



**SURFICIAL GEOLOGY OF THE  
ASBURY PARK QUADRANGLE  
MONMOUTH AND OCEAN COUNTIES, NEW JERSEY**

by  
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**DESCRIPTION OF MAP UNITS**

Age of unit indicated in parentheses. For units spanning more than one period, principal age is listed first. Order of map units in list does not necessarily indicate chronologic sequence.

-  **ARTIFICIAL FILL**—Sand, silt, clay, gravel; brown, gray, yellowish brown; may include demolition debris (concrete, brick, asphalt, glass) and trash. As much as 20 feet thick. In road and railroad embankments and made land. Many small areas of fill in urban areas are not shown.
-  **Qal** **ALLUVIUM (Holocene and late Pleistocene)**—Sand, silt, clay, peat; yellowish brown, dark brown, gray, and pebble gravel. Abundant organic matter. Sand is chiefly quartz, with some glauconite and mica. Gravel is quartz and quartzite with minor ironstone. As much as 15 feet thick. Deposited in floodplains, channels, and ground-water seepage areas.
-  **Qbs** **BEACH AND NEARSHORE MARINE SAND (Holocene)**—Sand, very pale brown to light gray; sand and minor pebble gravel, very pale brown, white, gray. As much as 20 feet thick. Deposited during Holocene sea-level rise. Underlain by estuarine deposits in places.
-  **Qem** **ESTUARINE DEPOSITS (Holocene)**—Silt-marsh peat, organic silt and clay; dark brown to black; sand and minor pebble gravel, very pale brown, white, gray. As much as 60 feet thick. Deposited during Holocene sea-level rise. Commonly underlain by lower terrace deposits.
-  **Qtl** **LOWER TERRACE DEPOSITS (late Pleistocene)**—Sand and minor silt; yellow, yellowish brown, reddish yellow, and pebble gravel. Sand is chiefly quartz with some glauconite and mica. Gravel is quartz and quartzite with minor ironstone. As much as 30 feet thick. Forms stream terraces with surfaces 5 to 20 feet above the modern floodplain.
-  **Qcl** **LOWER COLLUVIUM (late Pleistocene)**—Sand, silt, minor clay; yellow, yellowish brown, reddish yellow, light gray; some quartz and ironstone pebbles. As much as 20 feet thick, generally less than 10 feet thick. Forms aprons graded to lower terraces or the modern floodplain.
-  **Qcm2** **CAPE MAY FORMATION, UNIT 2 (late Pleistocene)**—Sand, minor silt and clay; very pale brown, yellow, white, olive yellow, and pebble gravel. Sand is chiefly quartz with minor glauconite and mica; gravel is quartz and quartzite. As much as 40 feet thick. Forms a shore-facing terrace with surface elevation between 15 and 50 feet. Deposited in beach and estuarine settings during the Sangamon sea-level highstand between 120,000 and 130,000 years ago.
-  **Qcm1** **CAPE MAY FORMATION, UNIT 1 (middle? Pleistocene)**—Sand, minor silt and clay; very pale brown, yellow, reddish yellow, and pebble gravel. Sand is chiefly quartz, with minor glauconite and mica; gravel is quartz and quartzite. As much as 30 feet thick. Forms a shore-facing terrace with surface elevation between 50 and 75 feet. Deposited in beach and estuarine settings during a middle? Pleistocene sea-level highstand.
-  **Qtu** **UPPER TERRACE DEPOSITS (middle Pleistocene)**—Sand, minor silt; yellow, reddish yellow, and pebble gravel. Sand is chiefly quartz, glauconite and mica are generally less abundant than in the lower terrace deposits and alluvium. Gravel is quartz, quartzite, and minor ironstone. As much as 20 feet thick. Forms terraces with surfaces 20 to 50 feet above the modern floodplain.
-  **Qcu** **UPPER COLLUVIUM (middle Pleistocene)**—Sand, silt, minor clay; pale brown, yellow, reddish yellow; some quartz, quartzite and ironstone pebbles. As much as 20 feet thick. Forms aprons graded to upper terraces.
-  **TQg** **UPLAND GRAVEL, LOWER PHASE (late Pliocene-middle Pleistocene)**—Sand, minor silt, reddish yellow, and pebble gravel. Sand is chiefly quartz with minor glauconite and mica; gravel is quartz and quartzite. As much as 20 feet thick. Caps lower uplands and interfluvies.
-  **Tg** **UPLAND GRAVEL (Pliocene-early Pleistocene)**—Sand, yellow to reddish yellow, and pebble gravel; minor fine-cobble gravel. Sand is chiefly quartz, with minor glauconite in places; gravel is quartz and quartzite with minor weathered chert. Locally iron-cemented. As much as 20 feet thick. In erosional remnants on hills and interfluvies.
-  **Qwcp** **WEATHERED COASTAL PLAIN FORMATIONS**—Exposed sand and clay of Coastal Plain bedrock formations. May be overlain by thin, patchy alluvium and colluvium. Quartz and ironstone pebbles left from erosion of surficial deposits may be present on the surface and in the upper several feet of the formation.

**DESCRIPTION OF MAP SYMBOLS**

-  **Contact**—Contacts of alluvium, beach deposits, and estuarine deposits are well-defined by landforms and are drawn from 1:12,000-scale aerial stