer system. Minor aquifers in the two-county area include the Piney Point aquifer, the Vincentown aquifer, and the Englishtown aquifer system.

Average reported ground-water withdrawals in Gloucester and Salem Counties during 1975-95 were 7,800 Mgal/yr for public supply, 4,900 Mgal/yr for industrial use, 700 Mgal/yr for irrigation, 500 Mgal/yr for power plants, 50 Mgal/yr for commercial use, and about 40 Mgal/yr for mining. Withdrawals for domestic self-supply in 1994 are estimated to be about 2,600 Mgal/yr, but only about 20 percent (520 Mgal/yr) is thought to be consumptive use and the remainder is returned to the aquifer through septic systems. The most heavily used aquifer in Salem and Gloucester Counties is the Upper Potomac-Raritan-Magothy aquifer, followed by, in decreasing order of use, the Middle Potomac-Raritan-Magothy aquifer, the Lower Potomac-Raritan-Magothy aquifer, the Kirkwood-Cohansey aquifer system, and the Wenonah-Mount Laurel aquifer. Average reported withdrawals during 1975-95 from these aquifers were 5,000, 3,700, 3,200, 1,200, and 300 Mgal/yr, respectively.

Reported withdrawals from the Kirkwood-Cohansey aquifer system in the southeastern half of the Salem/Gloucester two-county area are as much as 2,100 Mgal/yr. Although withdrawals from the aquifer are substantial in some areas, no regional cones of depression were observed. This is because the storage capacity and recharge rate are high, as is typical of unconfined aquifers, and because some of the water withdrawn for domestic supply and, to a smaller extent, irrigation, is returned to the aquifer. Water-table gradients are steeper in the

northwestern part of the study area than elsewhere in the study area because the sediments are less permeable and stream valleys are deeply incised. The water-table gradients elsewhere in the study area are typical of the high-permeability sediments of the Coastal Plain, in which water levels are high in topographically high areas, where precipitation recharges the aquifer, and low in topographically low areas, where ground water discharges to streams.

The Piney Point aquifer is not used significantly in Salem and Gloucester Counties because it is present only in the extreme southeastern part of each county. Water levels in 1993, however, were as much as 40 ft below sea level in the southernmost corner of Salem County and at sea level in the southernmost corner of Gloucester County because of withdrawals in the Dover, Delaware, and Buena, Atlantic County, New Jersey, areas, respectively.

Withdrawals from the Wenonah-Mount Laurel aquifer in Salem and Gloucester Counties increased during 1993-95 partly because of NJDEP restrictions on new withdrawals from the deeper Potomac-Raritan-Magothy aquifer system. Withdrawals increased to 660 Mgal in 1995, the highest annual withdrawal on record. Water levels in the Wenonah-Mount Laurel aquifer measured in 1996 are as much as 40 ft lower than those measured in 1993 and previous years because of the increased withdrawals. Water levels are highest in the outcrop area in central to northwestern Gloucester County, decrease to the southwest and southeast, and are significantly lower near pumping centers in Gloucester and Camden Counties, reaching lows of nearly 40 ft below sea level in Washington Township, Gloucester County.

In the study area, withdrawals are greatest and water levels are lowest in the Upper, Middle, and Lower Potomac-Raritan-Magothy aquifers, but average withdrawals from the aquifer system during 1993-95 were lower than the 1975-92 average. Average withdrawals from the Upper Potomac-Raritan-Magothy aquifer during 1975-95 were 5,000 Mgal/yr; this water was withdrawn from an area that extends from the outcrop area downdip to the Glassboro vicinity. Water-level altitudes in the Upper Potomac-Raritan-Magothy aquifer in 1993 were near or above sea level in the outcrop area near the Delaware River but were more than 80 ft below sea level in parts of central Gloucester County adjacent to Camden County. Average withdrawals from the Middle Potomac-Raritan-Magothy aquifer during 1975-95 were 3,700 Mgal/yr; this water was withdrawn from an area within about 8 mi of the Delaware River. In 1993, water levels were 20 to 60 ft below sea level near pumping centers in Gibbstown, Woodbury, Pennsville, and Artificial Island, and withdrawals in Camden County lowered water levels in the Middle Potomac-Raritan-Magothy aquifer in Gloucester and Salem Counties to 20 to 60 ft below sea level. Average withdrawals from the Lower Potomac-Raritan-Magothy aquifer during 1975-95 were 3,200 Mgal/yr; this water was withdrawn from the outcrop area and nearby areas adjacent to the Delaware River, primarily in northern Gloucester County. In 1993, water levels were more than 40 ft below sea level near pumping centers in Woodbury and Pennsville. Withdrawals in Camden County lowered water levels in the aquifer in Gloucester and Salem Counties to 20 to 60 ft below sea level, and withdrawals in Delaware lowered water levels in Salem County to 40 to 60 ft below sea level.

Chloride concentrations in more than 4,200 samples collected periodically from 496 wells during 1949-96 indicate the following:

1. The potable-water standard of 250 mg/L was exceeded in at least one sample from 30 wells. These wells were screened in the following aquifers: 10 in the Upper Potomac-Raritan-Magothy aquifer, 7 in the Middle Potomac-Raritan-Magothy aquifer, 12 in the Lower Potomac-Raritan-Magothy aquifer, and 1 in the Wenonah-Mount Laurel aquifer.

2. Six of the eight primary aquifers in Gloucester and Salem Counties (Vincentown aquifer, Wenonah-Mount Laurel aquifer, Englishtown aquifer system, and the Upper, Middle, and Lower Potomac-Raritan-Magothy aquifers) have been affected by saltwater intrusion. No chloride-concentration data are available for the Piney Point aquifer. Intrusion into the Vincentown aquifer, Wenonah-Mount Laurel aquifer, and Englishtown aquifer system is localized, primarily near Salem City, Salem County.

3. Saltwater intrusion is most widespread in the Upper, Middle, and Lower Potomac-Raritan-Magothy aquifers. Chloride concentrations in most of the sampled wells in these aquifers along the Delaware River from National Park Borough in northern Gloucester County south and west to Salem City, Salem County, have increased. Sources of high-salinity water include the tidally affected Delaware River and tributaries of the Delaware River that flow across the western part of this area. Chloride concentrations in wells in the Potomac-Raritan-Magothy aquifer system from the interior communities of Mantua Township south to Clayton Borough, west to Woodstown Borough, and north to Swedesboro Borough are elevated or have increased over time. The source of chloride in this area is older, salty water at depth that has been drawn toward the well vertically (upconing) or laterally, updip from the southeast.

4. Median chloride concentrations in the most recently collected samples from each well are highest in the Lower Potomac-Raritan-Magothy aquifer (79 mg/L), followed by the Upper Potomac-Raritan-Magothy aquifer (26 mg/L), the Middle Potomac-Raritan-Magothy aquifer (25 mg/L), and the Wenonah-Mount Laurel aquifer (6.6 mg/L).

5. Chloride concentrations in many production wells are highly variable and cyclic, probably as a result of the rate and duration of pumping in the well prior to sample collection and the proximity of the well intake to saline water.

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Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
Kirkwood-Cohansey aquifer system		
15- 2	04-23-51	18
15- 38	05-29-57	6.1
	07-25-90	11
15- 754	09-19-88	10
15- 810	09-08-88	11
15- 41	07-21-87	21
15- 46	05-30-57	7.0
15- 48	11-19-86	9.4
15- 53	06-04-57	3.2
15- 57	06-04-57	7.0
15- 729	11-19-86	12
15- 730	07-30-87	33
15- 732	12-11-86	16
15- 733	12-10-86	13
	09-29-88	14
15- 734	12-10-86	4.0
	08-26-88	7.7
15- 743	09-26-88	3.9
	02-16-89	3.9
15- 764	09-27-88	2.7
15- 785	09-19-88	9.9
15- 791	09-15-88	4.2
15- 793	09-09-88	5.7
15- 804	09-09-88	3.8
15- 805	09-20-88	5.3
15- 813	08-12-87	25
15- 830	01-21-87	4.6
15- 831	01-28-86	6.3
	09-14-88	6.0
15-1016	09-20-88	4.2
15-1017	09-22-88	9.7
15- 726	11-19-86	13
	11-19-86	13
	09-20-88	12
15-1054	05-07-91	59
15-1055	03-26-91	50
15-1056	03-22-91	13
15- 120	05-29-57	5.5
15- 829	12-11-86	13
	09-22-88	17
15- 199	11-06-69	9.0
15- 204	09-29-88	4.6
15- 365	11-20-86	5.2
15- 375	11-20-86	10
15- 375 (con't.)	09-28-88	11
15- 425	04-23-51	5.4
15- 426	04-23-51	13
15- 566	09-26-88	12
15- 619	09-15-88	4.3
15- 735	12-10-86	35
	09-23-88	20
15- 759	09-07-88	3.8
15- 801	01-20-87	10
	08-25-88	4.1
15- 802	09-30-88	12
15- 812	12-10-86	4.3
	08-24-88	4.4
15-1019	09-28-88	6.3
15-1048	08-15-90	3.3
15-1068	06-17-89	20
15-1072	06-14-90	14
	10-12-90	8.0
	12-11-90	11
	01-10-91	14
	02-07-91	10
	07-26-91	14
	08-18-91	15
	09-05-91	15
	09-11-91	15
	09-18-91	15
	10-02-91	17
	10-29-91	16
	11-14-91	16
	11-29-91	20
	12-17-91	19
	12-30-91	22
	03-06-92	17
	03-26-92	16
	06-14-92	15
	10-06-92	18
	12-04-92	14
	12-23-92	16
	03-10-93	14
	03-26-93	15
	06-11-93	16
15- 209	09-10-84	10
	09-16-85	7.0
	08-18-86	9.0
	11-20-86	5.5
15- 209 (con't.)	07-06-87	8.0
	11-16-87	5.0
	07-18-89	14
	08-21-90	11
	09-05-91	7.3
	08-21-92	6.3
15- 424	04-23-51	4.2
15-1071	09-10-84	13
	09-16-85	9.0
	08-18-86	10
	07-06-87	11
	11-16-87	5.5
	07-18-89	15
	08-24-90	16
	09-05-91	25
	08-21-92	14
15- 244	07-08-87	11
15- 246	05-30-57	4.6
15- 258	05-29-57	10
15- 263	10-20-68	4.7
15-1028	06-02-88	11
15-1029	06-02-88	15
15-1033	07-18-90	16
15-1044	07-25-90	6.4
15-1049	08-23-90	7.7
15-1050	08-08-90	12
15-1051	03-20-91	5.2
15-1052	03-19-91	8.1
15-1053	03-19-91	2.5
15-1057	03-22-91	83
	12-17-91	83
15-1058	03-21-91	12
	03-21-91	12
	12-27-91	11
15-1059	03-20-91	2.1
	12-17-91	2.1
15-1063	03-21-91	20
	12-17-91	23
15-1065	07-17-90	8.3
	11-29-94	20
15-1087	11-29-94	9.0
33- 464	12-16-86	23
	04-24-91	22
33- 672	08-16-90	44

[1] Wells are sorted by aquifer (primary), county (secondary), municipality (tertiary), and well number (quaternary).

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 682	08-15-90	28
33- 23	03-15-51	13
33- 698	02-18-94	17
33- 211	04-27-56	3.0
33- 223	08-03-89	30
	07-24-90	14
33- 229	06-29-87	14
33- 231	12-10-59	3.4
33- 390	12-29-59	2.3
33- 462	12-15-86	2.2
	12-14-88	1.7
	04-24-91	<0.10
33- 463	12-17-86	21
	12-14-88	19
33- 465	12-17-86	13
	11-23-88	9.7
33- 469	09-01-87	1.6
	12-01-88	1.9
33- 684	04-26-91	21
33- 785	09-16-93	7.5
	09-14-94	12
33- 262	07-22-87	28
33- 270	07-21-87	39
33- 275	11-23-88	11
33- 295	07-29-87	19
33- 466	12-16-86	38
	12-08-88	36
33- 673	08-09-90	25
33- 674	08-09-90	20
	04-26-91	20
33- 675	08-14-90	23
33- 676	08-23-90	26
33- 677	07-20-90	21
33- 678	08-16-90	13
33- 679	08-09-90	27
	04-23-91	18
33- 680	03-27-91	13
33- 681	03-27-91	18
33- 685	08-14-90	25
	04-23-91	26
Vincentown aquifer		
15- 119	05-29-57	2.1
15- 232	05-29-57	4.1
15- 270	05-29-57	5.6
33- 427	04-26-56	3.0
33- 699	02-17-94	3.5
33- 429	05-07-51	27
33- 153	04-27-56	2.0
33- 240	12-21-50	5.6
	04-08-58	5.9
	08-25-58	6.0
	04-09-59	5.8
	09-08-59	6.2
	04-11-60	5.8
	08-24-60	5.7
	04-07-61	6.4
	08-30-61	6.5
	04-19-62	6.2
	09-26-62	5.8
	04-03-63	6.0
	03-06-69	7.0
	09-28-72	7.0
33- 368	10-04-74	6.5
33- 248	03-16-65	170
Wenonah-Mount Laurel aquifer		
15- 12	05-28-57	100
15- 14	05-28-57	2.6
15- 25	05-28-57	13
15- 58	01-23-70	3.8
15-1060	08-24-90	2.5
15- 125	05-30-57	5.2
15- 184	05-29-57	2.0
15-1117	11-07-94	10
	02-06-95	2.0
15- 229	08-30-57	3.3
15- 249	05-30-57	2.2
15- 250	01-20-70	6.0
15- 255	01-23-70	3.5
15- 264	01-20-70	4.0
15- 269	05-29-57	2.0
	01-22-70	3.5
15- 336	05-30-57	8.0
33- 1	04-27-56	4.0
	07-16-64	3.7
33- 2	09-20-94	8.0
33- 11	07-07-59	1.6
33- 20	10-13-58	1.6
33- 22	09-18-64	4.8
33- 22 (con't.)	03-28-75	5.1
	05-15-90	0.15
	08-15-90	0.15
33- 456	05-15-90	0.15
	08-15-90	0.15
33- 32	10-07-76	30
	05-18-79	66
	09-28-81	220
	10-22-82	160
	04-04-84	150
	05-02-84	160
	06-05-84	170
	07-03-84	160
	10-02-84	160
	11-07-84	140
	11-09-84	150
	12-05-84	170
	01-04-85	140
	02-05-85	150
	03-04-85	160
	04-02-85	150
	05-16-85	150
	06-02-85	140
	07-15-85	150
	08-12-85	200
	09-05-85	130
	09-13-85	140
	10-04-85	130
	11-21-85	130
	12-12-85	130
	01-15-86	150
	02-15-86	140
	03-15-86	150
	04-15-86	130
	05-15-86	97
	07-15-86	180
	08-15-86	200
	09-15-86	130
	09-29-86	140
	10-15-86	130
	04-15-87	160
	05-15-87	150
	06-15-87	110
	07-15-87	110

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 32 (con't.)	08-15-87	160
	08-21-87	160
	09-15-87	160
	10-15-87	160
	12-15-87	160
	01-15-88	140
	02-15-88	180
	03-15-88	160
	04-15-88	150
	05-15-88	140
	06-15-88	180
	07-15-88	160
	08-15-88	140
	08-16-88	150
	09-15-88	30
	01-01-89	150
	02-01-89	8.5
	03-01-89	150
	04-15-89	150
	05-15-89	110
	06-15-89	140
	08-22-89	41
	04-15-90	130
	05-15-90	180
	06-15-90	26
	07-15-90	28
	08-15-90	34
	08-23-90	27
	09-15-90	28
	10-15-90	27
	11-15-90	26
	12-15-90	120
	04-15-91	34
	05-15-91	80
	06-15-91	140
	07-15-91	130
	08-15-91	29
	08-15-91	32
	09-15-91	140
	10-15-91	160
	11-15-91	150
	12-15-91	39
	01-15-92	130
	02-15-92	150
33- 32 (con't.)	03-15-92	35
	04-15-92	150
	05-15-92	150
	06-15-92	78
	03-15-93	27
	11-15-94	23
	03-15-95	90
	05-15-95	31
	08-15-95	25
	12-07-95	30
33- 33	08-17-64	34
	09-16-64	34
	09-27-77	45
	08-29-79	41
	09-29-81	8.9
	11-07-84	42
33- 34	10-07-76	36
	05-18-79	70
	09-28-81	95
	10-22-82	100
	11-07-84	88
33- 35	10-07-76	110
	05-18-79	210
	09-28-81	250
	10-07-82	280
	04-04-84	280
	05-02-84	410
	06-05-84	440
	07-03-84	410
	08-03-84	360
	09-07-84	410
	10-02-84	420
	11-07-84	430
	11-09-84	430
	12-05-84	450
	02-07-85	400
	04-02-85	480
	05-16-85	450
	06-02-85	460
	07-02-85	440
	09-05-85	460
	09-13-85	440
	10-04-85	470
33- 35 (con't.)	11-21-85	460
	12-12-85	480
	01-15-86	420
	02-15-86	410
	03-15-86	410
	04-15-86	400
	05-15-86	370
	06-15-86	350
	07-15-86	390
	08-15-86	370
	09-15-86	380
	09-29-86	190
	10-15-86	390
	11-15-86	370
	12-15-86	360
	04-15-87	540
	05-15-87	410
	06-15-87	390
	07-15-87	370
	08-15-87	370
	08-21-87	370
	10-15-87	560
	11-15-87	670
	01-15-88	340
	02-15-88	720
	07-15-88	580
	09-15-88	350
	08-22-89	390
	07-15-90	660
	08-23-90	460
	10-15-90	640
	12-15-90	190
	04-15-91	490
	05-15-91	460
	06-15-91	440
	12-15-91	730
	04-15-92	730
	03-15-93	33
	11-15-94	630
	03-15-95	920
	05-15-95	600
	08-15-95	740
	12-29-95	520
33- 46	07-29-59	7.0

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 46 (con't.)	06-11-64	8.0
33- 50	04-11-58	8.8
	08-26-58	8.9
	04-09-59	9.0
	07-29-59	9.3
	09-08-59	9.9
	04-12-60	10
	08-24-60	9.9
	04-11-61	12
	08-30-61	10
	04-19-62	11
	04-03-63	11
	04-27-64	12
	03-06-69	20
	08-09-71	18
	09-28-72	19
	09-21-73	28
	04-30-74	22
	08-29-74	26
33- 51	04-12-60	10
33- 55	07-21-59	33
33- 426	08-17-79	21
	09-29-81	17
33- 568	02-16-94	22
33- 700	02-17-94	29
33- 203	07-16-59	6.6
33- 235	06-16-64	14
33- 241	09-21-73	5.7
	10-07-76	14
	09-27-77	17
	08-17-79	10
33- 243	04-11-65	5.0
	04-19-65	5.0
	10-21-65	6.0
	11-18-65	4.0
33- 244	05-19-64	100
33- 245	04-27-64	88
	06-10-64	110
	03-18-65	30
	03-19-65	62
	09-28-72	44
	10-04-74	45
33- 249	09-15-52	7.7
	04-06-53	8.7
33- 249 (con't.)	09-16-53	15
	04-14-54	8.0
	09-08-54	8.0
	09-02-55	9.5
	04-12-56	7.9
	08-27-56	10
	04-11-57	9.5
	08-30-57	11
	04-08-58	14
	08-25-58	20
	04-09-59	39
	09-08-59	32
	04-11-60	30
	08-24-60	28
	04-07-61	22
	08-30-61	20
	04-19-62	16
	09-26-62	32
	04-03-63	85
	08-27-63	110
	04-27-64	140
	06-10-64	110
	09-30-64	67
	03-06-69	80
	09-28-72	55
	09-21-73	48
	10-04-74	50
	05-15-75	52
	10-07-76	54
	09-27-77	26
	04-10-89	5.0
	07-11-89	6.1
	09-01-89	5.1
	12-12-89	6.0
	07-05-90	8.1
	10-05-90	6.3
	01-09-91	5.8
	03-25-91	6.0
	06-26-91	6.0
	09-16-91	5.5
	12-27-91	6.7
	03-23-92	5.0
	05-21-92	6.0
	08-28-92	6.0
33- 249 (con't.)	12-09-92	5.0
	03-24-93	6.0
	06-30-93	61
	09-07-93	6.0
	12-13-93	7.0
	03-07-94	6.3
	11-22-94	6.9
	02-16-95	5.0
	06-20-95	5.5
	09-28-95	26
	12-30-95	24
33- 252	06-24-75	41
	05-10-76	32
	07-26-93	86
33- 256	12-21-50	6.6
33- 279	03-12-59	2.0
	03-13-85	1.9
33- 280	03-12-59	1.8
33- 350	07-27-59	4.6
33- 351	04-27-56	24
	06-17-58	17
	08-19-58	18
	04-10-59	15
	09-08-59	20
	04-19-62	66
	09-25-62	61
	04-02-63	68
	08-27-63	67
	03-27-64	70
	09-30-64	66
Englishtown aquifer system		
15- 13	05-29-57	2.4
15- 188	05-28-57	4.5
15- 676	11-13-86	1.8
15- 223	05-29-57	3.1
15- 344	05-28-57	1.8
33- 168	10-11-57	3.4
Upper Potomac-Raritan-Magothy aquifer		
15- 1	07-30-57	120
	09-24-57	120
	11-19-58	120

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 1 (con't.)	12-09-58	120
	08-29-61	120
	04-18-62	120
	09-24-62	120
	04-03-63	120
	08-27-63	120
	04-29-64	120
	04-22-65	120
	07-13-67	130
	02-28-70	130
	09-21-72	140
	05-24-73	130
	09-24-73	130
	04-29-74	130
	08-28-74	120
	05-13-75	130
	11-05-76	140
	09-14-77	140
	08-24-78	140
	08-17-79	140
	09-17-80	110
	09-10-81	140
	09-17-82	140
	08-30-83	140
	07-02-84	130
	09-25-84	140
	10-09-84	140
	12-19-84	150
	03-05-85	140
	06-01-85	140
	06-10-85	150
	08-21-85	150
	09-17-85	140
	03-13-86	130
	06-24-86	160
	09-04-86	150
	09-26-86	170
	12-09-86	130
	02-28-87	130
	03-13-87	140
	06-18-87	140
	08-18-87	140
	09-24-87	180
	03-03-88	71
15- 1 (con't.)	06-06-88	73
	08-12-88	140
	09-08-88	72
	12-05-88	150
	03-08-89	150
	06-09-89	150
	08-23-89	150
	09-12-89	150
	06-13-90	120
	08-24-90	130
	09-14-90	120
	12-15-90	120
	01-29-91	220
	06-14-91	36
	08-09-91	150
	09-25-91	38
	12-04-91	85
	03-04-92	82
	06-17-92	87
	08-26-92	160
	09-16-92	85
	11-10-92	130
	02-10-93	130
	06-22-93	67
	08-05-93	72
	11-08-93	85
	02-02-94	250
	07-06-94	140
	10-04-94	150
	01-11-95	140
	04-20-95	140
	07-25-95	190
	10-19-95	130
15- 3	08-28-74	91
	05-13-75	92
	11-05-76	98
	08-24-78	93
	08-17-79	98
	09-17-80	98
	09-10-81	110
	09-17-82	100
	08-30-83	110
	07-02-84	85
	09-25-84	110
15- 3 (con't.)	10-09-84	140
	12-19-84	140
	03-05-85	120
	06-01-85	120
	06-10-85	150
	08-21-85	120
	03-13-86	140
	06-09-86	110
	06-24-86	140
	09-04-86	120
	09-26-86	140
	02-28-87	140
	03-13-87	110
	06-18-87	110
	08-18-87	110
	09-24-87	120
	03-03-88	70
	06-06-88	71
	09-08-88	70
15- 5	04-14-58	24
	08-25-58	23
	04-08-59	24
	09-02-59	24
	04-06-60	24
	08-23-60	24
	04-06-61	25
	08-29-61	23
	04-18-62	24
	04-03-63	26
	08-27-63	29
	04-29-64	24
	09-18-64	24
	04-22-65	30
	09-21-72	28
	09-25-73	30
	08-28-74	30
15- 6	09-16-77	25
	08-14-79	34
	04-25-90	31
	06-14-90	33
	09-07-90	49
	10-03-90	40
	12-07-90	45
	04-03-91	40

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 6 (con't.)	05-01-91	46
	06-05-91	30
	08-12-91	39
	09-13-91	31
	10-02-91	37
	11-06-91	34
	12-04-91	34
	01-04-92	39
	06-03-92	38
	07-07-92	31
	08-05-92	32
	09-10-92	30
	01-06-93	49
	02-03-93	32
	03-03-93	34
	05-05-93	41
	06-02-93	49
	07-07-93	46
	08-04-93	49
	09-14-93	49
	10-06-93	45
	11-03-93	48
	12-01-93	54
	04-06-94	1.5
	06-01-94	1.0
	07-06-94	3.0
	08-03-94	2.5
	09-07-94	8.0
	10-05-94	16
	12-07-94	15
	02-02-95	26
	03-17-95	20
	04-03-95	6.0
	10-18-95	10
	11-22-95	8.5
	12-14-95	4.5
15- 7	04-25-51	21
15- 8	08-25-78	24
	08-27-80	25
	10-17-80	28
	09-11-81	28
	08-13-82	26
	05-22-90	31
	08-22-90	32
15- 8 (con't.)	11-07-90	30
	01-02-91	34
	02-06-91	31
	03-04-91	31
	07-09-91	32
	04-01-92	30
	05-06-92	28
	10-07-92	31
	12-02-92	22
	01-05-94	41
	02-02-94	43
	03-02-94	42
	11-02-94	6.5
	05-05-95	13
	06-14-95	22
	07-26-95	21
	08-09-95	32
	09-13-95	33
15- 9	09-02-80	2.2
	05-30-90	21
	06-06-90	43
	09-11-91	1.0
	04-16-93	1.0
	07-20-93	9.8
	03-02-94	3.6
	09-08-94	2.3
	02-15-95	7.9
	09-11-95	3.3
15- 11	08-17-67	9.2
	05-30-90	7.0
	06-06-90	43
	09-11-91	2.7
	10-17-91	11
	04-16-93	7.6
	07-20-93	2.5
	03-02-94	18
	09-08-94	6.8
	02-15-95	14
	09-11-95	8.6
15- 16	08-17-67	3.3
	09-02-80	6.9
	12-28-82	7.2
	05-30-90	7.0
	06-06-90	43
15- 16 (con't.)	09-11-91	3.7
	04-16-93	8.8
	07-20-93	2.2
	03-02-94	18
	09-08-94	13
	02-15-95	14
	09-11-95	8.0
15-1089	04-16-93	0.90
	07-20-93	6.2
15- 28	04-14-58	73
	09-05-58	76
	07-13-67	72
	09-05-80	48
	06-19-85	47
	07-01-85	47
	07-23-85	45
	06-01-86	44
	10-10-86	42
	02-01-87	35
	03-01-88	10
	08-23-89	41
	09-29-89	100
	03-12-90	33
	05-15-90	67
	03-20-91	4.0
	08-15-91	30
	09-18-91	19
	07-22-92	36
	02-08-93	16
	08-02-93	17
	03-16-94	26
	09-30-94	26
	09-06-95	26
15- 29	05-07-51	54
15- 355	09-05-80	57
	09-08-83	58
	09-19-84	53
	02-08-93	16
	08-02-93	17
	03-16-94	37
	09-30-94	36
	09-06-95	34
15- 363	11-20-86	76
15- 366	11-17-80	130

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 501	11-19-86	50
15- 59	09-22-72	58
	04-29-74	61
	08-28-74	64
	05-13-75	61
	09-14-77	65
	08-24-78	63
	06-02-88	72
	09-12-88	73
	11-14-88	84
	03-07-89	67
	06-06-89	77
	06-27-90	89
	09-10-90	73
	12-03-90	75
	03-18-91	80
	06-07-91	74
	09-09-91	74
	03-04-92	79
	06-12-92	73
	09-17-92	73
	12-04-92	74
	03-09-93	73
	06-02-93	73
	09-13-93	85
	12-03-93	86
	03-16-94	81
	06-01-94	75
	09-07-94	92
	01-23-95	80
	03-06-95	79
	06-22-95	77
	10-02-95	81
	12-12-95	77
15- 60	07-17-67	56
	02-28-70	57
	09-24-73	60
	10-07-74	62
	09-14-77	68
	09-01-78	65
	08-17-79	66
	08-19-80	90
	08-17-82	66
	09-01-82	66
	08-30-83	66
15- 60 (con't.)	04-01-84	60
	04-17-84	60
	04-18-84	60
	09-25-84	69
	02-11-85	46
	09-19-85	36
	12-01-85	36
	02-13-86	36
	03-06-86	38
	05-22-86	42
	06-20-86	48
	10-23-86	29
	02-12-87	70
	03-05-87	71
	04-07-87	69
	05-12-87	68
	06-09-87	69
	10-20-87	80
	03-08-88	71
	04-05-88	68
	05-17-88	74
	06-15-88	59
	07-05-88	71
	08-03-88	68
	09-06-88	70
	10-04-88	38
	11-01-88	62
	07-18-89	74
	10-03-89	71
	11-06-89	34
	12-05-89	40
	06-15-91	76
	07-02-91	70
	08-06-91	71
	09-03-91	71
	10-01-91	76
	11-12-91	71
	12-03-91	70
	01-07-92	68
	03-03-92	68
	04-07-92	65
	05-05-92	66
	06-02-92	69
	08-26-92	75
15- 60 (con't.)	03-01-94	72
	04-05-94	75
	05-03-94	82
	01-03-95	72
	02-07-95	76
	08-09-95	2.0
	10-06-95	77
	11-15-95	75
	12-07-95	1.8
15- 62	05-07-51	19
	04-11-58	20
	08-26-58	20
	11-19-58	13
	12-09-58	20
	04-08-59	20
	04-06-60	26
	08-23-60	19
	04-05-61	20
	08-29-61	20
	04-18-62	20
	09-24-62	19
	04-03-63	28
	08-27-63	20
	09-18-64	19
	04-22-65	19
	07-17-67	18
	02-28-70	20
	09-24-73	20
	08-19-80	78
	09-01-82	66
	07-06-84	27
	01-10-85	26
	12-01-85	18
	01-02-86	16
	02-06-86	16
	03-06-86	18
	04-11-86	14
	04-09-87	16
	05-05-87	21
	06-11-87	18
	03-08-88	25
	04-05-88	33
	05-17-88	25
	06-15-88	19

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 62 (con't.)	07-05-88	22
	01-03-89	32
	02-07-89	99
	03-07-89	21
	04-04-89	24
	05-02-89	23
	07-03-89	30
	12-04-90	26
	04-02-91	23
	05-07-91	21
	01-07-92	23
	03-03-92	22
	04-07-92	22
	07-06-93	82
	02-01-94	22
	03-01-94	23
	04-05-94	24
	05-03-94	24
	06-07-94	25
	07-12-94	26
	03-14-95	27
	04-04-95	24
	09-19-95	2.0
15- 63	07-17-67	20
	09-21-72	28
	10-07-74	28
	08-19-80	60
	09-17-80	29
	08-17-82	40
	09-01-82	40
	07-06-84	33
	08-08-84	51
	09-05-84	59
	07-24-85	36
	08-12-85	20
	06-20-86	30
	07-08-86	21
	10-16-86	24
	12-11-86	25
	01-13-87	34
	03-05-87	34
	05-19-87	40
	06-09-87	48
	07-01-87	41
15- 63 (con't.)	10-20-87	42
	11-12-87	15
	12-10-87	22
	06-15-88	39
	07-05-88	49
	08-03-88	48
	09-06-88	37
	10-04-88	38
	11-01-88	72
	12-06-88	38
	01-03-89	24
	03-07-89	38
	04-04-89	42
	06-06-89	43
	07-03-89	42
	08-08-89	60
	09-06-89	48
	10-03-89	49
	11-06-89	20
	12-05-89	80
	07-10-90	45
	08-07-90	52
	08-24-90	37
	09-04-90	37
	11-05-90	64
	04-02-91	38
	05-07-91	36
	07-02-91	38
	08-06-91	39
	09-03-91	38
	10-01-91	35
	12-03-91	2.0
	05-05-92	40
	06-02-92	45
	07-06-93	40
	10-05-93	41
	11-01-93	39
	12-07-93	46
	01-04-94	46
	07-12-94	45
	08-02-94	53
	01-03-95	42
	02-07-95	44
	03-14-95	47
15- 63 (con't.)	04-04-95	48
	06-06-95	45
	07-17-95	2.0
15- 361	04-29-74	44
	09-01-78	55
	08-17-79	55
	09-17-80	58
	09-10-81	59
	08-17-82	59
	08-30-83	60
	09-25-84	62
	09-04-86	64
	08-18-87	61
	08-12-88	64
	08-23-89	67
	08-07-91	72
	11-01-93	66
	08-02-94	73
	09-13-94	65
	07-17-95	2.0
	08-09-95	2.0
15- 65	07-13-67	7.8
15- 728	04-22-87	13
	04-22-87	12
15- 127	02-28-70	62
15- 129	12-21-50	140
	04-11-58	140
	08-26-58	140
	11-09-58	140
	12-09-58	130
	04-08-59	140
	09-01-59	140
	12-09-59	130
	04-05-60	140
	08-22-60	140
	04-05-61	140
	08-28-61	130
	04-17-62	140
	09-24-62	140
	04-03-63	140
	08-26-63	140
	03-27-64	140
	09-30-64	140
	10-27-80	160

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 129 (con't.)	09-22-82	170
	09-26-84	170
	12-12-86	150
	03-09-87	150
	06-17-87	150
	09-16-87	150
	12-10-87	150
	03-04-88	150
	05-11-88	150
	07-28-88	150
	06-25-90	150
	10-23-90	150
	02-25-91	150
	06-30-91	180
	08-15-91	180
15- 130	02-28-70	140
	12-22-70	150
	09-21-72	150
	05-24-73	150
	04-29-74	150
	10-07-74	150
	05-13-75	150
	11-05-76	140
	09-14-77	160
	08-25-78	150
	08-14-79	150
	09-17-80	160
	09-10-81	160
	08-30-83	160
	08-15-84	150
	07-23-85	160
	09-24-85	130
	12-19-85	130
	03-12-86	150
	04-15-86	150
	08-27-86	140
	09-09-86	170
	12-12-86	150
	03-09-87	150
	06-17-87	150
	08-18-87	170
	09-16-87	150
	12-10-87	150
	03-04-88	150
15- 130 (con't.)	05-11-88	150
	07-28-88	150
	08-12-88	170
	03-05-89	150
	08-25-89	170
	12-30-89	150
	08-23-90	160
	06-30-91	170
	08-08-91	170
	08-15-91	170
	11-20-91	170
	02-21-92	170
	04-08-92	180
	09-01-92	180
	09-25-92	170
	12-16-92	170
	01-14-93	170
	05-19-93	170
	12-16-93	180
	05-10-94	200
	08-17-94	190
	10-19-94	160
	02-17-95	200
	05-05-95	180
	08-17-95	170
	11-02-95	170
15- 131	02-28-70	68
	09-18-80	77
15- 417	09-25-80	11
	10-03-85	28
15- 475	05-17-84	11
15- 476	05-17-84	12
15- 478	05-16-84	22
15- 543	06-20-84	37
15- 544	06-20-84	29
15- 546	06-19-84	57
15- 554	05-18-84	89
15- 564	05-18-85	16
	11-25-86	12
15- 570	06-08-84	12
15- 572	06-13-84	32
15- 573	06-07-84	2.3
15- 576	06-11-84	21
15- 578	06-12-84	23
15- 579	06-12-84	55
15- 581	06-11-84	33
15- 583	06-15-84	820
15- 584	06-15-84	210
15- 587	06-08-84	7.4
15- 589	06-14-84	180
15- 590	06-14-84	450
15- 591	06-13-84	2000
15- 592	06-13-84	2100
	06-13-84	2100
15- 593	06-12-84	530
15- 594	06-13-84	420
	06-13-84	760
15- 595	06-14-84	220
15- 606	06-20-84	72
15- 617	02-27-85	16
	11-21-85	14
	12-03-86	11
15- 617	10-19-94	15
15- 626	12-05-86	14
15- 627	10-06-86	77
15- 714	12-01-86	14
15- 183	10-02-85	2.0
	10-25-91	46
15- 189	04-11-58	20
	08-26-58	19
	04-08-59	19
	09-02-59	20
	04-06-60	20
	08-23-60	19
	04-06-61	19
	08-29-61	20
	04-18-62	20
	09-24-62	20
	04-03-63	21
	09-21-72	24
	08-28-74	24
	08-14-79	26
	08-04-80	26
	09-15-81	28
	08-30-83	27
	09-20-84	30
15- 191	07-17-67	20
	03-07-70	20

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 191 (con't.)	09-21-72	26
	09-25-73	23
	08-28-74	26
	09-16-77	29
	08-25-78	28
	08-04-80	26
	10-03-85	12
	03-21-86	22
	04-01-86	22
	09-09-86	25
	12-16-86	26
	06-16-87	17
	08-19-87	31
	09-15-87	16
	03-15-88	10
	08-12-88	26
	08-28-89	28
	08-22-90	31
	08-28-90	41
	08-13-91	32
	08-20-91	3.3
	08-25-92	33
	07-20-93	8.9
	11-07-94	31
	09-01-95	32
15- 192	08-15-67	30
	09-11-80	42
	08-17-82	39
	01-04-83	41
	08-30-83	45
	09-20-84	44
	07-23-85	44
	03-21-86	34
	04-01-86	34
	09-09-86	50
	06-16-87	25
	08-19-87	45
	09-15-87	29
	03-15-88	23
	08-12-88	47
	08-28-89	48
	08-22-90	52
	08-28-90	46
	08-13-91	53
15- 192 (con't.)	08-20-91	5.8
	08-25-92	57
	07-20-93	8.1
	11-07-94	70
	09-01-95	60
15- 193	04-14-58	22
	08-27-58	21
	04-08-59	22
	09-02-59	22
	04-06-60	22
	08-23-60	23
	04-06-61	23
	08-29-61	24
	04-18-62	23
	09-24-62	21
	04-03-63	24
	07-17-67	26
	09-21-72	30
	08-28-74	30
	08-04-80	31
	01-04-83	30
	11-07-94	21
	09-01-95	28
15- 194	09-21-72	42
	05-24-73	39
	09-25-73	36
	04-30-74	39
	09-16-77	35
	08-25-78	37
	08-14-79	38
	08-04-80	40
	09-11-81	40
	08-17-82	39
	01-04-83	42
	08-30-83	42
	09-20-84	37
	03-21-86	28
	04-01-86	28
	09-09-86	38
	06-16-87	24
	08-19-87	36
	09-15-87	22
	03-15-88	15
	08-12-88	38
15- 194 (con't.)	08-28-89	34
	08-22-90	38
	08-28-90	41
	08-13-91	36
	08-20-91	3.6
	08-25-92	42
	07-20-93	14
	11-07-94	0.10
	09-01-95	44
15- 432	10-27-86	42
15- 715	11-12-86	13
15- 741	05-14-87	23
	07-23-93	19
	07-11-96	21
15- 206	04-25-51	21
	04-10-58	29
	08-25-58	23
	04-07-59	22
	09-01-59	32
	04-05-60	53
	07-20-60	43
	08-22-60	67
	08-28-61	36
	04-17-62	28
	09-24-62	25
	04-02-63	21
	08-26-63	22
	04-28-64	21
	09-17-64	40
	08-29-66	95
15- 673	10-23-86	170
15- 674	06-27-86	67
	10-14-86	60
15- 224	11-19-58	24
	07-17-67	42
15- 225	09-02-29	26
	05-07-51	34
	04-11-58	23
	08-26-58	24
	12-09-58	24
	04-08-59	24
	12-09-59	24
	04-06-60	24
	08-23-60	26

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 225 (con't.)	04-05-61	30
	08-29-61	30
	04-18-62	27
	09-24-62	22
	04-03-63	26
	08-27-63	23
	04-29-64	21
	09-18-64	19
	04-22-65	19
	07-17-67	20
	09-21-72	55
	05-24-73	35
	09-24-73	32
	04-29-74	37
	08-28-74	35
	05-13-75	33
	09-14-77	44
	08-24-78	37
	08-14-79	38
	06-06-95	53
	09-20-95	54
	09-26-95	54
15- 226	04-17-51	26
	06-20-58	58
	07-17-67	24
	02-28-70	28
	09-21-72	12
	09-24-73	28
	04-29-74	32
	08-28-74	31
	09-17-80	27
15- 227	02-28-70	32
	09-21-72	42
	04-29-74	46
	08-28-74	43
	03-16-93	100
	09-23-93	120
	12-14-93	100
	03-21-94	120
	06-22-94	120
	09-20-94	140
	12-21-94	110
	04-11-95	47
	06-06-95	51
15- 227 (con't.)	09-20-95	53
	09-26-95	53
15- 385	09-17-80	43
	09-10-81	44
	07-23-82	45
	08-30-83	44
	09-25-84	45
	07-24-85	44
	09-04-86	48
	08-18-87	44
	08-12-88	46
	08-23-89	45
	08-24-90	45
	08-07-91	53
	08-26-92	54
	06-06-95	53
	09-20-95	53
	09-26-95	53
15- 231	10-20-80	22
	04-26-95	2.4
15-1007	04-26-95	2.0
15- 237	05-07-51	43
	07-20-60	58
	07-13-67	2.6
15- 238	04-11-58	54
	08-26-58	75
	04-07-59	62
	09-01-59	55
	04-05-60	150
	07-20-60	59
	08-22-60	62
	04-07-61	150
	08-28-61	150
	04-17-62	120
	09-24-62	130
	04-02-63	130
	08-26-63	100
	04-28-64	72
	09-17-64	59
	02-28-70	65
	05-13-75	60
	09-16-77	62
	09-01-78	57
	09-17-86	40
15- 238 (con't.)	12-03-86	32
	09-14-92	1.0
	09-10-93	15
	08-10-94	58
	08-14-95	26
15- 240	03-07-70	44
	09-17-70	58
	09-10-80	42
	11-18-86	22
15- 243	04-11-69	120
15- 248	09-17-80	9.0
	08-18-82	8.8
	11-29-94	12
	02-21-95	13
	06-05-95	13
	08-07-95	15
	10-24-95	11
15- 253	08-15-67	2.0
	09-17-80	3.3
	08-18-82	2.8
	07-24-85	22
	11-29-94	3.6
15- 260	11-29-94	1.9
15- 261	08-17-67	2.3
	08-13-82	1.6
	11-29-94	2.0
15- 265	08-17-67	2.0
	11-29-94	6.4
15- 267	08-13-82	1.8
	11-29-94	15
15- 268	11-29-94	2.9
15- 433	11-29-94	2.4
15- 274	04-17-51	7.6
	04-14-58	9.0
	08-26-58	7.8
	04-08-59	8.7
	09-02-59	8.7
	04-06-60	9.0
	08-23-60	8.6
	04-10-61	9.1
	08-29-61	9.1
	04-18-62	9.3
	09-24-62	9.6
	04-04-63	10

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 274 (con't.)	09-18-64	9.5
	07-17-67	12
	09-21-72	18
	09-25-73	15
	05-13-75	18
	08-25-78	21
	08-14-79	20
	08-04-80	22
	02-18-93	30
	04-20-93	30
	07-07-93	30
	11-10-93	34
	02-10-94	32
	04-07-94	33
	07-26-94	35
	10-19-94	35
	03-22-95	33
	06-07-95	34
	09-20-95	34
	12-18-95	30
15- 275	07-17-67	12
	09-21-72	22
	04-29-74	21
	09-16-77	22
	09-08-83	24
	09-20-84	24
	08-19-87	24
	03-17-93	27
	04-20-93	33
	07-07-93	31
	11-10-93	33
	02-10-94	35
	08-10-94	38
	12-09-94	38
	06-07-95	30
	09-20-95	31
	12-18-95	26
15- 276	08-15-67	24
	08-26-80	12
	12-28-82	30
	07-18-85	33
	11-03-86	41
	07-28-93	23
	10-01-93	22
15- 276 (con't.)	04-13-94	19
	09-16-94	40
	12-20-94	39
	03-28-95	64
	06-20-95	36
	09-28-95	33
	12-29-95	40
15- 281	08-15-67	15
	08-26-80	27
	07-27-93	11
	10-01-93	10
	04-13-94	22
	09-16-94	21
	12-20-94	22
	03-28-95	25
	06-20-95	20
	09-28-95	21
	12-29-95	22
15- 284	08-15-67	29
	09-24-80	26
	09-15-81	26
	08-17-82	23
	08-31-83	22
	09-19-84	14
	09-04-86	13
	08-28-89	13
	08-22-90	12
	09-02-92	23
	03-23-93	36
	12-11-93	33
	03-20-94	44
	06-23-94	46
	09-29-94	34
	12-31-94	34
	03-11-95	57
	06-29-95	47
	10-05-95	73
	12-21-95	50
15- 295	11-12-86	11
	12-06-94	15
	10-21-95	14
15- 297	10-16-86	14
15- 329	10-11-50	12
15- 332	05-07-51	6.5
15- 332 (con't.)	08-27-63	30
	04-29-64	30
	09-18-64	29
	04-22-65	45
	07-12-67	7.6
	09-25-73	6.8
	04-29-74	10
	08-27-80	12
	10-17-80	15
	10-29-86	31
	04-25-90	33
	05-14-90	33
	05-22-90	32
	08-22-90	36
	09-07-90	45
	10-03-90	40
	11-07-90	30
	12-07-90	43
	01-02-91	40
	02-06-91	39
	03-04-91	42
	04-03-91	41
	05-01-91	49
	06-01-91	47
	07-09-91	50
	08-12-91	47
	09-13-91	49
	10-02-91	26
	11-06-91	31
	12-04-91	43
	01-04-92	37
	02-05-92	41
	03-04-92	45
	04-01-92	44
	05-06-92	38
	06-03-92	37
	07-07-92	38
	08-05-92	27
	09-10-92	40
	10-07-92	41
	11-04-92	37
	12-02-92	22
	01-06-93	39
	02-03-93	30

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 332 (con't.)	03-03-93	26
	04-07-93	27
	05-05-93	50
	06-02-93	45
	07-07-93	42
	08-04-93	49
	09-14-93	46
	10-06-93	50
	11-03-93	44
	12-01-93	52
	01-05-94	43
	02-02-94	42
	03-02-94	46
	04-06-94	0.50
	05-04-94	0.50
	06-01-94	1.0
	07-06-94	7.0
	08-03-94	2.5
	09-07-94	11
	10-05-94	25
	11-02-94	20
	12-07-94	41
	01-04-95	39
	02-02-95	26
	03-17-95	0.50
	04-03-95	5.0
	05-05-95	8.0
	06-14-95	28
	07-26-95	17
	08-09-95	17
	09-13-95	24
	10-18-95	20
	11-22-95	3.0
	12-14-95	4.5
15- 333	04-14-58	4.5
	08-25-58	4.1
	04-08-59	19
	09-02-59	4.8
	04-06-60	4.6
	08-23-60	18
	04-06-61	4.7
	04-18-62	4.8
	09-24-62	40
	04-03-63	23
15- 333 (con't.)	08-27-63	4.7
	04-29-64	4.0
	09-18-64	17
	04-22-65	4.0
	07-12-67	48
	09-21-72	18
	08-28-74	9.2
	05-09-75	18
15- 330	04-27-93	0.80
	01-11-94	6.0
	04-04-94	47
	10-07-94	10
	01-18-95	7.0
	07-31-95	9.0
15- 334	05-29-57	3.6
	10-20-80	3.4
15- 337	02-28-70	3.0
	10-14-80	2.4
15- 340	10-20-80	1.9
15- 341	10-27-80	6.1
15- 342	03-17-69	12
	09-10-80	13
	09-26-85	13
15- 343	05-29-57	2.6
15- 345	10-27-80	6.7
	12-04-86	16
15- 392	09-08-80	64
15- 519	11-18-86	15
33- 307	03-06-51	93
	12-07-67	180
33- 309	12-07-67	20
33- 316	06-07-89	110
	09-29-89	160
	11-15-89	150
	01-16-90	180
	05-15-90	160
	05-15-92	100
	10-13-93	270
	11-09-93	270
	12-07-93	270
33- 325	02-16-68	180
33- 326	02-16-68	280
	06-07-89	81
	11-15-89	69
33- 326 (con't.)	05-15-92	130
	10-13-93	53
	11-09-93	53
	12-07-93	53
33- 333	02-16-68	21
33- 342	06-24-75	12
	05-06-76	10
33- 345	04-10-58	14
	08-26-58	14
	04-09-59	13
	09-08-59	14
	04-11-60	12
	08-24-60	11
	04-11-61	14
	08-30-61	14
	04-19-62	13
	09-26-62	13
	04-02-63	13
	09-29-72	18
	09-20-73	13
	10-07-74	14
	10-06-76	15
	10-05-78	15
	08-30-79	12
	09-23-80	13
	09-30-81	15
	10-12-82	13
	11-04-83	14
	09-09-92	13
	12-16-93	10
	08-17-94	19
	02-17-95	13
	08-17-95	13
33- 347	01-11-51	9.4
	10-29-90	25
33- 361	08-30-79	13
	09-23-80	19
33- 428	09-29-72	13
	08-14-91	15
33- 460	11-01-84	13
	09-11-85	14
	06-16-86	12
	09-25-86	10
	08-20-87	11

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 460 (con't.)	08-17-88	12
	08-22-89	12
	08-14-91	16
33- 74	10-03-80	1.7
33- 75	11-05-58	2.0
33- 76	10-20-80	4.3
33- 370	07-17-86	8.7
	02-16-94	10
33- 439	07-25-86	27
33- 105	04-10-58	400
	08-25-58	440
33- 112	02-27-68	7.8
	03-07-69	10
	09-28-72	16
	09-21-73	12
	10-04-74	12
	10-05-76	11
	09-22-77	12
	08-30-79	9.5
	10-02-80	12
	09-29-81	10
	10-08-82	11
	08-09-84	20
	11-29-84	15
	03-21-85	10
	05-07-85	5.0
	08-13-85	10
	09-19-85	9.8
	11-18-85	15
	02-27-86	10
	06-17-86	11
	08-22-86	10
	09-26-86	13
	11-28-86	12
	03-12-87	10
	06-08-87	12
	08-20-87	12
	09-01-87	15
	11-17-87	23
	03-14-88	10
	08-16-88	11
	09-20-88	10
	02-28-89	9.0
	05-30-89	9.0
33- 112 (con't.)	08-15-89	11
	08-29-89	20
	12-04-89	26
	05-22-90	18
	08-22-90	13
	08-27-90	31
	11-28-90	12
	03-18-91	12
	06-13-91	10
	08-14-91	14
	09-12-91	12
	03-03-92	38
33- 117	02-26-68	6.6
	03-07-69	6.0
	09-28-72	12
	09-21-73	6.7
	10-04-74	8.7
	10-05-76	8.4
	09-22-77	10
	10-05-78	8.0
	10-02-80	8.9
	10-08-82	12
	08-09-84	25
	11-29-84	35
	03-21-85	10
	05-07-85	30
	09-19-85	19
	11-18-85	25
	06-17-86	47
	08-22-86	15
	11-28-86	13
	03-12-87	20
	06-08-87	18
33- 126	12-07-67	20
	10-21-80	13
	02-15-89	22
	03-13-89	2.2
	06-07-89	25
	09-29-89	25
	11-15-89	30
	01-16-90	28
	05-15-90	28
	05-15-92	36
	10-13-93	38
33- 126 (con't.)	11-09-93	38
	12-07-93	38
33- 128	12-07-67	56
33- 135	01-19-68	630
33- 360	10-02-80	6.4
	08-09-84	10
	11-29-84	10
	03-21-85	15
	05-07-85	15
	08-13-85	10
	09-19-85	9.2
	11-18-85	18
	06-17-86	7.2
	07-25-86	7.2
	08-22-86	20
	11-28-86	11
	03-12-87	10
	06-08-87	10
	09-01-87	10
	11-17-87	15
	03-14-88	5.0
	12-01-88	8.0
	05-30-89	8.0
	08-29-89	19
	12-04-89	18
	05-22-90	23
	08-27-90	24
	11-28-90	8.5
	03-18-91	10
	06-13-91	9.0
	09-12-91	11
	12-13-91	11
	03-03-92	9.0
	06-04-92	10
	12-22-92	9.1
	05-19-93	8.3
	12-29-93	9.0
	05-24-94	16
	09-29-94	9.0
	11-28-94	20
	03-09-95	16
	05-03-95	10
	08-29-95	16
	11-08-95	23

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 671	05-30-89	25
	08-29-89	28
	12-04-89	37
	05-22-90	40
	08-27-90	51
	11-28-90	24
	03-18-91	28
	06-13-91	25
	09-12-91	28
	12-13-91	27
	03-03-92	24
	06-04-92	19
	12-22-92	24
	05-20-93	21
	09-29-94	32
	11-28-94	45
	03-09-95	32
	05-03-95	35
	08-29-95	34
	11-08-95	39
33- 686	09-09-92	11
	09-16-92	10
	12-22-92	10
	05-19-93	11
33- 147	10-14-80	27
	04-26-95	27
33- 253	09-02-65	700
	11-22-82	670
	09-24-93	670
33- 355	10-23-58	13
Middle Potomac-Raritan-Magothy aquifer		
15- 24	09-02-80	6.6
	07-12-85	6.0
	05-30-90	11
	06-06-90	43
	09-11-91	5.0
	04-16-93	3.2
	07-20-93	3.9
	03-02-94	7.8
	09-08-94	15
	02-15-95	6.3
	09-11-95	10
15- 374	09-02-80	12
15- 374 (con't.)	01-18-85	17
	05-22-85	14
	07-12-85	15
	07-20-93	9.5
	03-02-94	11
	09-08-94	16
	09-11-95	16
15-1036	04-16-93	6.0
	07-20-93	5.8
	03-02-94	11
	09-08-94	12
	02-14-95	7.8
	09-11-95	35
15- 69	09-21-51	6.9
	07-13-67	8.5
	09-18-80	13
	09-22-82	11
	05-22-85	21
	07-25-85	14
	08-07-85	13
	10-23-85	12
	02-19-86	19
	05-13-86	12
	09-03-86	13
	11-05-86	14
	11-05-86	13
	03-18-87	15
	07-09-87	22
	09-30-87	16
	12-08-87	15
	01-20-88	17
	07-25-88	24
	07-27-88	24
	12-21-88	75
	01-17-89	33
	06-29-89	30
	08-03-89	32
	01-31-90	28
	12-18-90	26
	03-20-91	32
	06-19-91	22
	09-18-91	16
	12-04-91	11
	03-18-92	34
15- 69 (con't.)	06-24-92	38
	09-25-92	68
	06-30-93	10
	09-22-93	15
15- 70	08-14-67	18
15- 72	09-15-52	39
	04-06-53	22
	09-16-53	36
	04-14-54	49
	09-08-54	52
	04-14-55	56
	09-02-55	110
	04-12-56	62
	08-27-56	69
	04-11-57	75
	08-30-57	76
	04-08-58	80
	07-07-58	81
	08-25-58	78
	04-07-59	88
	09-01-59	89
	04-05-60	93
	08-22-60	92
	04-10-61	96
	08-28-61	91
	04-17-62	93
	09-24-62	120
	04-02-63	100
	08-26-63	110
	04-28-64	110
	09-17-64	110
	04-21-65	110
	08-15-67	110
	03-12-70	120
	09-22-72	110
	09-20-73	100
	08-30-74	120
	05-13-76	100
	09-21-77	140
	09-12-80	32
	07-29-81	31
	08-24-82	110
	10-11-83	100
	07-31-84	130

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 72 (con't.)	11-08-84	87
	11-09-84	120
	02-09-85	84
	05-01-85	140
	06-15-85	140
	09-09-85	140
	12-05-85	130
	03-27-86	68
	06-27-86	100
	09-23-86	39
	12-23-86	33
	03-10-87	36
	06-12-87	51
	09-30-87	56
	12-18-87	41
	03-08-89	86
	06-28-89	72
	06-06-90	62
	09-05-90	63
	10-10-90	68
	01-28-91	69
	04-17-91	71
	07-24-91	68
	10-22-91	73
	03-02-92	76
	05-12-92	73
	06-17-92	73
	11-10-92	85
	03-26-93	90
	05-18-93	79
	07-13-93	74
	11-16-93	94
	03-29-94	88
	06-13-94	82
	07-12-94	88
	10-11-94	77
	01-23-95	80
	04-17-95	26
	07-25-95	84
	10-25-95	95
15- 76	09-15-80	16
	07-29-81	15
	11-18-82	16
	10-02-84	20
15- 76 (con't.)	10-04-85	40
	10-03-86	34
	10-05-87	44
	08-15-88	16
	09-01-88	16
	08-29-90	13
	08-19-92	24
	09-20-93	12
	08-15-95	13
15- 79	03-12-70	140
	12-21-70	110
	09-22-72	110
	09-20-73	120
	08-30-74	150
	03-28-75	160
	05-13-76	110
	09-21-77	130
	09-01-78	96
	08-15-79	95
	09-12-80	97
	07-29-81	110
	08-24-82	94
	10-11-83	100
	07-31-84	130
	11-08-84	96
	11-09-84	150
	02-02-85	22
	02-09-85	85
	05-22-85	21
	08-07-85	18
	09-09-85	180
	09-17-85	94
	09-17-85	95
	10-23-85	19
	12-05-85	170
	02-19-86	18
	03-27-86	120
	05-13-86	18
	06-27-86	130
	09-23-86	55
	11-05-86	19
	12-23-86	43
	03-10-87	37
	03-18-87	17
15- 79 (con't.)	06-12-87	40
	07-09-87	18
	09-30-87	21
	12-08-87	33
	12-18-87	39
	01-20-88	24
	07-27-88	22
	12-21-88	84
	01-17-89	31
	03-08-89	64
	06-28-89	64
	06-29-89	33
	01-31-90	21
	06-06-90	56
	09-05-90	57
	10-10-90	59
	12-18-90	23
	01-28-91	59
	03-20-91	26
	04-17-91	63
	06-19-91	24
	07-24-91	62
	09-18-91	12
	10-22-91	66
	12-04-91	18
	03-02-92	67
	03-18-92	28
	05-12-92	70
	06-17-92	70
	06-24-92	30
	09-25-92	47
	11-10-92	72
	03-03-93	9.6
	03-26-93	80
	05-18-93	74
	06-30-93	11
	07-13-93	71
	09-22-93	11
	11-16-93	73
	03-29-94	72
	04-21-94	10
	06-13-94	69
	07-12-94	72
	08-10-94	22

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 79 (con't.)	09-28-94	24
	10-11-94	65
	12-29-94	20
	01-23-95	79
	03-30-95	26
	04-17-95	77
	06-08-95	21
	07-25-95	85
	08-10-95	22
	10-25-95	85
	10-26-95	20
15- 81	08-15-67	19
	05-13-76	63
	09-01-78	56
	08-15-79	32
	09-12-80	72
	07-29-81	66
	08-24-82	39
	07-31-84	130
	11-09-84	120
	02-09-85	86
	09-09-85	130
	12-05-85	130
	03-27-86	53
	06-27-86	32
	09-23-86	43
	10-07-86	27
	12-23-86	18
	03-10-87	25
	06-12-87	25
	09-30-87	20
	12-18-87	13
	06-06-90	62
15- 82	08-20-51	96
15- 84	08-14-67	16
15- 89	08-14-67	20
15- 93	07-09-51	14
15- 94	08-14-67	30
	03-12-70	42
	09-22-72	46
	05-24-73	55
	09-20-73	42
	10-07-74	48
	09-21-77	54
15- 94 (con't.)	09-17-80	45
	07-29-81	46
	09-13-85	25
	09-19-85	45
	09-21-87	34
	09-26-88	35
15- 96	12-06-82	79
15- 97	11-03-82	120
	10-11-85	120
15- 98	08-14-67	180
	09-22-72	160
	11-05-76	130
	09-01-78	140
	08-15-79	140
	09-17-80	110
	07-29-81	130
	08-11-82	120
	08-31-83	110
	09-20-84	83
	09-09-86	79
15- 347	12-10-80	21
	09-22-82	26
	07-25-85	22
	11-05-86	18
15- 348	09-18-80	7.0
	12-22-82	8.0
	07-25-85	10
	07-14-86	11
	11-17-86	11
	08-29-88	13
	03-31-93	9.7
	06-30-93	8.7
	09-22-93	37
	12-09-93	22
	08-10-94	25
	09-28-94	25
	12-29-94	24
	03-30-95	41
	06-15-95	21
	08-10-95	22
	10-26-95	19
15- 423	07-09-51	38
15- 652	10-28-86	61
15- 657	10-07-86	24
15- 668	10-28-86	68
	10-28-86	64
15- 679	09-23-86	120
15- 681	09-22-86	53
15- 682	11-14-86	22
15- 683	11-14-86	65
15- 713	12-03-86	7.5
	07-14-93	9.3
15- 727	04-27-87	400
	06-22-87	240
	07-15-93	210
	06-07-96	210
15-1034	09-20-93	59
	08-15-95	56
15- 137	09-26-80	17
	10-11-83	20
	09-26-84	23
	09-09-86	19
	08-19-88	15
	08-25-89	20
	08-23-90	21
	08-08-91	23
	08-27-92	26
	01-21-93	11
	05-06-93	15
	09-18-93	14
	12-14-93	27
	03-09-94	18
	07-20-94	17
	01-06-95	18
	04-25-95	13
	07-31-95	12
	10-27-95	11
	01-30-96	11
15- 140	03-14-85	31
	11-20-85	33
15- 143	09-30-80	7.4
	10-31-84	7.1
15- 144	09-26-80	34
	09-16-81	34
	10-11-83	35
	09-26-84	34
	07-14-86	34
	09-09-86	37
	08-19-88	28

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 144 (con't.)	11-26-88	30
	02-28-89	30
	08-25-89	32
	08-23-90	38
	08-28-90	35
	10-15-90	40
	02-04-91	45
	06-30-91	17
	08-08-91	21
	09-17-91	10
	11-15-91	13
	03-18-92	6.9
	05-28-92	7.2
	09-22-92	11
	12-21-92	25
15- 146	10-01-80	81
15- 161	06-25-75	7.2
	07-07-76	7.8
	10-20-82	7.8
15- 165	05-19-51	9.5
	08-28-61	10
	04-19-62	8.8
	09-24-62	9.0
	04-02-63	9.4
	08-26-63	9.1
	04-28-64	9.5
	09-17-64	9.5
	04-21-65	9.0
	07-12-67	20
	09-20-73	14
15- 166	04-10-58	7.5
	08-25-58	7.8
	04-07-59	8.0
	09-01-59	8.9
	04-05-60	8.5
	08-22-60	8.4
	04-07-61	8.2
	08-28-61	10
	04-19-62	8.8
	09-24-62	9.0
	04-02-63	9.4
	08-26-63	9.1
	04-28-64	9.5
	09-17-64	9.5
15- 166 (con't.)	04-21-65	9.0
	07-12-67	10
	03-12-70	13
	09-22-72	13
	05-23-73	15
	08-29-74	15
	05-13-75	15
	09-21-77	14
	09-01-78	14
	08-15-79	13
	09-16-80	13
	09-16-81	14
	08-13-82	14
	12-22-82	14
	09-08-83	15
	09-26-84	17
	06-16-86	14
	09-01-92	18
	11-12-93	20
	05-10-94	19
	08-17-94	19
	02-17-95	18
	05-10-95	11
	08-17-95	26
	11-10-95	22
	03-06-96	22
15- 167	09-23-80	180
	10-19-82	170
	09-08-83	200
	09-26-84	210
15- 354	10-31-80	14
	06-06-84	25
15- 387	10-31-80	150
	06-07-84	90
15- 395	09-24-80	11
	10-30-86	9.4
15- 399	09-15-80	29
15- 409	10-09-80	4.5
15- 450	06-01-84	190
15- 453	06-06-86	14
15- 481	05-16-84	22
15- 539	05-17-84	14
15- 540	04-18-85	14
	12-10-85	8.9
15- 550	06-19-84	13
15- 555	05-18-84	180
15- 556	05-18-84	25
15- 569	11-10-86	15
	08-25-89	18
	01-30-93	15
	05-06-93	12
	09-25-93	13
	12-21-93	20
	03-09-94	11
	07-21-94	13
	10-31-94	20
	01-06-95	7.2
	04-25-95	11
	07-31-95	12
	10-19-95	12
	01-30-96	12
15- 575	06-11-84	22
	10-09-86	30
15- 577	06-12-84	55
15- 580	06-11-84	21
15- 585	06-06-84	24
15- 586	06-06-84	16
15- 588	06-14-84	560
15- 601	05-29-84	150
15- 616	02-28-85	6.9
	11-20-85	6.3
	11-26-86	5.2
	10-19-94	8.2
15- 620	06-07-85	2.6
	11-25-86	4.3
15- 697	11-12-93	12
15- 771	07-16-87	20
15- 780	08-27-87	34
15- 210	08-15-79	35
	09-11-80	34
	09-11-81	34
	08-13-82	34
	11-30-82	31
	08-31-83	32
	09-20-84	31
	09-25-85	31
	09-09-86	30
	10-22-86	26

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 210 (con't.)	08-28-89	28
	08-22-90	29
	08-08-91	32
	09-02-92	30
	02-24-93	33
	07-26-93	29
	02-22-94	28
	07-20-94	27
	01-23-95	28
	07-24-95	25
15- 212	08-14-67	170
	08-15-79	36
	09-11-80	13
	09-11-81	26
	08-13-82	35
	11-30-82	24
	10-22-86	16
	10-22-86	16
	02-24-93	18
	07-26-93	13
	02-22-94	19
	07-20-94	18
	01-23-95	18
	07-24-95	15
15- 213	08-14-67	43
	08-15-79	19
	09-11-80	19
	09-11-81	19
	08-13-82	19
	10-24-86	29
	02-24-93	28
	07-26-93	24
	02-22-94	25
	07-20-94	26
	01-23-95	22
	07-24-95	23
15- 215	04-11-51	19
	07-12-67	22
15- 216	04-11-51	77
	07-12-67	18
15- 428	07-09-51	23
15-1039	07-19-93	37
	10-14-93	43
	01-24-94	39
15-1039 (con't.)	10-21-94	42
	01-16-95	35
	04-04-95	47
	07-27-95	41
	10-17-95	41
15- 236	09-22-72	58
	05-23-73	54
	09-24-73	55
	04-30-74	48
	08-29-74	48
	05-13-75	46
	08-15-79	41
	09-10-80	43
	09-15-81	45
	08-17-82	43
	09-08-83	46
	09-25-84	45
	09-04-86	48
	08-18-87	41
	08-15-88	39
	08-25-89	34
	08-23-90	41
	08-13-91	36
	08-27-92	38
	09-16-93	49
	08-10-94	57
	08-14-95	25
15- 242	03-07-70	220
15- 279	10-15-86	140
15- 286	03-23-93	140
	06-12-93	150
	12-11-93	140
	03-19-94	150
	06-24-94	150
	09-29-94	120
	12-31-94	120
	03-11-95	170
	06-30-95	130
	10-06-95	170
	12-21-95	120
15- 390	09-25-80	17
	09-26-85	90
15- 435	12-05-86	37
	07-27-93	22
15- 435 (con't.)	10-01-93	18
15- 431	09-11-81	16
	08-13-82	17
	07-22-85	22
	10-29-86	21
	01-06-93	34
	02-03-93	26
	03-03-93	24
	04-07-93	22
	05-05-93	35
	06-02-93	36
	07-07-93	36
	08-04-93	35
	10-16-93	38
	11-03-93	36
	12-01-93	51
	01-04-94	31
	01-05-94	34
	02-02-94	35
	03-02-94	33
	04-06-94	3.5
	05-04-94	1.0
	06-01-94	2.0
	07-06-94	8.0
	09-07-94	8.0
	12-07-94	15
	02-02-95	18
	03-17-95	0.50
	04-03-95	4.0
	05-05-95	9.5
	06-14-95	22
	07-26-95	25
	08-09-95	8.0
	09-13-95	31
	10-18-95	8.0
	11-22-95	5.5
	12-14-95	3.0
33- 298	02-15-89	7.0
	03-13-89	7.0
	06-07-89	9.0
	09-29-89	6.0
	11-15-89	6.0
	01-16-90	7.0
	05-15-90	7.0

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 298 (con't.)	05-15-92	6.8
	10-13-93	11
	11-09-93	11
	12-07-93	11
33- 299	05-01-67	180
	02-15-89	22
	03-13-89	22
	06-07-89	22
	11-15-89	21
	05-15-92	22
	10-13-93	21
	11-09-93	21
	12-07-93	21
33- 300	05-01-67	42
33- 301	05-01-67	22
33- 302	05-01-67	42
33- 303	05-01-67	140
33- 304	05-01-67	30
33- 305	10-15-80	9.9
	02-15-89	11
	06-07-89	9.0
	09-29-89	11
	11-15-89	11
	01-16-90	23
	05-15-90	11
	05-15-92	11
	10-13-93	13
	11-09-93	13
33- 319	02-15-89	65
	03-13-89	65
	09-29-89	51
	11-15-89	78
	01-16-90	61
	05-15-90	72
	05-15-92	69
	11-09-93	64
	12-07-93	64
33- 322	10-15-80	120
	09-30-81	140
	11-16-82	58
	06-07-89	38
	09-29-89	77
	11-15-89	140
	01-16-90	150
33- 322 (con't.)	05-15-90	150
	05-15-92	190
	10-13-93	170
	11-09-93	170
	12-07-93	170
33- 328	02-16-68	190
	02-15-89	130
	03-13-89	130
	06-07-89	320
	09-29-89	320
	11-15-89	370
	01-16-90	330
	05-15-90	360
	05-15-92	320
33- 331	04-30-90	250
	10-29-90	20
	11-22-91	15
	08-17-94	27
	02-17-95	24
	08-17-95	26
33- 334	02-16-68	73
33- 364	10-07-76	18
	05-18-79	17
	09-28-81	27
	10-22-82	23
	04-04-84	25
	05-02-84	400
	06-05-84	35
	07-03-84	50
	08-03-84	40
	09-07-84	60
	10-02-84	60
	11-09-84	40
	12-05-84	50
	01-04-85	35
	02-05-85	38
	03-04-85	40
	04-02-85	37
	07-15-85	20
	08-12-85	25
	09-05-85	30
	09-13-85	37
	10-04-85	20
	11-07-85	20
33- 364 (con't.)	12-12-85	25
	01-15-86	39
	02-15-86	45
	03-15-86	40
	04-15-86	40
	05-15-86	36
	06-15-86	55
	08-15-86	35
	09-15-86	59
	09-29-86	45
	10-15-86	48
	11-15-86	50
	12-15-86	41
	01-15-87	40
	03-15-87	42
	04-15-87	30
	06-15-87	190
	08-15-87	40
	08-21-87	27
	09-15-87	45
	10-15-87	35
	11-15-87	40
	12-15-87	45
	01-15-88	35
	02-15-88	35
	03-15-88	35
	04-15-88	50
	05-15-88	45
	06-15-88	100
	07-15-88	30
	08-15-88	30
	08-16-88	31
	09-15-88	35
	01-01-89	30
	02-01-89	22
	03-01-89	14
	04-15-89	27
	05-15-89	18
	06-15-89	38
	04-15-90	40
	05-15-90	45
	06-15-90	30
	07-15-90	38
	08-15-90	34

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 364 (con't.)	08-23-90	26
	10-15-90	28
	11-15-90	25
	12-15-90	45
	04-15-91	27
	05-15-91	23
	06-15-91	25
	07-15-91	22
	08-15-91	25
	08-15-91	23
	09-15-91	21
	10-15-91	19
	11-15-91	21
	12-15-91	21
	01-15-92	32
	02-15-92	21
	03-15-92	24
	05-15-92	19
	06-15-92	44
	09-10-92	25
	01-15-93	26
	02-15-93	24
	03-15-93	27
	10-15-94	21
	11-15-94	25
	01-15-95	20
	02-15-95	19
	03-15-95	39
	04-15-95	20
	05-15-95	34
	06-15-95	27
	07-15-95	20
	08-15-95	30
	09-15-95	230
	10-12-95	20
	11-16-95	18
	12-07-95	23
	12-15-95	24
33- 452	04-15-84	6.5
	05-15-84	7.0
	06-15-84	5.7
	07-15-84	5.0
	08-15-84	6.2
	09-15-84	9.8
33- 452 (con't.)	10-15-84	5.9
	11-15-84	12
	12-15-84	11
	01-15-85	8.7
	02-15-85	11
	03-15-85	6.8
	04-15-85	7.6
	05-16-85	6.9
	06-15-85	7.0
	07-15-85	6.5
	08-15-85	7.4
	09-15-85	11
	10-15-85	8.1
	11-15-85	8.0
	12-15-85	7.5
	01-15-86	6.1
	02-15-86	6.6
	03-15-86	6.1
	04-15-86	7.6
	05-15-86	9.4
	06-15-86	9.0
	10-15-86	6.1
	11-15-86	5.5
	12-15-86	8.3
	01-15-87	6.3
	02-15-87	5.1
	03-15-87	4.8
	04-15-87	4.9
	05-15-87	7.6
	06-15-87	4.0
	07-15-87	4.5
	08-15-87	6.3
	09-15-87	3.0
	10-15-87	7.0
	11-15-87	6.5
	12-15-87	6.3
	01-15-88	6.2
	02-15-88	8.0
	03-15-88	7.5
	04-15-88	8.0
	05-15-88	5.0
	06-15-88	7.0
	07-15-88	7.0
	08-15-88	8.0
33- 452 (con't.)	09-15-88	10
	01-01-89	7.7
	02-01-89	5.0
	04-15-89	3.0
	05-15-89	2.0
	04-15-90	14
	05-15-90	7.0
	06-15-90	5.9
	07-15-90	10
	08-15-90	9.0
	09-15-90	11
	10-15-90	10
	11-15-90	9.0
	12-15-90	6.0
	06-15-91	5.0
	07-15-91	5.0
	08-15-91	7.0
	09-15-91	12
	01-15-92	6.0
	02-15-92	6.0
	03-15-92	4.0
	04-15-92	6.0
	05-15-92	6.0
	06-15-92	3.0
	01-15-93	5.3
	02-15-93	7.1
	03-15-93	7.0
	10-15-94	5.0
	11-15-94	3.5
	12-15-94	9.4
	01-15-95	4.1
	02-15-95	5.3
	03-15-95	4.7
	04-15-95	4.1
	05-15-95	4.1
	06-15-95	3.8
	07-15-95	4.5
	08-15-95	5.9
	09-15-95	5.0
	12-13-95	4.5
33- 64	05-01-67	62
33- 65	05-01-67	18
33- 66	05-01-67	17
33- 67	05-18-67	26

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 67 (con't.)	10-15-80	23
33- 421	11-20-80	35
33- 69	02-16-68	3.5
	09-08-80	3.1
33- 70	02-16-68	4.0
33- 77	04-09-51	9.8
	02-16-68	4.5
33- 80	10-03-80	5.2
33- 83	10-09-80	4.8
	03-16-82	17
	06-09-82	14
	10-21-82	8.7
	03-31-83	13
	06-09-83	13
	09-20-83	13
	11-04-83	12
	12-13-83	14
	03-03-84	15
	06-27-84	15
	07-31-84	16
	11-02-84	13
	11-12-84	16
	03-18-85	19
	06-03-85	18
	09-11-85	18
	09-16-85	17
	11-12-85	18
	03-01-86	20
	06-12-86	20
	08-10-86	19
	09-29-86	17
	10-05-86	20
	01-07-87	22
	06-07-87	24
	08-21-87	24
	09-07-87	24
	11-12-87	26
	01-07-88	25
	06-12-88	29
	08-01-88	31
	08-17-88	31
	11-20-88	33
	02-19-89	36
	03-19-89	36
33- 83 (con't.)	05-12-89	36
	08-16-89	34
	04-03-90	44
	05-06-90	44
	06-06-90	44
	08-22-90	43
	10-13-90	46
	11-10-90	46
	12-09-90	46
	04-15-91	48
	05-07-91	48
	06-23-91	48
	07-03-91	48
	08-17-91	48
	09-14-91	48
	10-12-91	50
	11-09-91	50
	12-10-91	50
	01-06-92	46
	02-13-92	46
	03-13-92	46
	04-14-92	51
	05-23-92	51
	06-13-92	51
	07-11-92	52
	08-20-92	52
	09-09-92	51
	10-15-92	52
	11-28-92	52
	12-28-92	52
	01-24-93	51
	02-28-93	51
	03-28-93	51
	06-30-93	50
	07-18-93	53
	08-30-93	53
	09-25-93	53
	10-19-93	51
	11-10-93	51
	12-23-93	51
	01-28-94	50
	02-17-94	50
	03-26-94	50
	04-24-94	52
33- 83 (con't.)	05-27-94	52
	06-28-94	50
	07-25-94	49
	09-25-94	55
	10-27-94	53
	11-30-94	55
	12-22-94	55
	01-23-95	58
	02-24-95	59
	03-30-95	62
	04-27-95	52
	05-12-95	59
33- 85	04-10-80	15
	06-30-80	13
	09-08-80	20
	10-09-80	13
	12-16-80	15
	03-27-81	20
	06-12-81	21
	09-18-81	22
	12-21-81	20
	03-16-82	28
	09-30-82	20
	10-21-82	20
	02-01-83	41
	02-25-83	23
	05-13-83	22
	08-12-83	19
	11-04-83	21
	11-09-83	17
	01-16-84	26
	05-03-84	24
	07-31-84	18
	11-02-84	18
	11-12-84	22
	03-18-85	24
	06-03-85	24
	09-11-85	21
	09-16-85	28
	11-12-85	20
	01-05-86	22
	06-12-86	22
	08-10-86	23
	09-29-86	23

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 85 (con't.)	10-05-86	24
	01-07-87	26
	06-07-87	28
	08-02-87	28
	08-21-87	29
	11-12-87	32
	01-07-88	32
	06-12-88	31
	08-01-88	33
	08-17-88	33
	11-20-88	35
	02-19-89	36
	03-19-89	36
	05-12-89	36
	08-16-89	34
	04-03-90	40
	05-06-90	40
	06-06-90	40
	08-22-90	38
	10-13-90	41
	11-10-90	41
	12-09-90	41
	04-15-91	43
	05-07-91	43
	06-23-91	43
	07-03-91	42
	08-15-91	45
	08-17-91	42
	09-14-91	42
	10-12-91	42
	11-09-91	42
	12-10-91	42
	01-06-92	41
	02-13-92	41
	03-13-92	41
	04-14-92	39
	05-23-92	39
	06-13-92	39
	07-19-92	37
	08-20-92	37
	09-09-92	36
	10-15-92	41
	11-28-92	41
	12-28-92	41
33- 85 (con't.)	01-24-93	41
	03-28-93	41
	06-30-93	40
	07-18-93	40
	08-30-93	40
	09-25-93	40
	10-19-93	43
	11-10-93	43
	12-23-93	43
	01-28-94	40
	02-17-94	40
	03-26-94	40
	04-24-94	39
	05-27-94	43
	06-28-94	39
	07-25-94	38
	09-25-94	42
	10-27-94	41
	11-30-94	41
	12-22-94	41
	01-23-95	45
	02-24-95	45
	03-30-95	44
	04-27-95	40
	05-12-95	41
	06-28-95	40
	07-10-95	43
	08-30-95	41
	09-27-95	41
	10-19-95	41
	11-21-95	44
	12-21-95	41
33- 419	11-21-80	6.2
33- 420	11-21-80	7.4
33- 103	09-22-80	8.8
33- 106	10-10-80	460
	04-25-95	440
33- 107	04-26-56	130
	04-10-58	120
	08-26-58	130
	04-09-59	110
	09-08-59	120
	12-15-59	100
	04-11-60	100
33- 107 (con't.)	08-24-60	120
	04-07-61	98
	08-30-61	120
	04-19-62	100
	09-26-62	110
	04-03-63	100
	08-28-63	110
	04-28-64	100
	09-30-64	100
	04-21-65	96
	02-26-68	100
	03-07-69	110
	09-28-72	110
	05-23-73	110
	09-21-73	84
	10-04-74	110
	05-15-75	110
	10-06-76	100
	09-22-77	98
	10-05-78	91
33- 108	11-19-58	240
	11-19-59	240
	02-26-68	210
	03-07-69	220
	05-23-73	170
	09-21-73	200
	04-30-74	210
	08-29-74	210
	10-06-76	140
	09-22-77	130
	10-05-78	140
	08-29-79	110
	10-10-80	110
	09-29-81	110
	10-15-82	110
	11-02-84	110
	09-19-85	100
	09-26-86	99
	08-19-88	100
	08-15-89	100
	08-22-90	110
	08-14-91	110
	09-10-92	110
33- 118	04-11-58	61

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 118 (con't.)	08-25-58	64
	04-09-59	64
	09-08-59	64
	04-11-60	63
	04-07-61	62
	08-30-61	64
	04-19-62	64
	09-26-62	64
	04-04-63	65
	08-28-63	64
	04-28-64	64
	04-21-65	60
	02-26-68	62
	03-07-69	67
	09-28-72	68
	09-21-73	66
	04-30-74	66
	08-29-74	70
	10-05-76	65
	09-22-77	67
	10-05-78	64
	08-30-79	62
	10-02-80	64
	09-29-81	65
	10-08-82	62
	11-03-83	67
	08-09-84	70
	11-02-84	64
	11-29-84	60
	03-21-85	55
	05-07-85	65
	08-13-85	70
	09-19-85	59
	11-18-85	100
	08-22-86	80
	09-26-86	61
	11-28-86	39
	03-12-87	60
	06-08-87	66
	09-01-87	70
	11-17-87	68
	03-14-88	60
	08-16-88	62
	09-20-88	60
33- 118 (con't.)	12-01-88	67
	02-28-89	55
	05-30-89	59
	08-15-89	60
	08-29-89	58
	08-22-90	65
	08-27-90	95
	11-28-90	63
	03-18-91	57
	08-14-91	120
	12-13-91	59
	03-03-92	63
	06-04-92	59
	09-09-92	64
	09-16-92	56
	12-22-92	61
	05-19-93	68
	12-29-93	59
	05-24-94	58
	09-29-94	58
	11-28-94	65
	03-09-95	59
	05-03-95	110
	08-29-95	58
	11-08-95	55
33- 119	01-11-51	74
	02-26-68	86
	03-07-69	92
	09-28-72	96
	05-23-73	65
	09-21-73	98
	04-30-74	94
	08-29-74	95
	05-15-75	94
	10-05-76	110
	09-22-77	110
	10-05-78	130
	08-30-79	120
	10-02-80	120
	09-29-81	56
	10-08-82	33
	11-03-83	120
	08-09-84	70
	11-02-84	57
33- 119 (con't.)	11-29-84	130
	03-21-85	120
	05-07-85	70
	08-13-85	50
	09-19-85	41
	06-17-86	100
	08-22-86	80
	09-26-86	60
	11-28-86	44
	03-12-87	60
	06-08-87	120
	08-20-87	120
	09-01-87	100
	11-17-87	70
	03-14-88	65
	08-16-88	120
	09-20-88	120
	08-29-89	120
	12-04-89	47
	05-22-90	60
	06-13-91	100
	08-14-91	70
	09-12-91	120
	03-03-92	63
	06-04-92	81
	09-09-92	87
	09-16-92	78
	12-22-92	73
	05-19-93	120
	12-29-93	120
	05-24-94	110
	09-29-94	100
	11-28-94	130
	03-09-95	110
	05-03-95	110
	08-29-95	110
	11-08-95	100
33- 121	02-15-68	46
	09-29-72	46
	09-21-73	44
33- 122	05-15-75	45
	09-22-77	49
	10-05-78	43
	08-30-79	44

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 122 (con't.)	09-22-80	57
	09-30-81	46
	10-12-82	52
	11-03-83	56
	11-01-84	50
	09-11-85	43
	09-25-86	40
	08-26-87	50
	05-01-88	52
	05-15-88	52
	08-01-88	54
	08-15-88	54
	08-17-88	49
	11-15-88	54
	01-15-89	76
	02-18-89	66
	03-11-89	96
	04-22-89	79
	05-22-89	53
	06-21-89	46
	08-15-89	61
	04-01-90	56
	05-01-90	59
	06-01-90	53
	08-06-90	73
	08-23-90	70
	08-31-90	59
	09-20-90	76
	10-02-90	76
	11-27-90	63
	12-04-90	72
	01-12-91	76
	02-11-91	79
	03-03-91	88
	04-03-91	76
	05-02-91	69
	06-26-91	89
	07-02-91	66
	08-14-91	69
	08-16-91	73
	09-25-91	69
	10-16-91	66
	11-27-91	69
	12-19-91	79
33- 122 (con't.)	01-15-92	69
	02-12-92	66
	03-19-92	66
	04-18-92	69
	05-18-92	66
	06-08-92	79
	07-06-92	69
	08-03-92	66
	09-04-92	76
	09-10-92	73
	10-09-92	69
	11-23-92	66
	12-02-92	66
33- 123	02-15-68	50
	09-29-72	49
	05-23-73	53
	09-22-77	76
	11-01-84	78
	09-11-85	83
	04-01-88	54
	04-15-88	54
	07-01-88	100
	07-15-88	100
	10-15-88	54
	01-18-89	76
	02-23-89	89
	03-19-89	99
	04-07-89	110
	05-09-89	96
	09-20-90	76
	10-09-90	79
	11-08-90	59
	12-15-90	110
	01-28-91	100
	02-22-91	79
	03-09-91	89
	04-25-91	89
	05-19-91	120
	06-21-91	100
	07-24-91	69
	08-14-91	120
	08-22-91	76
	09-15-91	73
	10-23-91	79
33- 123 (con't.)	11-16-91	79
	12-20-91	110
	01-27-92	120
	02-13-92	76
	03-20-92	69
	04-10-92	79
	05-16-92	86
	06-17-92	92
	07-01-92	100
	08-07-92	86
	09-10-92	130
	09-28-92	120
	10-13-92	99
	11-15-92	89
	12-07-92	96
33- 125	02-15-68	42
	09-29-72	42
	09-21-73	55
	08-29-74	49
	10-06-76	62
	09-22-77	54
	10-05-78	70
	08-30-79	65
	09-30-81	55
	10-12-82	50
	11-03-83	82
	11-01-84	58
	09-11-85	53
	01-01-88	64
	06-15-88	67
	09-15-88	64
	12-15-88	55
	01-20-89	80
	02-10-89	96
	03-03-89	56
	06-22-89	82
	05-04-90	56
	05-30-90	46
	06-15-90	79
	08-01-90	73
	08-23-90	78
	08-31-90	59
	09-20-90	76
	10-08-90	86

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 125 (con't.)	12-04-90	72
	01-31-91	99
	02-06-91	89
	03-18-91	86
	04-12-91	73
	05-14-91	76
	06-24-91	110
	07-25-91	66
	08-14-91	73
	08-23-91	73
	09-23-91	66
	10-03-91	76
	11-13-91	73
	12-11-91	98
	01-17-92	69
	02-14-92	79
	03-23-92	69
	04-22-92	76
	05-01-92	73
	06-15-92	92
	07-11-92	73
	08-11-92	76
	09-10-92	76
	09-20-92	86
	10-23-92	86
	11-08-92	83
	12-04-92	83
	02-23-93	83
	04-15-93	99
	03-05-94	69
	05-19-94	76
	08-18-94	96
	11-21-94	92
	11-30-94	89
	03-14-95	63
	05-07-95	86
	07-10-95	66
	10-28-95	79
33- 127	02-15-68	62
	09-29-72	110
	04-30-74	140
	10-04-74	150
	09-22-77	110
	08-30-79	160
33- 127 (con't.)	09-22-80	140
	10-12-82	53
	11-03-83	74
	09-11-85	180
	09-25-86	69
33- 141	08-15-89	150
	08-23-90	140
33- 602	02-15-89	1400
	03-13-89	1400
	06-07-89	340
	09-29-89	1200
	11-15-89	1200
	01-16-90	1300
	05-15-90	1300
	05-15-92	1100
	10-13-93	1000
	11-09-93	1000
	12-07-93	1000
33- 158	02-09-60	62
	04-12-60	62
	04-06-61	62
	08-29-61	62
	02-27-68	72
33- 163	04-27-56	42
	04-11-58	21
	08-26-58	25
	04-09-59	24
	09-08-59	26
	04-12-60	24
	04-11-61	24
	08-29-61	24
	04-20-62	25
	09-25-62	24
	04-02-63	25
	08-27-63	24
	04-28-64	22
	09-30-64	23
	04-21-65	22
	04-27-66	23
	02-27-68	22
	03-07-69	23
	09-29-72	28
	09-21-73	78
	04-30-74	30
33- 163 (con't.)	08-29-74	69
	05-15-75	26
	10-07-76	22
	09-27-77	24
	08-29-79	18
	09-16-80	21
	09-29-81	26
	10-15-82	14
33- 164	02-27-68	49
	09-27-77	50
33- 165	05-01-67	22
33- 166	05-01-67	10
33- 167	05-01-67	19
33- 194	01-29-60	25
33- 198	09-16-80	2.3
33- 251	06-06-78	1900
	11-22-82	1900
	09-28-94	1700
33- 353	01-11-51	140
	11-19-58	150
	12-09-58	140
	02-27-68	160
33- 354	04-11-58	140
	08-26-58	150
	04-10-59	160
	09-08-59	160
	04-12-60	160
	04-06-61	160
	08-29-61	160
	04-19-62	160
	09-25-62	150
	04-02-63	170
	08-27-63	160
	03-27-64	170
	09-30-64	170
	04-21-65	170
	02-27-68	160
	04-30-74	170
	08-29-74	160
	05-15-75	170
	10-07-76	200
	09-27-77	180
	08-29-79	210
	10-06-80	170

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 354 (con't.)	09-29-81	170
	11-03-83	200
	04-07-84	180
	10-18-84	170
	11-08-84	180
	02-07-85	170
	06-05-85	170
	09-13-85	170
	09-17-85	170
	11-18-85	190
	03-27-86	170
	06-30-86	190
	09-16-86	190
	09-26-86	180
	12-24-86	190
	03-27-87	190
	06-28-87	180
	08-20-87	200
	09-26-87	180
	11-18-87	180
	01-20-88	190
	06-21-88	200
	08-16-88	210
	09-20-88	150
	12-20-88	190
	03-21-89	170
	06-20-89	170
	08-15-89	180
	07-17-90	170
	08-22-90	180
	12-28-90	170
	01-08-91	170
	04-10-91	200
	07-01-91	180
	08-14-91	180
	10-01-91	190
	01-07-92	160
	04-07-92	170
	07-07-92	180
	09-10-92	230
	10-06-92	180
	05-04-93	160
	10-05-93	180
	01-06-94	190
33- 354 (con't.)	04-19-94	180
	07-05-94	210
	10-11-94	180
	01-10-95	210
	07-17-95	190
	10-10-95	190
33- 362	10-07-76	180
	09-27-77	190
	08-29-79	150
	10-06-80	170
	09-29-81	180
	11-03-83	160
	04-07-84	150
	10-18-84	160
	11-08-84	150
	02-21-85	160
	06-05-85	140
	09-17-85	140
	11-18-85	130
	03-27-86	190
	06-30-86	170
	09-16-86	160
	09-26-86	150
	12-22-86	150
	03-27-87	170
	06-28-87	160
	08-20-87	160
	09-26-87	150
	11-18-87	150
	01-20-88	140
	06-21-88	130
	08-16-88	150
	09-20-88	200
	12-20-88	150
	03-21-89	140
	06-20-89	140
	08-15-89	150
	07-17-90	190
	08-23-90	140
	01-08-91	150
	04-10-91	140
	07-01-91	140
	08-14-91	140
	10-01-91	85
33- 362 (con't.)	01-07-92	140
	04-07-92	150
	07-07-92	140
	09-10-92	150
	10-06-92	140
	01-11-93	130
	05-04-93	110
	10-05-93	130
	01-06-94	170
	04-19-94	180
	07-05-94	160
	10-11-94	180
	01-10-95	150
	07-17-95	120
	10-10-95	150
33- 459	11-08-84	16
	09-13-85	17
	09-26-86	14
	08-20-87	17
	08-17-88	16
	08-15-89	16
	08-22-90	18
	08-14-91	15
	09-09-92	19
Lower Potomac-Raritan-Magothy aquifer		
15- 671	06-03-86	10
	07-09-93	12
	06-05-96	12
15- 101	07-09-51	240
	06-04-52	250
	04-06-53	240
	09-16-53	260
	04-14-54	240
	09-08-54	250
	04-14-55	240
	09-02-55	230
	04-12-56	240
	08-27-56	250
	04-11-57	240
	08-30-57	240
	04-08-58	240
	08-25-58	240

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 101 (con't.)	04-07-59	250
	09-01-59	240
	04-05-60	230
	08-22-60	230
	04-10-61	230
	08-28-61	230
	04-17-62	230
	09-24-62	230
	04-02-63	230
	08-26-63	220
	04-28-64	230
	09-17-64	220
	04-21-65	220
	08-14-67	59
	09-22-72	240
	05-24-73	260
	09-20-73	160
	08-30-74	220
	05-13-75	210
	11-05-76	180
15- 102	09-15-52	310
	04-06-53	260
	09-16-53	250
	04-14-54	230
	09-08-54	200
	04-14-55	200
	09-02-55	200
	04-12-56	180
	08-27-56	180
	04-11-57	170
	08-30-57	160
	04-08-58	140
	08-25-58	180
	04-07-59	150
	09-01-59	150
	04-05-60	150
	08-22-60	140
	04-10-61	140
	08-28-61	120
	04-17-62	130
	09-24-62	120
	04-02-63	140
	08-26-63	110
	04-28-64	120
15- 102 (con't.)	09-17-64	120
	04-21-65	120
	08-15-67	140
	03-12-70	120
	12-21-70	130
	09-22-72	130
	05-23-73	140
15- 103	06-01-49	200
	08-20-51	180
15- 104	06-01-49	320
15- 107	06-01-49	54
15- 109	08-14-67	120
	03-12-70	120
	09-22-72	110
	05-24-73	110
	09-20-73	100
	08-30-74	110
	11-05-76	110
	09-21-77	110
	08-11-82	100
	09-13-85	62
	09-19-85	85
	10-18-85	92
	09-21-87	38
	09-12-88	39
15- 118	08-25-58	280
	08-14-67	110
	09-22-72	150
	08-30-74	140
	05-13-75	140
	11-05-76	130
	09-21-77	130
	09-01-78	120
	08-14-79	120
	09-17-80	110
	07-29-81	120
	08-11-82	110
	08-31-83	110
	09-20-84	110
	10-18-85	110
	10-18-85	110
	09-09-86	110
	01-28-92	100
	04-15-92	90
15- 118 (con't.)	07-06-92	94
	10-16-92	98
	04-01-93	100
	07-19-93	93
	10-14-93	100
	01-24-94	89
	07-13-94	96
	10-21-94	96
	01-16-95	100
	04-04-95	100
	07-27-95	97
	10-17-95	93
15- 357	11-16-82	110
	10-08-86	96
15- 634	10-08-86	520
15- 672	10-30-86	150
15- 678	09-23-86	130
15- 680	09-22-86	71
	09-22-86	73
15- 712	12-16-86	670
	12-16-86	670
	03-19-87	660
	03-19-87	660
	07-13-93	610
	06-14-96	640
15- 139	09-26-80	810
	03-13-85	800
	11-10-86	820
15- 349	10-01-80	110
15- 350	09-30-80	370
	10-31-84	380
15- 398	11-17-86	140
15- 615	02-28-85	830
	12-02-86	790
	12-02-86	790
	10-19-94	900
15- 618	03-01-85	450
	11-24-86	400
15- 742	05-13-87	140
	07-16-93	140
	07-10-96	140
15- 207	04-25-51	21
	04-10-58	46
	08-25-58	45

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 207 (con't.)	04-07-59	44
	09-01-59	44
	04-05-60	42
	08-22-60	42
	04-10-61	42
	08-21-61	41
	08-28-61	41
	04-17-62	41
	09-24-62	40
	04-02-63	40
	04-28-64	38
	09-17-64	38
	04-21-65	38
	08-29-66	37
	07-13-67	34
	03-12-70	34
	05-18-71	30
	09-22-72	28
	05-24-73	29
	09-20-73	28
	08-30-74	29
	05-09-75	30
	09-21-77	32
	08-15-79	27
	09-09-80	28
	09-11-81	28
	08-31-83	24
	09-18-84	28
	09-09-86	30
	09-01-92	30
	12-01-94	28
	02-03-95	28
	04-03-95	23
	07-05-95	29
	10-03-95	30
15- 533	01-04-93	31
	04-01-93	30
	07-01-93	29
	10-01-93	30
	01-03-94	27
	04-01-94	29
	07-01-94	39
	10-10-94	31
	01-03-95	28
15- 533 (con't.)	04-04-95	17
	07-03-95	28
	10-02-95	27
15- 770	08-25-87	30
15- 778	08-28-87	36
15- 218	09-15-52	87
	04-06-53	100
	09-16-53	110
	04-14-54	24
	09-08-54	60
	04-14-55	24
	09-02-55	92
	04-12-56	95
	08-27-56	98
	04-11-57	82
	08-30-57	110
	04-08-58	97
	08-25-58	92
	04-07-59	86
	09-01-59	94
	04-05-60	17
	08-22-60	75
	04-10-61	80
	08-28-61	58
	04-17-62	24
	09-24-62	63
	04-02-63	70
	08-26-63	66
15- 220	08-14-67	16
	11-25-75	140
	10-13-81	190
	10-11-83	160
	11-21-84	140
	03-01-85	140
	03-15-85	140
	04-30-85	150
	05-31-85	140
	06-12-85	140
	07-31-85	140
	08-15-85	140
	09-16-85	140
	10-24-85	140
	12-26-85	140
	01-03-86	140
15- 220 (con't.)	02-21-86	130
	03-31-86	130
	04-11-86	130
	05-20-86	130
	06-04-86	130
	07-23-86	130
	08-16-86	130
	09-19-86	130
	10-20-86	130
	11-24-86	130
	12-08-86	130
	01-06-87	130
	02-04-87	130
15- 221	10-14-86	150
15- 439	10-08-80	160
	07-23-82	150
	11-08-84	130
	09-25-85	130
15- 282	12-10-80	79
	07-18-85	81
	07-27-93	19
	04-13-94	24
	09-16-94	77
	12-20-94	70
	03-28-95	100
	06-20-95	79
	09-28-95	40
	12-29-95	27
15- 283	08-15-67	140
	09-24-80	140
	09-15-81	150
	08-17-82	140
	08-31-83	150
	09-19-84	150
	09-24-85	140
	09-24-85	140
	09-04-86	150
	08-15-88	140
	08-28-89	150
	08-22-90	140
	08-08-91	140
	03-24-93	150
	06-12-93	150
	12-11-93	140

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 283 (con't.)	03-20-94	150
	06-23-94	150
	09-29-94	150
	12-31-94	140
	03-11-95	150
	06-29-95	130
	10-06-95	170
	12-21-95	140
15- 285	08-15-67	170
	03-24-93	140
	06-11-93	150
	12-11-93	120
	03-19-94	140
	06-24-94	150
	09-29-94	100
	12-31-94	120
	03-12-95	130
	06-30-95	120
	10-06-95	150
	12-22-95	120
15- 296	10-16-86	190
	10-16-86	190
15- 304	01-20-93	62
	04-21-93	66
	07-21-93	65
	10-20-93	63
	11-27-93	65
	12-15-93	69
	02-01-94	60
	04-20-94	62
	07-20-94	55
	10-19-94	65
	01-17-95	62
	04-20-95	62
	07-26-95	57
	10-25-95	65
15- 306	11-03-86	74
	01-20-93	73
	04-21-93	76
	07-21-93	74
	10-20-93	72
	11-27-93	64
	12-15-93	59
	01-19-94	84

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 306 (con't.)	04-20-94	62
	07-20-94	70
	10-19-94	70
	01-17-95	70
	04-20-95	61
	07-26-95	63
	10-25-95	74
15- 308	09-18-80	79
	09-26-85	79
15- 312	08-26-80	43
	08-18-82	42
	07-18-85	46
	12-17-86	42
	12-20-94	30
	03-28-95	45
	06-20-95	31
	09-28-95	29
	12-29-95	31
15- 314	08-15-50	40
	12-22-70	24
	08-09-82	22
	09-24-85	24
15- 317	09-09-80	20
	02-04-93	27
	05-17-93	14
	08-04-93	20
	01-27-94	29
	05-06-94	27
	08-22-94	25
	11-09-94	27
	06-09-95	26
15- 318	03-15-50	26
	08-25-66	23
	10-09-81	27
	08-31-83	32
	09-19-84	29
15- 319	03-15-50	26
	08-25-66	25
	05-18-71	23
	06-29-72	27
	06-01-73	26
	06-30-74	28
15- 320	03-15-50	14
	06-04-52	14

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 320 (con't.)	04-06-53	17
	04-14-54	14
	09-08-54	18
	04-14-55	16
	09-02-55	12
	04-12-56	14
	08-29-56	16
	04-11-57	14
	08-30-57	14
	04-08-58	15
	08-25-58	13
	04-07-59	17
	09-01-59	15
	04-05-60	14
	08-22-60	15
	04-10-61	17
	08-28-61	15
	04-17-62	17
	09-24-62	15
	04-02-63	16
	08-26-63	16
	04-28-64	13
	09-17-64	14
	04-21-65	17
	08-25-66	13
	03-12-70	17
	09-09-80	25
	02-18-93	37
	05-17-93	21
	08-04-93	31
	11-04-93	34
	01-27-94	34
	09-22-94	33
	12-22-94	29
	03-15-95	17
	05-19-95	34
	09-05-95	36
	11-28-95	38
15- 321	04-06-50	9.2
	09-09-80	15
	08-09-82	16
15- 322	03-15-50	17
	10-09-81	32
	02-19-93	35

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 322 (con't.)	06-11-93	32
	09-30-93	35
	11-04-93	39
	01-27-94	38
	05-06-94	40
	08-22-94	40
	12-29-94	44
	03-15-95	34
	05-19-95	34
	09-05-95	33
	11-28-95	35
15- 323	03-15-50	17
	05-18-71	20
	06-29-72	23
	06-05-73	24
	06-30-74	28
	10-09-81	38
	09-07-82	39
	10-04-85	38
15- 324	11-19-82	21
15- 373	08-18-82	23
	10-13-83	27
	07-27-93	13
	10-01-93	13
	04-13-94	27
	12-20-94	27
	03-28-95	33
	06-20-95	26
	09-28-95	27
	12-29-95	28
15- 410	09-09-80	29
	10-09-81	30
	08-09-82	30
	08-04-93	30
	09-26-94	44
	12-22-94	39
	03-15-95	20
	06-29-95	42
	09-05-95	42
	11-02-95	42
15- 430	02-04-93	24
	05-17-93	11
	08-04-93	17
	11-04-93	23
15- 430 (con't.)	01-27-94	26
	05-06-94	23
	08-22-94	22
	11-09-94	25
	03-30-95	54
	06-09-95	22
	09-05-95	24
	12-15-95	24
15- 326	09-02-80	13
	09-17-82	12
	03-20-93	26
	04-30-93	24
	08-05-93	29
	12-10-93	26
	02-01-94	26
	05-23-94	28
	08-09-94	27
	11-15-94	24
	03-27-95	23
	06-08-95	23
	09-08-95	24
	12-19-95	22
15- 327	07-13-67	7.5
	05-20-71	7.6
	06-01-73	7.6
	06-30-74	7.6
	09-02-80	9.5
	09-10-82	11
	04-09-94	25
	07-20-94	27
	10-08-94	27
	02-28-95	17
	06-26-95	20
	09-20-95	20
	12-19-95	26
15- 434	09-17-82	11
	06-28-94	29
	09-15-94	30
	12-05-94	30
	03-27-95	20
	06-30-95	25
	09-12-95	22
	12-19-95	20
15- 331	07-12-67	48
15- 331 (con't.)	09-21-72	46
	05-24-73	48
	09-25-73	47
	04-29-74	49
	08-28-74	48
	05-09-75	48
	09-16-77	27
	08-25-78	46
	08-14-79	46
	08-27-80	45
	12-10-80	43
	09-11-81	40
	08-13-82	18
	12-22-82	24
	07-22-85	44
	04-25-90	90
	05-22-90	45
	06-14-90	46
	08-22-90	46
	09-07-90	49
	10-03-90	50
	11-07-90	44
	12-07-90	47
	01-02-91	47
	02-06-91	45
	03-04-91	46
	04-03-91	49
	05-01-91	53
	07-09-91	48
	08-12-91	47
	10-02-91	45
	11-06-91	40
	12-04-91	43
	01-04-92	48
	02-05-92	44
	03-04-92	44
	04-01-92	46
	05-06-92	43
	06-03-92	42
	07-07-92	50
	08-05-92	48
	09-10-92	44
	10-07-92	70
	11-04-92	39

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
15- 331 (con't.)	12-02-92	46
	01-06-93	46
	02-03-93	24
	03-03-93	50
	04-07-93	29
	05-05-93	49
	06-02-93	50
	07-07-93	54
	08-04-93	46
	09-14-93	48
33- 308	12-07-67	84
33- 330	01-11-51	260
	02-16-68	240
33- 335	02-16-68	100
	02-15-89	55
	03-13-89	55
	06-07-89	62
	09-29-89	13
	11-15-89	13
	01-16-90	14
	05-15-90	14
	05-15-92	14
	10-13-93	13
	11-09-93	13
	12-07-93	13
33- 346	09-26-62	190
	04-02-63	200
	08-28-63	160
	04-29-64	170
	09-30-64	160
	04-21-65	160
	02-16-68	200
	09-29-72	220
	08-30-74	190
	05-15-75	190
	10-06-76	200
	09-22-77	210
	10-05-78	210
	08-30-79	200
	09-23-80	210
	09-30-81	230
	10-12-82	220
	11-04-83	220
	11-01-84	210
33- 346 (con't.)	09-25-86	220
	08-17-88	220
	08-22-89	220
	08-14-91	220
	09-09-92	220
	01-19-93	230
	05-25-93	230
	12-16-93	230
	08-17-94	210
	02-17-95	210
33- 86	10-09-80	300
	09-30-81	320
	10-21-82	310
	11-04-83	290
	11-02-84	310
	09-11-85	250
	09-29-86	280
	08-21-87	270
	08-17-88	280
	08-16-89	280
	08-22-90	280
	08-15-91	260
	09-09-92	270
33- 136	02-15-89	120
	03-13-89	120
	06-07-89	120
	09-29-89	36
	11-15-89	120
	01-16-90	120
	05-15-90	120
	05-15-92	140
	10-13-93	120
	11-09-93	120
	12-07-93	120
33- 137	03-06-51	37
	09-15-52	30
	04-06-53	28
	09-16-53	43
	04-14-54	40
	09-08-54	38
	04-14-55	38
	09-02-55	34
	04-12-56	38
	08-27-56	40
33- 137 (con't.)	04-11-57	46
	08-30-57	37
	04-08-58	42
	08-26-58	44
	04-09-59	42
	09-08-59	120
	04-11-60	53
	08-24-60	51
	08-31-61	38
	04-04-63	43
	10-04-74	55
	10-06-76	64
	09-22-77	70
	10-05-78	70
	08-30-79	74
	10-15-80	72
	11-04-83	77
	09-11-85	73
	08-21-87	80
	08-17-88	76
	09-29-89	31
	11-15-89	82
	01-16-90	37
	05-15-90	41
	05-15-92	82
	10-13-92	8.8
	10-13-93	79
	11-09-93	79
	12-07-93	79
33- 138	02-15-89	150
	03-13-89	150
	06-07-89	170
	09-29-89	32
	11-15-89	140
	01-16-90	140
	05-15-90	210
	05-15-92	150
	10-13-93	150
	11-09-93	150
	12-07-93	150
33- 187	09-23-58	5.2
	10-24-58	73
	12-24-58	180
	04-20-62	190

Table 5. Results of chloride analysis of water samples from selected wells in Gloucester and Salem Counties, New Jersey, 1949-95--Continued

USGS well number[1]	Date of sample collection	Chloride concentration (milligrams per liter)
33- 187 (con't.)	09-19-62	190
	04-12-63	190
	10-07-85	170
	09-15-94	160

Table 6. Well-location and -construction data for selected wells in Gloucester and Salem Counties, New Jersey

[121CKKD, Kirkwood-Cohansey aquifer system; 125VNCN, Vincentown aquifer; 211MLRW, Wenonah-Mount Laurel aquifer; 211EGLS, Englishtown aquifer system; 211MRPAU, Upper Potomac-Raritan-Magothy aquifer; 211MRPAM, Middle Potomac-Raritan-Magothy aquifer; 211MRPAL, Lower Potomac-Raritan-Magothy aquifer; 211MRPA, Undifferentiated Middle/Lower Potomac-Raritan-Magothy aquifer; --, no data; TWP, Township; BORO, Borough; MUA, Municipal Utilities Authority; WD, Water Department; WC, Water Company; USGS, U.S. Geological Survey; SLF, Sanitary Landfill; PW, production well; OBS, OW, observation well; DCW, domestic well; MW, monitoring well; TW, test well]

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 2	CWD 2	393914	750519	CLAYTON BORO	08-04-42	133.00	103	83.0	105	121CKKD	--
15- 38	1	394057	751007	ELK TWP	11-23-51	135.00	45.0	41.0	45.0	121CKKD	--
15- 754	DEAN 1	393934	751033	ELK TWP	05-25-84	143	58	48	58	121CKKD	31-31545
15- 810	ELK 1	394021	750827	ELK TWP	02-11-81	144	63	53	63	121CKKD	31-17796
15- 41	SCAPELLATO 2	393137	745831	FRANKLIN TWP	--	100	68.0	--	--	121CKKD	--
15- 46	FRANKLIN TWP	393410	745630	FRANKLIN TWP	05-09-55	115.00	96.0	--	--	121CKKD	31-00866
15- 48	FERRUCCI BROS	393446	745606	FRANKLIN TWP	05-13-66	110	120	20.0	120	121CKKD	31-04954
15- 53	1	393634	750419	FRANKLIN TWP	03-05-52	110.00	90.0	70.0	90.0	121CKKD	--
15- 57	FRANKLIN TWP	393751	750107	FRANKLIN TWP	--	130.00	58.0	--	--	121CKKD	--
15- 729	GREEN ACRES 1	393331	750154	FRANKLIN TWP	01-09-85	105	80	70	80	121CKKD	--
15- 730	SCAPELLATO 1	393154	745811	FRANKLIN TWP	12-12-66	110	98.0	38.0	98.0	121CKKD	--
15- 732	BIAGI H1	393517	745539	FRANKLIN TWP	02-28-83	110	89	84	89	121CKKD	31-19570
15- 733	WROBEL.H1	393457	745839	FRANKLIN TWP	10-29-81	135	110	100	110	121CKKD	31-18493
15- 734	DASE 1	393523	745912	FRANKLIN TWP	10-01-86	138	110	100	110	121CKKD	--
15- 743	LAKE SCHOOL 1	393411	750022	FRANKLIN TWP	11-08-67	111	98	83	98	121CKKD	31-05162
15- 764	SCAFONIS D	393708	750143	FRANKLIN TWP	--	130	49	44	49	121CKKD	--
15- 785	BEHL RD WELL	393917	750149	FRANKLIN TWP	09-21-84	143	56	52	56	121CKKD	31-20754
15- 791	CLR 1	393634	750415	FRANKLIN TWP	03-05-52	111	90	70	90	121CKKD	31-00470

[1] Wells are sorted by aquifer (primary), county (secondary), municipality (tertiary), and well number (quaternary).

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 793	FERRUCCI 10	393448	745606	FRANKLIN TWP	05-14-84	110	150	100	150	121CKKD	--
15- 804	MALAGA 1	393428	750244	FRANKLIN TWP	09-06-84	110	123	95	123	121CKKD	31-22013
15- 805	MAIN RD SCHOOL #1	393322	745950	FRANKLIN TWP	00-00-75	119	100	95	100	121CKKD	--
15- 813	FERRUCCI IRR-76	393419	745626	FRANKLIN TWP	05-10-76	110	121	60	70	121CKKD	--
								81	121		
15- 830	WILSON LAKE PARK OFF	393920	750345	FRANKLIN TWP	00-00-60	120	90	70	90	121CKKD	--
15- 831	FRANKLIN ADMIN BLD	393539	750348	FRANKLIN TWP	--	104	85	80	85	121CKKD	--
15-1016	DUFFIELD 2/ SEALED	393633	750630	FRANKLIN TWP	00-00-60	129	60	50	60	121CKKD	--
15-1017	SHOREWAY HOUSE	394025	750548	FRANKLIN TWP	00-00-63	136	80	60	80	121CKKD	--
15- 726	AURA ORCHARDS	394130	750921	GLASSBORO BORO	04-12-78	140	62	52	62	121CKKD	--
15-1054	USGS GSC OBS-1 SHALLOW	394221	750722	GLASSBORO BORO	06-05-90	153.9	36	31	36	121CKKD	31-33949
15-1055	USGS GSC OBS-2 MED	394221	750722	GLASSBORO BORO	06-07-90	153.9	66	61	66	121CKKD	31-33950
15-1056	USGS GSC OBS-3 DEEP	394221	750722	GLASSBORO BORO	06-06-90	153.9	84	79	84	121CKKD	31-33951
15- 120	1	394219	750954	HARRISON TWP	09-20-52	141.00	51.0	45.0	51.0	121CKKD	--
15- 829	ZEE 1927	394258	750836	HARRISON TWP	00-00-27	141	29	25	29	121CKKD	--
15- 199	2	394050	745958	MONROE TWP	08-15-67	155.00	143	123	143	121CKKD	31-05150

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 204	MONROE TWP	394114	745908	MONROE TWP	01-15-74	145.00	120	105	120	121CKKD	31-07471
15- 365	MTMUA 6	394203	745936	MONROE TWP	01-30-70	140.00	144	109	143	121CKKD	31-05375
15- 375	MT MUA 7 1979	394010	745845	MONROE TWP	09-21-78	148	147	118	147	121CKKD	31-14080
15- 425	MTMUA 3	394047	745927	MONROE TWP	00-00-35	150.00	132	97.0	132	121CKKD	--
15- 426	MTMUA 2/SEALED	394052	745930	MONROE TWP	00-00-14	160.00	105	--	--	121CKKD	--
15- 566	CECIL 1	393842	745655	MONROE TWP	11-05-82	110.00	128	108	128	121CKKD	31-19549
15- 619	HOSPITALITY CAMPGROUND 1	393724	745542	MONROE TWP	03-23-78	105.00	98.0	38.0	98.0	121CKKD	31-12099
15- 735	DEMATTO 1	393940	745746	MONROE TWP	00-00-81	140	80	75	80	121CKKD	--
15- 759	MESIANO 1	394232	750126	MONROE TWP	--	159	135	130	135	121CKKD	--
15- 801	CHILLARI 1	394227	750522	MONROE TWP	02-00-86	144	85	80	85	121CKKD	--
15- 802	WAWA #1	394246	750151	MONROE TWP	06-00-85	150	65	60	65	121CKKD	--
15- 812	CORONA 1	393805	745554	MONROE TWP	12-00-82	123	110	100	110	121CKKD	--
15-1019	WILLIAMS GAR-DEN	394020	745611	MONROE TWP	00-00-60	115	45	40	45	121CKKD	--
15-1048	MONROE TWP MUA 8	394217	750039	MONROE TWP	08-10-88	162	144	100	141	121CKKD	31-27529
15-1068	NATIONWIDE MHP 2	394231	750108	MONROE TWP	12-00-81	170	135	115	135	121CKKD	31-18471
15-1072	NATIONWIDE MHP	394247	750127	MONROE TWP	--	158	81	--	--	121CKKD	51-00033
15- 209	NWD 3	393254	750121	NEWFIELD BORO	07-02-63	125.00	162	132	162	121CKKD	31-04599
15- 424	NWD 2	393254	750119	NEWFIELD BORO	05-01-36	120.00	135	102	134	121CKKD	--

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15-1071	NEWFIELD 5C	393300	750113	NEWFIELD BORO	00-00-77	125	140	--	--	121CKKD	51-00046
15- 244	1964 WELL	394235	750427	WASHINGTON TWP	11-12-64	150.00	100	20.0	100	121CKKD	31-04779
15- 246	1	394315	750147	WASHINGTON TWP	11-04-55	154.00	50.0	44.0	50.0	121CKKD	--
15- 258	1	394516	750421	WASHINGTON TWP	02-25-52	151.00	60.0	56.0	60.0	121CKKD	--
15- 263	WASHINGTON TWP	394525	750640	WASHINGTON TWP	00-00-60	70.00	90.0	--	--	121CKKD	--
15-1028	TW 13 /HYDRO GROUP T-2	394258	750508	WASHINGTON TWP	04-20-88	135.0	62	42	62	121CKKD	--
15-1029	TW 12 /HYDRO GROUP T-1	394301	750459	WASHINGTON TWP	04-16-88	145	65	45	65	121CKKD	--
15-1033	WTMUA MONITOR-ING 1 OBS	394354	750259	WASHINGTON TWP	07-24-89	150.00	54	44.0	54.0	121CKKD	31-31399
15-1044	PIERCE DOM	394416	750132	WASHINGTON TWP	12-12-87	150	60	50	60	121CKKD	31-27872
15-1049	GLASSBERG 774	394303	750529	WASHINGTON TWP	10-19-84	115	70	60	70	121CKKD	31-21916
15-1050	SMITH 581	394308	750505	WASHINGTON TWP	06-16-81	130	50	45	50	121CKKD	31-18078
15-1051	USGS WTMUA OBS-1 SHALLOW	394314	750145	WASHINGTON TWP	05-25-90	152.17	27	22	27	121CKKD	31-33952
15-1052	USGS WTMUA OBS-2 MED	394314	750145	WASHINGTON TWP	05-24-90	152.16	65	60	65	121CKKD	31-33953
15-1053	USGS WTMUA OBS-3 DEEP	394314	750145	WASHINGTON TWP	05-23-90	152.18	97	92	97	121CKKD	31-33954
15-1057	USGS TPE OBS-1 SHALLOW	394242	750330	WASHINGTON TWP	05-18-90	155.89	27	22	27	121CKKD	31-33946
15-1058	USGS TPE OBS-2 MED-DEEP	394242	750330	WASHINGTON TWP	05-22-90	156.20	75	70	75	121CKKD	31-33947

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15-1059	USGS TPE OBS-3 DEEP	394242	750330	WASHINGTON TWP	05-17-90	156.20	100	95	100	121CKKD	31-33948
15-1063	USGS TPE OBS-4 MED-SHAL	394242	750330	WASHINGTON TWP	06-08-90	155.78	40	35	40	121CKKD	31-34116
15-1065	WASHINGTON MUA 11	394327	750210	WASHINGTON TWP	01-11-89	152	85	59.2	85	121CKKD	31-28782
15-1087	WTMUA 10	394321	750157	WASHINGTON TWP	02-02-87	160	103	82.5	103	121CKKD	31-26047
33- 464	MCALLISTER 1	393203	751705	ALLOWAY TWP	11-22-74	115	58	48	58	121CKKD	31-01428
33- 672	MOORE DOM 1965	393213	751716	ALLOWAY TWP	12-30-65	100	31	26	31	121CKKD	30-01061
33- 682	REEVES DOM	393359	751728	ALLOWAY TWP	00-00-89	140	70	--	--	121CKKD	34-03273
33- 23	EWC 4/SEALED	393534	751020	ELMER BORO	09-23-35	107.00	62.0	42.0	62.0	121CKKD	--
33- 698	HAND DUG	392906	752620	LOWER ALLOWAY CREEK TWP	--	10	11.5	--	--	121CKKD	--
33- 211	PW A	393018	750803	PITTSGROVE TWP	00-00-45	73.00	80.0	--	--	121CKKD	--
33- 223	1	393236	751230	PITTSGROVE TWP	12-05-67	120.00	94.0	54.0	94.0	121CKKD	30-01147
33- 229	7-1959	393321	750806	PITTSGROVE TWP	07-16-53	120	60.0	36.0	56.0	121CKKD	31-01065
33- 231	PUMP WELL	393319	750812	PITTSGROVE TWP	00-00-58	120.00	53.0	37.0	53.0	121CKKD	--
33- 390	1955 WELL	393259	750748	PITTSGROVE TWP	08-01-55	115.00	137	--	--	121CKKD	--
33- 462	WALKER FARM	393449	750528	PITTSGROVE TWP	05-01-85	95	70	60	70	121CKKD	31-22844
33- 463	FOX 1	393047	750542	PITTSGROVE TWP	10-05-79	105	74	67	74	121CKKD	35-02150
33- 465	PAULUS 1	393236	751021	PITTSGROVE TWP	00-00-70	90	104	94	104	121CKKD	--

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
33- 469	PARVIN PARK DOMESTIC	393057	750839	PITTSGROVE TWP	00-00-84	75	114	104	114	121CKKD	--
33- 684	REINMAN DOM	393047	750542	PITTSGROVE TWP	11-15-84	105	70	63	70	121CKKD	35-04479
33- 785	B&B POULTRY 4	392954	750457	PITTSGROVE TWP	08-14-87	70	160	130	160	121CKKD	35-06473
33- 262	1	393420	751345	UPPER PITTSGROVE TWP	00-00-72	132.00	93.0	63.0	93.0	121CKKD	30-01292
33- 270	COOPER 1	393445	751423	UPPER PITTSGROVE TWP	02-17-67	140.00	88.0	48.0	88.0	121CKKD	30-01120
33- 275	HOSP 1	393515	751053	UPPER PITTSGROVE TWP	00-00-47	135.00	58.0	38.0	58.0	121CKKD	--
33- 295	2	393830	751226	UPPER PITTSGROVE TWP	03-18-66	160.00	84.0	24.0	84.0	121CKKD	30-01064
33- 466	WILSON 1	393509	751601	UPPER PITTSGROVE TWP	00-00-72	140	65	55	65	121CKKD	--
33- 673	OLBRICH IRR	393408	751423	UPPER PITTSGROVE TWP	05-25-83	144	52	42	52	121CKKD	30-02961
33- 674	MYERS DOM	393514	751253	UPPER PITTSGROVE TWP	11-05-83	145	80	70	80	121CKKD	30-03217
33- 675	FAITH CH DOM	393657	751357	UPPER PITTSGROVE TWP	05-21-85	134	50	40	50	121CKKD	30-03706
33- 676	PITTS DOM	393823	751349	UPPER PITTSGROVE TWP	05-16-86	145	40	35	40	121CKKD	30-04205
33- 677	UPPER PITTS SLF MW1	393840	751212	UPPER PITTSGROVE TWP	05-07-85	163.8	40	20	40	121CKKD	30-03680-7
33- 678	JESS DOM	393914	751302	UPPER PITTSGROVE TWP	09-11-80	122	19	15	19	121CKKD	30-02290

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
33- 679	STRANG DOM	393401	751448	UPPER PITTSGROVE TWP	01-05-87	140	66	56	66	121CKKD	30-04519
33- 680	USGS COLES FARM OBS-1	393849	751328	UPPER PITTSGROVE TWP	05-16-90	144.35	32	27	32	121CKKD	30-06586
33- 681	USGS COLES FARM OBS-2	393849	751328	UPPER PITTSGROVE TWP	05-15-90	144.61	45	40	45	121CKKD	30-06587
33- 685	COLES DOM	393852	751334	UPPER PITTSGROVE TWP	00-00-52	140	40	--	--	121CKKD	--
15- 119	1	394151	751112	HARRISON TWP	00-00-56	110.00	146	116	146	125VNCN	--
15- 232	1	394149	751541	SOUTH HARRISON TWP	08-30-50	120.00	149	70.0	149	125VNCN	--
15- 270	WASHINGTON TWP	394623	750328	WASHINGTON TWP	09-24-53	89.00	105	75.0	105	125VNCN	--
33- 427	1	393340	752140	ALLOWAY TWP	06-18-54	10.00	156	120	156	125VNCN	--
33- 699	PARUSZEWSKI HAND DUG	393204	752847	ELSINBORO TWP	--	10	13	--	--	125VNCN	--
33- 429	1	393033	752740	LOWER ALLOWAYS CR TWP	--	10.00	70.0	--	--	125VNCN	--
33- 153	SHEENAN 1	393830	751700	PILESGROVE TWP	00-00-51	130.00	158	138	158	125VNCN	--
33- 240	SWD 3	393253	752425	QUINTON TWP	00-00-00	7.00	140	--	--	125VNCN	--
33- 368	QUINTON 5	393253	752425	QUINTON TWP	00-00-08	7.00	133	--	--	125VNCN	--
33- 248	SCWD 2	393339	752718	SALEM CITY	00-00-65	1.00	24.0	20.0	24.0	125VNCN	--
15- 12	DEPTFORD TWP	394816	750730	DEPTFORD TWP	12-31-53	82.00	35.0	30.0	65.0	211MLRW	--
15- 14	DEPTFORD TWP	394827	750758	DEPTFORD TWP	04-15-53	102.00	107	83.0	107	211MLRW	--

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 25	CARTER 1	394622	751317	EAST GREENWICH TWP	00-00-56	80.00	36.0	31.0	36.0	211MLRW	30-00535
15- 58	1	394142	750608	GLASSBORO BORO	05-12-66	138.00	311	--	--	211MLRW	--
15-1060	GWD 6	394100	750553	GLASSBORO BORO	03-16-89	136	386	335	386	211MLRW	31-30571
15- 125	1	394324	751315	HARRISON TWP	08-17-50	92.00	105	84.0	105	211MLRW	--
15- 184	MANTUA TWP	394445	750816	MANTUA TWP	05-11-53	88.00	105	61.0	105	211MLRW	31-00958
15-1117	MTMUA HEILIG RD 6	394404	750957	MANTUA TWP	09-14-92	135	183	143	183	211MLRW	31-44254
15- 229	KEEN 1	394107	751601	SOUTH HARRISON TWP	00-00-51	83.00	135	114	135	211MLRW	--
15- 249	WASHINGTON TWP	394408	750511	WASHINGTON TWP	11-18-47	140.00	239	--	--	211MLRW	--
15- 250	1	394420	750630	WASHINGTON TWP	12-12-68	90.00	165	141	165	211MLRW	31-05305
15- 255	1	394442	750504	WASHINGTON TWP	02-24-68	150.00	244	--	--	211MLRW	--
15- 264	1	394531	750653	WASHINGTON TWP	02-16-68	60.00	104	72.0	104	211MLRW	--
15- 269	WASHINGTON TWP	394610	750303	WASHINGTON TWP	00-00-55	83.00	190	164	190	211MLRW	--
15- 336	STRING 1	394257	751825	WOOLWICH TWP	00-00-54	120.00	85.0	76.0	85.0	211MLRW	30-00287
33- 1	COBB 1	393146	751922	ALLOWAY TWP	11-15-50	60.00	380	361	380	211MLRW	--
33- 2	BOSTWICK NO 3	393202	751630	ALLOWAY TWP	00-00-72	85.00	472	462	472	211MLRW	--
33- 11	MASKER 1	393356	751909	ALLOWAY TWP	00-00-59	57.00	305	287	305	211MLRW	30-00756
33- 20	HORNER OBS	393534	751752	ALLOWAY TWP	00-00-29	76.75	283	--	--	211MLRW	--
33- 22	EWC 6	393533	751018	ELMER BORO	11-07-63	105.00	500	460	500	211MLRW	31-04612
33- 456	EWC 8	393507	751045	ELMER BORO	07-26-82	125.00	512	443	503	211MLRW	31-19206

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
33- 32	PW 3	392740	753201	LOWER ALLOWAYS CR TWP	02-16-70	12	293	242	293	211MLRW	34-00758
33- 33	LACTES 1	392751	752441	LOWER ALLOWAYS CR TWP	00-00-64	14.00	340	--	--	211MLRW	--
33- 34	PW 1	392742	753200	LOWER ALLOWAYS CR TWP	09-13-68	17.00	298	248	298	211MLRW	34-00737
33- 35	PW 2	392744	753206	LOWER ALLOWAYS CR TWP	04-09-70	9	281	230	281	211MLRW	34-00757
33- 46	SCHULTES 2	393451	752719	MANNINGTON TWP	00-00-47	20.00	130	90.0	130	211MLRW	--
33- 50	HOSP 1-1950	393538	752640	MANNINGTON TWP	00-00-50	20.00	100	73.0	97.0	211MLRW	--
33- 51	HOSP 2-1954	393538	752642	MANNINGTON TWP	00-00-54	20.00	112	82.0	112	211MLRW	30-00279
33- 55	HARRIS 1	393555	752550	MANNINGTON TWP	10-01-51	27.00	38.0	31.0	38.0	211MLRW	--
33- 426	2-1967	393451	752718	MANNINGTON TWP	00-00-67	10.00	127	87.0	127	211MLRW	--
33- 568	HALLTOWN RD	393734	752529	MANNINGTON TWP	11-07-81	25	32	25	32	211MLRW	30-02568
33- 700	BUZBY HAND DRIVEN	393915	752441	MANNINGTON TWP	02-00-82	22	21.5	16.5	21.5	211MLRW	--
33- 203	HOUSE	394153	752020	PILESGROVE TWP	07-15-59	58.00	56.0	49.0	56.0	211MLRW	30-00758
33- 235	DEWILDE 1	392934	752028	QUINTON TWP	06-24-54	45.00	400	388	400	211MLRW	34-00139
33- 241	QUINTON	393253	752422	QUINTON TWP	--	10.00	248	--	--	211MLRW	--
33- 243	SALEM KMW 3/ SEALED	393334	752724	QUINTON TWP	00-00-65	11.00	140	--	--	211MLRW	--
33- 244	SWD 4	393404	752811	SALEM CITY	00-00-47	10.00	124	93.0	124	211MLRW	--
33- 245	SCWD 5	393337	752719	SALEM CITY	00-00-61	8.00	168	96.0	168	211MLRW	30-00877

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
33- 249	SWD 2	393342	752718	SALEM CITY	00-00-36	5.00	157	110	150	211MLRW	50-00042
33- 252	SALEM 2 OBS	393348	752755	SALEM CITY	00-00-65	3.25	96.0	91.0	96.0	211MLRW	--
33- 256	SWD 1	393420	752751	SALEM CITY	00-00-36	17.00	136	86.0	136	211MLRW	--
33- 279	GARRISON	393622	751531	UPPER PITTSGROVE TWP	00-00-22	125.00	425	--	--	211MLRW	--
33- 280	1	393625	751513	UPPER PITTSGROVE TWP	01-03-54	133.00	435	375	435	211MLRW	30-00278
33- 350	WOODSTOWN BORO	393858	751841	WOODSTOWN BORO	07-25-59	60.00	136	115	136	211MLRW	30-00764
33- 351	SPINOSI 1/ WOODSTOWN R&D	393903	751941	WOODSTOWN BORO	05-09-50	45.00	116	84.0	116	211MLRW	30-00042
15- 13	DEPTFORD TWP	394821	750530	DEPTFORD TWP	10-21-55	44.00	132	120	132	211EGLS	31-00239
15- 188	YAHRLING 1	394605	751057	MANTUA TWP	00-00-55	80	160	134	160	211EGLS	--
15- 676	KRAMER LAND-FILL X-6D	394638	751201	MANTUA TWP	10-17-84	27.50	78	68	78	211EGLS	--
15- 223	KANE 1	394333	750808	PITMAN BORO	00-00-54	130.00	135	115	135	211EGLS	--
15- 344	NJTA INT 2	394518	751640	WOOLWICH TWP	--	80.00	83.0	69	83	211EGLS	30-00064
33- 168	HARRIS 1	393943	752236	PILESGROVE TWP	08-23-49	40.00	124	113	124	211EGLS	30-00029
15- 1	CWD 3	393913	750517	CLAYTON BORO	11-09-56	133.00	800	746	762	211MRPAU	31-02889
								785	800		
15- 3	4-1973	394015	750559	CLAYTON BORO	01-12-73	140.00	740	670	740	211MRPAU	31-06676
15- 5	SEWELL 1	394627	750813	DEPTFORD TWP	00-00-34	20.00	314	--	--	211MRPAU	--
15- 6	SEWELL 1A	394627	750813	DEPTFORD TWP	11-07-67	20.00	311	263	308	211MRPAU	31-05174

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 7	SEWELL 2/ SEALED	394628	750813	DEPTFORD TWP	00-00-37	65.00	317	267	317	211MRPAU	--
15- 8	SEWELL 2A	394628	750813	DEPTFORD TWP	03-28-73	21.00	307	244	307	211MRPAU	51-00101
15- 9	DTMUA 5	394746	750511	DEPTFORD TWP	03-31-71	78.00	447	414	447	211MRPAU	31-05514
15- 11	DTMUA 2	394811	750914	DEPTFORD TWP	01-14-58	58.00	281	255	281	211MRPAU	31-02118
15- 16	DTMUA 1	394842	750907	DEPTFORD TWP	12-27-55	60	273	252	273	211MRPAU	31-02416
15-1089	BOOSTER STA 8	395007	750613	DEPTFORD TWP	12-16-91	45	261	198	258	211MRPAU	31-37705
15- 28	EGWD 2	394755	751327	EAST GREENWICH TWP	02-17-56	70.00	216	191	216	211MRPAU	30-00432
15- 29	EGWD 1/SEALED	394757	751334	EAST GREENWICH TWP	00-00-31	65.00	205	183	203	211MRPAU	--
15- 355	EGWD 3	394822	751247	EAST GREENWICH TWP	12-02-75	42.00	246	205	245	211MRPAU	30-01426
15- 363	1	394618	751542	EAST GREENWICH TWP	05-05-60	40.00	152	145	151	211MRPAU	30-00817
15- 366	1	394620	751507	EAST GREENWICH TWP	07-11-78	80.00	219	209	219	211MRPAU	30-01736
15- 501	1	394632	751614	EAST GREENWICH TWP	10-30-77	50.00	167	162	167	211MRPAU	30-01566
15- 59	OWENS 1	394147	750714	GLASSBORO BORO	01-12-61	144.00	647	606	647	211MRPAU	31-04112
15- 60	GWD 3	394206	750758	GLASSBORO BORO	12-15-55	150.00	612	562	612	211MRPAU	31-02358
15- 62	GWD 2	394241	750642	GLASSBORO BORO	08-25-47	145.00	602	562	602	211MRPAU	51-00042
15- 63	GWD 4	394308	750702	GLASSBORO BORO	06-21-61	150.00	599	549	599	211MRPAU	31-04176

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 361	GWD 5	394155	750704	GLASSBORO BORO	03-01-73	149	657	610	657	211MRPAU	31-07709
15- 65	GTWD 2(NEW 3)/ SEALED	394851	751526	GREENWICH TWP	05-15-50	20.00	98.0	69.0	98.0	211MRPAU	30-00036
15- 728	STEFKA 4 OBS	394808	751724	GREENWICH TWP	03-30-87	4.46	56	46	56	211MRPAU	30-04549
15- 127	5	394346	750959	HARRISON TWP	01-29-58	140.00	524	--	--	211MRPAU	31-03280
15- 129	SJWC 1/SEALED	394409	751330	HARRISON TWP	00-00-50	35.00	263	--	--	211MRPAU	50-00049
15- 130	SJWC 3	394408	751330	HARRISON TWP	07-22-53	35.00	265	234	265	211MRPAU	30-00210
15- 131	CLEARVIEW HS 1/SEALED	394501	751229	HARRISON TWP	00-00-60	137	445	--	--	211MRPAU	--
15- 417	1-1978	394814	751819	LOGAN TWP	12-26-78	10.00	61.0	61.0	71.0	211MRPAU	31-14415
15- 475	101	394754	751920	LOGAN TWP	03-10-81	8.57	37.0	35.0	37.0	211MRPAU	30-02376
15- 476	102	394800	751927	LOGAN TWP	03-09-81	15.05	38.0	36.0	38.0	211MRPAU	30-02377
15- 478	104	394806	751929	LOGAN TWP	03-11-81	10.05	21	19.0	21.0	211MRPAU	30-02379.1
15- 543	CL1	394755	751956	LOGAN TWP	00-00-81	13.82	30.0	15.0	30.0	211MRPAU	30-02384
15- 544	CL4	394752	751951	LOGAN TWP	00-00-81	8.20	46.0	41.0	46.0	211MRPAU	30-02385
15- 546	CL2	394759	751948	LOGAN TWP	00-00-81	10.17	30.0	20.0	30.0	211MRPAU	30-02387
15- 554	S-2A	394808	751914	LOGAN TWP	09-15-83	9.00	14.0	4.00	14.0	211MRPAU	30-03071
15- 564	S-9	394802	751933	LOGAN TWP	08-08-83	6.8	52.0	42.0	52.0	211MRPAU	30-03081
15- 570	W23	394705	752109	LOGAN TWP	09-09-81	.47	13.5	8.50	13.5	211MRPAU	30-02521
15- 572	W18	394722	752054	LOGAN TWP	--	12.95	20.1	10.1	20.1	211MRPAU	--
15- 573	U	394715	752050	LOGAN TWP	00-00-76	22.11	22.2	19.7	22.2	211MRPAU	--

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 576	MA 11I	394719	752108	LOGAN TWP	09-04-81	1.22	29.0	19.0	29.0	211MRPAU	30-02512
15- 578	MA 8I	394717	752108	LOGAN TWP	08-26-81	1.89	35.0	25.0	35.0	211MRPAU	30-02498
15- 579	MA 8S	394717	752108	LOGAN TWP	08-26-81	1.84	13.5	8.50	13.5	211MRPAU	30-02499
15- 581	MA 5I	394718	752102	LOGAN TWP	--	2.48	37.0	27.0	37.0	211MRPAU	30-02489
15- 583	MA 1I	394715	752106	LOGAN TWP	07-13-81	1.67	35.0	25.0	35.0	211MRPAU	30-02483
15- 584	MA 1S	394715	752106	LOGAN TWP	07-13-81	1.68	10.0	5.00	10.0	211MRPAU	30-02484
15- 587	C	394707	752055	LOGAN TWP	00-00-72	9.60	35.0	30.0	35.0	211MRPAU	--
15- 589	31S	394717	752109	LOGAN TWP	00-00-82	5.60	40.0	10.0	40.0	211MRPAU	30-02633
15- 590	26	394717	752112	LOGAN TWP	00-00-76	7.50	25.0	15.0	25.0	211MRPAU	50-00021
15- 591	25	394716	752115	LOGAN TWP	--	3.40	19.7	9.70	19.7	211MRPAU	30-01303
15- 592	22 (RP OBS 2/ 12)	394710	752107	LOGAN TWP	--	5.60	19.7	9.70	19.7	211MRPAU	30-01305
15- 593	20B	394707	752102	LOGAN TWP	--	4.20	25.0	15.0	25.0	211MRPAU	--
15- 594	15	394714	752110	LOGAN TWP	--	9.10	26.0	12.0	26.0	211MRPAU	--
15- 595	4	394714	752106	LOGAN TWP	--	5.52	18.5	14.0	18.5	211MRPAU	--
15- 606	TP-9	394758	751948	LOGAN TWP	--	4.67	5.63	.63	5.63	211MRPAU	--
15- 617	SHIVELER UPPER	394637	751916	LOGAN TWP	02-28-85	30.6	70.0	60.0	70.0	211MRPAU	--
15- 626	MW 102 S	394729	752101	LOGAN TWP	07-11-84	11.78	19.0	9.00	19.0	211MRPAU	30-33900
15- 627	MW 103 D/ SEALED	394644	752136	LOGAN TWP	07-17-84	7.38	75.0	65.0	75.0	211MRPAU	30-33926
15- 714	GG	394707	752058	LOGAN TWP	11-24-81	8.46	13.7	10.7	13.7	211MRPAU	--

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 183	COUNTRY CLUB 1	394431	750911	MANTUA TWP	00-00-67	85.00	408	378	408	211MRPAU	31-05060
15- 189	MTMUA 1/SEALED	394602	750823	MANTUA TWP	07-16-51	80.00	377	352	377	211MRPAU	31-00196
15- 191	MTMUA 2	394629	750859	MANTUA TWP	04-19-65	72	368	336	368	211MRPAU	31-04791
15- 192	MTMUA 5	394635	751116	MANTUA TWP	02-22-57	80	337	315	337	211MRPAU	31-02987
15- 193	MTMUA 3	394712	751008	MANTUA TWP	12-08-53	65.00	317	295	317	211MRPAU	31-01140
15- 194	MTMUA 4	394732	751037	MANTUA TWP	03-10-69	10.00	265	230	265	211MRPAU	31-05309
15- 432	1	394707	751202	MANTUA TWP	08-09-81	60.00	300	222	252	211MRPAU	31-18246
								252	280		
								280	300		
15- 715	DOMESTIC 1	394527	751230	MANTUA TWP	07-10-72	140	137	131	137	211MRPAU	--
15- 741	MANTUA SHAL-LOW OBS	394652	751004	MANTUA TWP	06-19-86	82.0	313	293	313	211MRPAU	--
15- 206	NPWD 1/SEALED	395146	751053	NATIONAL PARK BORO	09-01-50	10.00	85.0	64.0	85.0	211MRPAU	--
15- 673	BL-3	395100	751420	PAULSBORO BORO	02-01-83	5.4	95	70	95	211MRPAU	30-02856
15- 674	OBS 1	395053	751346	PAULSBORO BORO	02-11-77	9	40.5	20.5	40.5	211MRPAU	30-01511
15- 224	PWD PG1	394342	750753	PITMAN BORO	00-00-38	140.00	524	486	524	211MRPAU	--
15- 225	PWD P1/SEALED	394405	750745	PITMAN BORO	00-00-26	140.00	514	468	514	211MRPAU	51-00017
15- 226	PWD P2	394411	750745	PITMAN BORO	06-23-47	130.00	515	475	515	211MRPAU	--
15- 227	PWD P3	394426	750747	PITMAN BORO	05-18-60	99.00	487	447	487	211MRPAU	31-04061
15- 385	PWD P4	394345	750804	PITMAN BORO	00-00-80	125.00	520	--	--	211MRPAU	51-00018

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 231	S HARRISON TWP	394147	751651	SOUTH HARRISON TWP	09-17-54	90.00	358	348	358	211MRPAU	--
15-1007	MACCHERONE DOMESTIC	394335	751557	SOUTH HARRISON TWP	07-10-84	95	305	300	305	211MRPAU	30-03122
15- 237	SBWD 1/SEALED	394437	751835	SWEDESBORO BORO	02-28-33	35.00	224	174	179	211MRPAU	--
								185	220		
15- 238	SBWD 2	394438	751833	SWEDESBORO BORO	06-27-40	30.00	244	217	240	211MRPAU	50-00036
15- 240	9	394510	751838	SWEDESBORO BORO	00-00-63	31.5	231	190	231	211MRPAU	30-00973
15- 243	4	394514	751831	SWEDESBORO BORO	00-00-42	15.00	220	--	--	211MRPAU	--
15- 248	WTMUA 5	394339	750433	WASHINGTON TWP	00-00-73	125.00	618	559	618	211MRPAU	51-00029
15- 253	6(FRIES MLS 1)	394437	750249	WASHINGTON TWP	09-23-64	152.00	652	584	652	211MRPAU	31-04741
15- 260	8(BELS LK WC2)	394517	750300	WASHINGTON TWP	03-21-68	130.00	620	544	568	211MRPAU	31-05206
								593	620		
15- 261	WTMUA 1	394520	750218	WASHINGTON TWP	00-00-59	100.00	612	581	612	211MRPAU	31-03913
15- 265	WTMUA 2	394533	750323	WASHINGTON TWP	07-17-65	90.00	577	543	573	211MRPAU	31-04849
15- 267	WTMUA 3	394546	750400	WASHINGTON TWP	00-00-72	150.00	640	575	605	211MRPAU	31-06050
								615	640		
15- 268	WTMUA 4	394732	750447	WASHINGTON TWP	05-10-72	77.00	417	369	379	211MRPAU	31-06133
								393	417		
15- 433	WTMUA 9	394631	750517	WASHINGTON TWP	03-11-81	135.00	552	512	552	211MRPAU	31-06133
15- 274	WWD 1	394743	750902	WENONAH BORO	05-20-44	80.00	320	273	310	211MRPAU	51-00065

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 275	WWD 2	394751	750912	WENONAH BORO	02-05-51	50.00	310	268	310	211MRPAU	31-00170
15- 276	WDTWD 4	394821	751026	WEST DEPTFORD TWP	03-05-63	60.00	289	242	289	211MRPAU	31-04567
15- 281	WDTWD 3	394912	751026	WEST DEPTFORD TWP	08-27-57	61.00	243	227	243	211MRPAU	31-03021
15- 284	SHELL 4	394919	751256	WEST DEPTFORD TWP	01-11-62	30.00	159	127	157	211MRPAU	30-00901
15- 295	1-1973	394939	751007	WEST DEPTFORD TWP	01-29-73	20.00	140	120	140	211MRPAU	31-06200
15- 297	SHELL 6 OBS/ SEALED	394942	751317	WEST DEPTFORD TWP	00-00-62	20.50	120	113	118	211MRPAU	30-00903
15- 329	WWD 1	395221	757307	WESTVILLE BORO	00-00-30	16.00	112	69.0	112	211MRPAU	--
15- 332	PARKING LOT 3/ SEALED	395009	750922	WOODBURY CITY	00-00-46	50.00	188	148	188	211MRPAU	51-00100
15- 333	TATUM 4	395044	750907	WOODBURY CITY	01-15-53	20.00	167	129	144	211MRPAU	31-00787
								155	167		
15- 330	1 HELEN AVE	394858	750845	WOODBURY HEIGHTS BORO	00-00-72	40.00	235	190	235	211MRPAU	31-06356
15- 334	1	394156	751907	WOOLWICH TWP	04-02-54	63.00	253	247	253	211MRPAU	--
15- 337	MAUGERI S1	394346	752110	WOOLWICH TWP	06-02-55	47.5	152	128	148	211MRPAU	30-00431
15- 340	1	394356	752143	WOOLWICH TWP	08-27-54	50.00	114	108	114	211MRPAU	--
15- 341	1	394420	751647	WOOLWICH TWP	05-07-55	60.00	228	222	228	211MRPAU	--
15- 342	10	394438	751914	WOOLWICH TWP	08-04-67	60.00	289	192	279	211MRPAU	30-01104
15- 343	1953 WELL	394443	752052	WOOLWICH TWP	01-10-53	65.00	121	115	121	211MRPAU	--
15- 345	1	394642	751823	WOOLWICH TWP	11-06-54	62.00	100	94.0	100	211MRPAU	--
15- 392	1964-S-1	394527	751607	WOOLWICH TWP	08-13-64	105	251	241	251	211MRPAU	30-01015

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 519	1	394649	751738	WOOLWICH TWP	11-09-78	35.00	87.0	75.0	87.0	211MRPAU	30-01788
33- 307	RANNEY 1/ SEALED	394058	752918	CARNEYS POINT TWP	--	8.00	60.0	--	--	211MRPAU	--
33- 309	RANNEY 3/ SEALED	394058	752918	CARNEYS POINT TWP	05-17-60	18.00	69.0	49.0	69.0	211MRPAU	--
33- 316	102	394121	752921	CARNEYS POINT TWP	00-00-70	5.00	85.0	--	--	211MRPAU	30-02322
33- 325	CARNEY PT 3	394149	752918	CARNEYS POINT TWP	00-00-33	5.00	102	--	--	211MRPAU	--
33- 326	CARNEY PT 4	394153	752928	CARNEYS POINT TWP	00-00-55	5.00	86.0	--	--	211MRPAU	30-00423
33- 333	CARNEY PT 5/ SEALED	394208	752859	CARNEYS POINT TWP	00-00-57	5.00	81.0	--	--	211MRPAU	30-00620
33- 342	PENNS GROVE 24	394236	752724	CARNEYS POINT TWP	00-00-41	17.94	51.0	46.0	51.0	211MRPAU	--
33- 345	PGWSC 2B/RF1A/ SEALED	394241	752711	CARNEYS POINT TWP	00-00-44	10.00	60.0	45.0	58.0	211MRPAU	50-00102
33- 347	RANNEY	394256	752723	CARNEYS POINT TWP	00-00-39	17.00	34.0	--	--	211MRPAU	50-00040
33- 361	SCHULTES 4	394205	752700	CARNEYS POINT TWP	08-15-78	13.00	64.0	44	54	211MRPAU	30-01815
33- 428	PGWSC 2A/ SEALED	394245	752718	CARNEYS POINT TWP	00-00-44	19.00	60.0	--	--	211MRPAU	--
33- 460	PGWSC 1A/RF2A	394247	752714	CARNEYS POINT TWP	03-23-84	19.00	61.0	41.0	61.0	211MRPAU	30-03310
33- 74	1 (AUBURN W C)	394241	752201	OLDMANS TWP	04-30-68	80.00	206	185	206	211MRPAU	30-01151
33- 75	CM1 (AUBURN HI	394258	752200	OLDMANS TWP	00-00-41	16	134	129	134	211MRPAU	--
33- 76	DAWSON 1	394328	752446	OLDMANS TWP	08-24-57	27.00	124	118	123	211MRPAU	30-00661
33- 370	1	394449	752554	OLDMANS TWP	03-10-79	25.00	52.0	42.0	52.0	211MRPAU	30-01800

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
33- 439	1	394449	752351	OLDMANS TWP	05-16-82	25.00	59.0	49.0	59.0	211MRPAU	30-02665
33- 105	DILWORTH/LOVE-LAND/SEALED	393458	752945	PENNSVILLE TWP	00-00-50	10.00	263	--	--	211MRPAU	--
33- 112	PTWD 4/SEALED	393754	753147	PENNSVILLE TWP	03-10-65	10.00	137	117	137	211MRPAU	30-01033
33- 117	PTWD 3	393954	753013	PENNSVILLE TWP	00-00-56	7.00	102	87.0	102	211MRPAU	30-00451
33- 126	RANNEY 7	394057	752950	PENNSVILLE TWP	00-00-66	15.00	140	52.0	140	211MRPAU	30-01080
33- 128	RANNEY 6/(INT-106)	394102	752946	PENNSVILLE TWP	00-00-66	15.00	60.0	50.0	60.0	211MRPAU	--
33- 135	RANNEY 5/ SEALED	394110	752955	PENNSVILLE TWP	00-00-63	16.00	116	47.0	116	211MRPAU	30-00987
33- 360	PTWD 5	393750	753131	PENNSVILLE TWP	02-01-79	10.00	125	101	117	211MRPAU	28-10466
33- 671	PTWD 3A	393954	753013	PENNSVILLE TWP	05-18-88	7	104	87	102	211MRPAU	30-05148
33- 686	PTWD 4A RPL	393749	753149	PENNSVILLE TWP	03-18-92	10	130	110	130	211MRPAU	30-08335
33- 147	3	393747	752151	PILESGROVE TWP	00-00-58	40.00	368	361	368	211MRPAU	--
33- 253	SALEM 3 OBS	393348	752755	SALEM CITY	00-00-65	3.00	340	335	340	211MRPAU	--
33- 355	C1	393914	751930	WOODSTOWN BORO	00-00-27	58.00	360	--	--	211MRPAU	--
15- 24	DTMUA 4	395115	750706	DEPTFORD TWP	00-00-71	40.00	345	282	345	211MRPAM	31-05513
15- 374	DTMUA 6	394843	750728	DEPTFORD TWP	08-02-79	50.00	489	430	486	211MRPAM	31-13385
15-1036	DTMUA 7	394733	750812	DEPTFORD TWP	07-03-85	60	324	259	319	211MRPAM	31-22504
15- 69	GTWD 3(NEW 4)	394920	751619	GREENWICH TWP	07-08-59	10.00	168	108	168	211MRPAM	30-00757
15- 70	5/GTWD 1 (NEW 2)/SEALED	394932	751722	GREENWICH TWP	02-03-44	10.00	96.0	76.0	96.0	211MRPAM	--

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 72	REPAUNO 3	394936	751747	GREENWICH TWP	04-15-50	6.00	101	91.0	101	211MRPAM	30-00037
15- 76	4 1970	394939	751704	GREENWICH TWP	07-16-70	15.00	120	90.5	120	211MRPAM	30-01224
15- 79	REPAUNO 6	394944	751734	GREENWICH TWP	10-24-67	10.00	109	84.0	109	211MRPAM	30-01145
15- 81	REPAUNO 5	394945	751717	GREENWICH TWP	00-00-65	10.00	99.0	81.0	99.0	211MRPAM	30-00907
15- 82	REPAUNO 1	394945	751736	GREENWICH TWP	00-00-36	10.00	105	75.0	105	211MRPAM	--
15- 84	GIBBSTOWN 2/ AKA150090	394948	751639	GREENWICH TWP	08-26-54	12.00	146	121	146	211MRPAM	30-00231
15- 89	GIBBSTOWN 1	394952	751653	GREENWICH TWP	04-19-54	10.00	103	77.5	97.5	211MRPAM	30-00230
15- 93	MOBIL 46/ SEALED	394956	751521	GREENWICH TWP	12-15-50	6.00	136	111	136	211MRPAM	30-00049
15- 94	MOBIL 44/ SEALED	394958	751512	GREENWICH TWP	04-04-47	7.00	136	116	136	211MRPAM	50-00019
15- 96	GIBBSTOWN OB 2	394959	751650	GREENWICH TWP	02-00-53	14.18	134	129	134	211MRPAM	30-00188
15- 97	GIBBSTOWN TH8/ TW8 (NEW)	395000	751636	GREENWICH TWP	05-28-54	5.61	107	102	107	211MRPAM	30-00315
15- 98	MOBIL 45/ SEALED	395006	751532	GREENWICH TWP	08-01-47	3.00	118	95.0	115	211MRPAM	50-00020
15- 347	GTWD 5 (2-A)	394932	751722	GREENWICH TWP	05-04-77	20.00	122	82.0	117	211MRPAM	30-01545
15- 348	GTWD 6	394910	751541	GREENWICH TWP	05-24-78	20.00	138	105	135	211MRPAM	30-01776
15- 423	MOBIL 28/ SEALED	395007	751513	GREENWICH TWP	--	10.00	136	87.0	136	211MRPAM	--
15- 652	MW 12	395017	751639	GREENWICH TWP	07-22-83	1.2	24	17	24	211MRPAM	30-03024
15- 657	OBS 38	394941	751737	GREENWICH TWP	08-27-84	9.16	94	89	94	211MRPAM	30-03461

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 668	MW 10C	394944	751648	GREENWICH TWP	06-05-84	7.83	112	92	112	211MRPAM	30-03370
15- 679	W-5D	394946	751612	GREENWICH TWP	06-19-85	9.70	128	118	128	211MRPAM	30-03624
15- 681	W-7D	395038	751605	GREENWICH TWP	04-04-85	8.70	70.0	60	70	211MRPAM	30-03601
15- 682	W-8D	395048	751518	GREENWICH TWP	05-13-85	10.79	115	105	115	211MRPAM	30-03607
15- 683	W-9D	395021	751533	GREENWICH TWP	05-01-85	10.70	102	92	102	211MRPAM	30-03613
15- 713	STEFKA 2 OBS	394808	751724	GREENWICH TWP	10-16-86	5.64	155	125	155	211MRPAM	30-04348
15- 727	STEFKA 3 OBS	394808	751724	GREENWICH TWP	03-24-87	5.06	210	195	205	211MRPAM	30-04548
15-1034	HERCULES PW 11	394910	751658	GREENWICH TWP	11-20-86	10	120	90	120	211MRPAM	30-04319
15- 137	PURE 2(3-1973)	394535	752054	LOGAN TWP	11-02-73	29	208	158	208	211MRPAM	30-01371
15- 140	TEST WELL 4	394608	752135	LOGAN TWP	05-26-70	6.1	184	132	184	211MRPAM	30-01248
15- 143	LANDTECT TW-6C	394551	752313	LOGAN TWP	02-05-72	19.40	152	102	152	211MRPAM	30-01312
15- 144	1-1973/SEALED	394613	752129	LOGAN TWP	06-15-73	7.60	138	81.0	86.0	211MRPAM	30-01370
								106	113		
								121	136		
15- 146	LANDTECT TW-9	394648	752318	LOGAN TWP	00-00-70	4.80	101	82.0	101	211MRPAM	--
15- 161	OB1(TW5-OBC)/ SEALED	394739	752232	LOGAN TWP	02-12-60	8	90.0	70.0	90.0	211MRPAM	30-00801
15- 165	BRIDGEPORT 1/ SEALED	394755	752108	LOGAN TWP	06-02-30	5.00	41.0	30.5	40.5	211MRPAM	--
15- 166	BRIDGEPORT 2	394755	752108	LOGAN TWP	03-15-55	5.00	88.0	65.4	85.4	211MRPAM	30-00410
15- 167	MONSANTO 1	394726	752319	LOGAN TWP	05-07-69	10.00	96	64.0	94.0	211MRPAM	30-01170

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 354	DP 2	394716	752112	LOGAN TWP	10-01-75	13.30	91.0	81.0	91.0	211MRPAM	30-01472
15- 387	DP 1	394713	752121	LOGAN TWP	10-01-75	10.20	90.0	80.0	90.0	211MRPAM	30-01471
15- 395	30-1972	394801	751759	LOGAN TWP	08-04-79	20.00	113	93.0	113	211MRPAM	30-01972
15- 399	NO-1 1977	394900	751913	LOGAN TWP	10-01-77	10.00	101	71.0	91.0	211MRPAM	30-01616
15- 409	NO-1-1975	394710	752240	LOGAN TWP	05-05-75	20.00	93.9	49.9	59.9	211MRPAM	30-01448
15- 450	10D	394750	752331	LOGAN TWP	10-18-79	12.90	65.3	60.3	65.3	211MRPAM	30-02026
15- 453	30-1946	394832	751846	LOGAN TWP	06-08-79	10.00	61.0	51.0	61.0	211MRPAM	30-01946
15- 481	107	394814	751920	LOGAN TWP	03-10-81	9.30	38.0	36.0	38.0	211MRPAM	30-02381
15- 539	S-6	394751	751907	LOGAN TWP	09-15-83	6.00	70.0	60.0	70.0	211MRPAM	30-03067
15- 540	EPA 108	394800	751936	LOGAN TWP	02-23-82	7.1	97.0	87.0	97.0	211MRPAM	30-02621
15- 550	DW2	394759	751949	LOGAN TWP	06-19-81	10.17	102	99.5	102	211MRPAM	30-02425
15- 555	S-2B	394808	751914	LOGAN TWP	09-15-83	10.89	50.0	40.0	50.0	211MRPAM	30-03072
15- 556	S-2C	394808	751914	LOGAN TWP	09-15-83	11.13	108	98.0	108	211MRPAM	30-03073
15- 569	PWC 3	394529	752045	LOGAN TWP	12-09-81	32	201	161	201	211MRPAM	30-02405
15- 575	MA 11D	394719	752108	LOGAN TWP	09-04-81	1.31	55.0	45.0	55.0	211MRPAM	30-02511
15- 577	MA 8D	394717	752108	LOGAN TWP	08-26-81	1.89	49.0	39.0	49.0	211MRPAM	30-02497
15- 580	MA 5D	394718	752102	LOGAN TWP	08-21-81	2.45	60.0	50.0	60.0	211MRPAM	30-02488
15- 585	DP5	394704	752058	LOGAN TWP	06-24-81	7.50	89.0	79.0	89.0	211MRPAM	30-02522
15- 586	DP4	394720	752052	LOGAN TWP	00-00-81	11.60	125	95.0	125	211MRPAM	30-02539
15- 588	31D	394717	752109	LOGAN TWP	00-00-82	5.60	70.0	40.0	70.0	211MRPAM	30-02634

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 601	35D	394736	752334	LOGAN TWP	02-07-80	17.30	75.0	70.0	75.0	211MRPAM	30-02123
15- 616	SHIVELER MID-DLE	394637	751916	LOGAN TWP	02-28-85	30.6	240	230	240	211MRPAM	--
15- 620	GAVENTA MID-DLE 1	394804	751933	LOGAN TWP	06-07-85	7.0	141	131	141	211MRPAM	30-03677
15- 697	BRIDGEPORT BACKUP-2	394755	752108	LOGAN TWP	07-10-84	8	84	69	84	211MRPAM	30-03332
15- 771	NATIONAL PARK #2-PW-M	395202	751115	NATIONAL PARK BORO	04-07-87	10	128	92.3	123	211MRPAM	31-26243
15- 780	NATIONAL PK #10-OW-BM	395223	751117	NATIONAL PARK BORO	05-13-87	5	90	75	85	211MRPAM	31-26244
15- 210	6-1973	394921	751417	PAULSBORO BORO	00-00-73	15.00	230	185	201	211MRPAM	30-01348
								217	227		
15- 212	PWD 4	394929	751447	PAULSBORO BORO	03-10-51	25	220	192	220	211MRPAM	30-00069
15- 213	PWD 5	394947	751416	PAULSBORO BORO	00-00-57	10.00	175	135	175	211MRPAM	30-00602
15- 215	PWD 2/SEALED	395023	751442	PAULSBORO BORO	09-22-30	16.00	100	70.0	100	211MRPAM	--
15- 216	PWD 3/SEALED	395023	751442	PAULSBORO BORO	00-00-42	16.00	140	115	140	211MRPAM	--
15- 428	MOBIL 36/ SEALED	395043	751502	PAULSBORO BORO	04-09-28	25.00	138	111	138	211MRPAM	--
15-1039	MOBIL 48 DWTA	394958	751512	PAULSBORO BORO	04-21-88	7	153	100	120	211MRPAM	30-05060
								120	153		
15- 236	SBWD 3	394434	751843	SWEDESBORO BORO	12-22-69	75.00	312	241	312	211MRPAM	30-01177
15- 242	6/SEALED	394512	751830	SWEDESBORO BORO	00-00-44	25.00	298	267	298	211MRPAM	--

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 279	SHELL OBS 7	394857	751250	WEST DEPTFORD TWP	00-00-62	16.93	322	315	320	211MRPAM	30-00916
15- 286	SHELL IND 2/ AKA150289	394917	751307	WEST DEPTFORD TWP	10-20-61	19.00	290	273	288	211MRPAM	30-00899
15- 390	GCSA 1 71	395020	751340	WEST DEPTFORD TWP	08-19-71	10.00	107	91.0	106	211MRPAM	30-01262
15- 435	WDTWD 8	394836	751046	WEST DEPTFORD TWP	07-24-81	40.00	312	252	312	211MRPAM	31-17911
15- 431	RED BANK 6	395037	750831	WOODBURY CITY	05-00-80	30.00	305	211	305	211MRPAM	33-07973
33- 298	COURSE LAND P2	393952	752429	CARNEYS POINT TWP	02-17-66	9.00	637	385	415	211MRPAM	30-01082
								429	463		
								495	525		
33- 299	COURSE LAND 1A	393957	752432	CARNEYS POINT TWP	00-00-66	26.00	614	604	614	211MRPAM	30-01081
33- 300	COURSE LAND 1B	393957	752432	CARNEYS POINT TWP	00-00-66	25.00	517	507	517	211MRPAM	--
33- 301	COURSE LAND 1C	393957	752432	CARNEYS POINT TWP	00-00-66	26.00	415	404	415	211MRPAM	--
33- 302	COURSE LAND 2A	394000	752439	CARNEYS POINT TWP	00-00-66	30.00	593	583	593	211MRPAM	--
33- 303	COURSE LAND 2B	394000	752439	CARNEYS POINT TWP	00-00-66	30.00	544	533	544	211MRPAM	--
33- 304	COURSE LAND 2C	394000	752439	CARNEYS POINT TWP	00-00-66	30.00	445	435	445	211MRPAM	--
33- 305	COURSE LAND P3	394013	752459	CARNEYS POINT TWP	05-01-66	14.00	457	381	457	211MRPAM	30-01083
33- 319	104	394139	752925	CARNEYS POINT TWP	00-00-72	5.00	105	--	--	211MRPAM	30-01272
33- 322	CARNEY PT 2	394149	752916	CARNEYS POINT TWP	00-00-33	5.00	219	169	219	211MRPAM	50-00004
33- 328	CARNEY PT 1/ SEALED	394157	752918	CARNEYS POINT TWP	02-28-67	5.00	194	175	195	211MRPAM	30-01109
33- 331	SCHULTES WELL	394205	752657	CARNEYS POINT TWP	11-30-66	14.00	62.0	47.0	62.0	211MRPAM	30-01099

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
33- 334	CARNEY PT 6	394211	752901	CARNEYS POINT TWP	05-22-57	5.00	185	157	162	211MRPAM	30-00621
								167	182		
33- 364	PW 5	392743	753158	LOWER ALLOWAYS CR TWP	09-03-74	17.00	840	765	840	211MRPAM	34-01031
33- 452	HOPE CREEK	392751	753207	LOWER ALLOWAYS CR TWP	04-26-76	10	817	746	817	211MRPAM	34-01074
33- 64	COURSE LAND 3A	393912	752436	MANNINGTON TWP	00-00-66	30.00	578	568	578	211MRPAM	30-01086
33- 65	COURSE LAND 3B	393912	752436	MANNINGTON TWP	00-00-66	30.00	512	501	512	211MRPAM	--
33- 66	COURSE LAND 3C	393912	752436	MANNINGTON TWP	00-00-66	30.00	386	375	386	211MRPAM	--
33- 67	COURSE LAND P1	393936	752437	MANNINGTON TWP	05-17-66	10.00	591	445	461	211MRPAM	30-01081
								471	481		
								507	523		
								555	591		
33- 421	1	393907	752652	MANNINGTON TWP	05-17-67	15.00	340	332	340	211MRPAM	34-00707
33- 69	SERVICE IN-1	394139	752349	OLDMANS TWP	07-13-53	40.00	333	313	333	211MRPAM	30-00067
33- 70	SERVICE 1N-2	394141	752343	OLDMANS TWP	--	40.00	330	--	--	211MRPAM	30-00229
33- 77	PEDRICKTOWN 11/SEALED	394434	752514	OLDMANS TWP	12-29-36	10.00	178	133	178	211MRPAM	--
33- 80	AIRCO 1	394542	752510	OLDMANS TWP	06-03-63	15	132	112	132	211MRPAM	30-00974
33- 83	9 (PW-1)	394547	752535	OLDMANS TWP	00-00-68	10.00	133	93.0	133	211MRPAM	--
33- 85	6 (PW-2)	394556	752530	OLDMANS TWP	06-14-67	10.00	129	109	129	211MRPAM	30-01141
33- 419	MONITOR 8R	394540	752540	OLDMANS TWP	03-19-80	10.00	108	101	108	211MRPAM	--

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
33- 420	MONITOR 9R2	394540	752540	OLDMANS TWP	04-02-80	10.00	61.0	53.0	61.0	211MRPAM	--
33- 103	SEWERAGE AUTH1	394346	752828	PENNS GROVE BORO	07-02-55	8.00	60.0	50.0	60.0	211MRPAM	30-00467
33- 106	1	393514	752917	PENNSVILLE TWP	05-01-62	5.00	366	359	365	211MRPAM	--
33- 107	FT MOTT SP 1/ SEALED	393620	753310	PENNSVILLE TWP	00-00-00	8.00	320	300	320	211MRPAM	--
33- 108	FINNS POINT	393641	753322	PENNSVILLE TWP	00-00-51	7.00	319	290	319	211MRPAM	30-00052
33- 118	PTWD 1	393958	753045	PENNSVILLE TWP	10-17-45	8.00	238	213	238	211MRPAM	50-00041
33- 119	PTWD 2	394009	753043	PENNSVILLE TWP	07-14-49	7.00	232	210	230	211MRPAM	30-00018
33- 121	DEEPWATER 3/ SEALED	394046	753022	PENNSVILLE TWP	00-00-29	19.00	249	171	239	211MRPAM	--
33- 122	DEEPWATER 3R	394045	753018	PENNSVILLE TWP	09-17-70	10.00	235	165	235	211MRPAM	30-01234
33- 123	DEEPWATER 2	394047	753027	PENNSVILLE TWP	00-00-29	10.00	235	158	234	211MRPAM	50-00001
33- 125	DEEPWATER 5	394051	753030	PENNSVILLE TWP	06-24-53	10.00	219	149	169	211MRPAM	30-00151
								199	219		--
33- 127	DEEPWATER 6/ SEALED	394100	753030	PENNSVILLE TWP	00-00-58	10.00	188	158	188	211MRPAM	30-00698
33- 141	CHAMBERS OB3-3	394131	753009	PENNSVILLE TWP	00-00-65	5.00	207	197	207	211MRPAM	30-01052
33- 602	CHAMBERS 108	394043	753030	PENNSVILLE TWP	11-00-84	5.0	86.2	43.1	58.1	211MRPAM	30-03368
								58.1	63.1		
								63.1	86.2		
33- 158	ACME 1	393848	752010	PILESGROVE TWP	00-00-60	62	575	562	575	211MRPAM	30-00763
33- 163	RICHMAN 1	393928	752147	PILESGROVE TWP	00-00-48	25.00	475	455	475	211MRPAM	--

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
33- 164	RICHMAN 2	393928	752147	PILESGROVE TWP	00-00-46	20.00	446	--	--	211MRPAM	50-00104
33- 165	COURSE LAND 4A	393942	752234	PILESGROVE TWP	00-00-66	47.00	644	634	644	211MRPAM	--
33- 166	COURSE LAND 4B	393942	752234	PILESGROVE TWP	00-00-67	47.00	578	568	578	211MRPAM	--
33- 167	COURSE LAND 4C	393942	752234	PILESGROVE TWP	00-00-66	47.00	440	430	440	211MRPAM	--
33- 194	KELLY	394102	751943	PILESGROVE TWP	01-20-60	90.00	500	--	--	211MRPAM	--
33- 198	IRR 74	394117	752207	PILESGROVE TWP	00-00-74	51.00	362	337	362	211MRPAM	30-01383
33- 251	SALEM 1 OBS	393348	752755	SALEM CITY	00-00-65	3.00	709	699	709	211MRPAM	--
33- 353	WWD 1/SEALED	393904	751946	WOODSTOWN BORO	07-25-27	45.00	692	665	703	211MRPAM	--
33- 354	WWD 2	393904	751946	WOODSTOWN BORO	00-00-46	45.00	705	670	705	211MRPAM	50-00038
33- 362	WWD 3	393926	751927	WOODSTOWN BORO	03-27-75	60.00	712	692	712	211MRPAM	30-01441
33- 459	1A	393928	752147	WOODSTOWN BORO	05-25-84	25.00	457	414	434	211MRPAM	30-03336
								447	457		
15- 671	DEPTFORD DEEP OBS	394957	750530	DEPTFORD TWP	03-24-86	35.00	670	650	670	211MRPAL	--
15- 101	MOBIL 40/ SEALED	395012	751520	GREENWICH TWP	03-02-44	20.00	225	195	225	211MRPAL	--
15- 102	REPAUNO 20	395016	751738	GREENWICH TWP	00-00-40	3.00	103	73	103	211MRPAL	--
15- 103	REPAUNO H	395021	751730	GREENWICH TWP	12-28-45	2.00	103	83.0	103	211MRPAL	--
15- 104	REPAUNO J	395021	751740	GREENWICH TWP	06-30-40	2.00	103	74.0	103	211MRPAL	--
15- 107	REPAUNO C/ SEALED	395025	751757	GREENWICH TWP	12-10-45	2.00	105	75.0	105	211MRPAL	--

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 109	MOBIL 41/ SEALED	395027	751503	GREENWICH TWP	07-31-46	20.00	266	229	259	211MRPAL	50-00018
15- 118	MOBIL 47	395036	751501	GREENWICH TWP	00-00-53	18	240	220	240	211MRPAL	30-00198
15- 357	OBS 7	394957	751737	GREENWICH TWP	--	4.00	105	--	--	211MRPAL	--
15- 634	OBS 40	394944	751750	GREENWICH TWP	09-06-84	5	141	136	141	211MRPAL	--
15- 672	2-NORTH WELL	395014	751459	GREENWICH TWP	02-24-78	20	264	244	264	211MRPAL	30-01640
15- 678	W-5C	394946	751612	GREENWICH TWP	06-17-85	9.40	204	194	204	211MRPAL	30-03625
15- 680	W-7C	395038	751605	GREENWICH TWP	03-28-85	8.66	196	186	196	211MRPAL	30-03602
15- 712	STEFKA 1 OBS	394808	751724	GREENWICH TWP	09-29-86	6.5	295	275	290	211MRPAL	30-04347
15- 139	TEST WELL 3	394608	752135	LOGAN TWP	05-20-70	7.0	345	301	345	211MRPAL	30-01223
15- 349	LANDTECT 2	394650	752316	LOGAN TWP	00-00-73	6	220	170	220	211MRPAL	--
15- 350	LANDTECT 1	394550	752313	LOGAN TWP	00-00-70	20.40	284	234	284	211MRPAL	--
15- 398	419	394935	751938	LOGAN TWP	10-10-79	1.00	60.0	50.0	60.0	211MRPAL	30-02016
15- 615	SHIVELER LOWER	394637	751916	LOGAN TWP	02-28-85	29.3	388	378	388	211MRPAL	--
15- 618	GAVENTA DEEP	394804	751933	LOGAN TWP	02-28-85	7.0	240	230	240	211MRPAL	--
15- 742	MANTUA DEEP OBS	394652	751004	MANTUA TWP	07-23-86	84.0	777	757	777	211MRPAL	--
15- 207	NPWD 2/NPWD 5	395156	751053	NATIONAL PARK BORO	04-27-56	30.00	282	241	282	211MRPAL	31-02555
15- 533	NPWD 6	395155	751051	NATIONAL PARK BORO	12-07-81	22.00	272	240	272	211MRPAL	31-17938

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 770	NATIONAL PARK #1-PW-L	395202	751115	NATIONAL PARK BORO	03-11-87	10	229	204	224	211MRPAL	31-26237-6
15- 778	NATIONAL PARK #9-OW-BL	395223	751117	NATIONAL PARK BORO	04-30-87	20	195	170	190	211MRPAL	31-26245
15- 218	MOBIL 33/ SEALED	395044	751503	PAULSBORO BORO	00-00-26	20.00	236	169	236	211MRPAL	--
15- 220	OLIN 1/SEALED	395051	751349	PAULSBORO BORO	05-26-54	10.00	256	234	256	211MRPAL	30-00281
15- 221	PAULSBORO 1/ SEALED	395057	751347	PAULSBORO BORO	03-20-70	10.00	286	258	286	211MRPAL	30-01185
15- 439	ESSEX 2/SEALED	395048	751401	PAULSBORO BORO	04-24-70	10.00	235	215	235	211MRPAL	30-01175
15- 282	5 KINGS HIWAY	394913	751105	WEST DEPTFORD TWP	00-00-73	55.00	450	388	450	211MRPAL	31-07056
15- 283	SHELL 3	394919	751256	WEST DEPTFORD TWP	01-11-62	30.00	384	358	383	211MRPAL	30-00900
15- 285	SHELL 1	394917	751307	WEST DEPTFORD TWP	10-04-61	12.00	360	328	358	211MRPAL	30-00898
15- 296	SHELL 5 OBS/ SEALED	394942	751317	WEST DEPTFORD TWP	00-00-62	20.76	327	321	326	211MRPAL	30-00902
15- 304	418	395032	751241	WEST DEPTFORD TWP	04-04-70	10.00	290	237	289	211MRPAL	30-01173
15- 306	417	395033	751233	WEST DEPTFORD TWP	03-02-70	10.00	278	234	276	211MRPAL	30-01174
15- 308	TEST WELL 8	395044	751242	WEST DEPTFORD TWP	04-21-69	10.00	271	231	271	211MRPAL	--
15- 312	6 RED BANK AVE	395107	750946	WEST DEPTFORD TWP	10-04-73	20.00	372	322	372	211MRPAL	51-00063
15- 314	EAGLE POINT 6	395153	750946	WEST DEPTFORD TWP	01-03-49	15.00	318	280	318	211MRPAL	31-00029
15- 317	EAGLE POINT 7	395200	750947	WEST DEPTFORD TWP	03-16-73	10.00	306	261	301	211MRPAL	31-06834
15- 318	EAGLE POINT 2/ SEALED	395207	750930	WEST DEPTFORD TWP	01-12-48	17.00	289	259	289	211MRPAL	31-00009

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
15- 319	EAGLE POINT 4	395213	750936	WEST DEPTFORD TWP	03-10-48	14.00	289	259	289	211MRPAL	31-00002
15- 320	EAGLE POINT 1	395216	750915	WEST DEPTFORD TWP	10-16-47	20.00	288	248	288	211MRPAL	31-00007
15- 321	EAGLE POINT 5	395221	750856	WEST DEPTFORD TWP	10-29-48	13.00	277	237	277	211MRPAL	31-00028
15- 322	EAGLE POINT 3	395222	750918	WEST DEPTFORD TWP	12-17-47	20.00	288	258	288	211MRPAL	31-00008
15- 323	EAGLE POINT 3 OBS	395235	750950	WEST DEPTFORD TWP	11-11-48	20.96	276	255	275	211MRPAL	31-00037
15- 324	EAGLE PT OBS 4	395236	750821	WEST DEPTFORD TWP	00-00-48	10.00	224	214	224	211MRPAL	31-00036
15- 373	WDTWD 7	395126	750856	WEST DEPTFORD TWP	12-08-80	28.00	366	323	363	211MRPAL	31-17452
15- 410	EAGLE POINT 4A	395213	750936	WEST DEPTFORD TWP	02-01-78	5.00	296	256	296	211MRPAL	31-10647
15- 430	EAGLE POINT 6A	395156	750938	WEST DEPTFORD TWP	04-07-81	15.00	331	256	264	211MRPAL	31-17788
								264	304		
								304	319		
								319	328		
15- 326	WWD 5	395216	75739	WESTVILLE BORO	06-15-71	12.00	277	243	277	211MRPAL	31-05689
15- 327	WWD 4	395221	757307	WESTVILLE BORO	11-25-57	16.00	319	286	313	211MRPAL	31-03418
15- 434	WWD 6	395224	750734	WESTVILLE BORO	06-05-80	15.00	--	265	317	211MRPAL	31-17923
15- 331	RAILROAD 5	394955	750908	WOODBURY CITY	04-27-60	35.00	457	405	457	211MRPAL	31-04259
33- 308	RANNEY 2/ SEALED	394058	752918	CARNEYS POINT TWP	00-00-55	18.00	480	--	--	211MRPAL	--
33- 330	LAYTON 11	394205	752657	CARNEYS POINT TWP	00-00-36	16.00	394	--	--	211MRPAL	50-00098
33- 335	CARNEY PT 7	394212	752751	CARNEYS POINT TWP	07-14-67	11.00	435	270	299	211MRPAL	30-01133

Table 6. Well-location and -construction data for wells located in Gloucester and Salem Counties, New Jersey -- Continued

USGS well number[1]	Local name and well number	Latitude	Longitude	Municipality	Date well constructed	Elevation of land surface (feet above sea level)	Depth of well (feet below land surface)	Top of open interval (feet below land surface)	Bottom of open interval (feet below land surface)	Aquifer code	New Jersey well-permit number
								329	363		
								380	430		
33- 346	LAYNE 1	394256	752718	CARNEYS POINT TWP	00-00-56	19.00	357	317	357	211MRPAL	30-00563
33- 86	4 (PW-3)	394557	752523	OLDMANS TWP	06-10-67	13.00	189	169	189	211MRPAL	30-01139
33- 136	CHAMBERS INJ 2	394110	753013	PENNSVILLE TWP	12-21-65	4.00	247	--	--	211MRPAL	30-01053
33- 137	DRINKWATER 8	394112	753028	PENNSVILLE TWP	06-17-43	14.00	361	317	347	211MRPAL	50-00003
33- 138	CHAMBERS INJ 3/SEALED	394131	753008	PENNSVILLE TWP	00-00-65	5.00	462	314	462	211MRPAL	30-01049
33- 187	POINT AIRY OBS	394037	751914	PILESGROVE TWP	00-00-58	72.97	672	664	672	211MRPAL	--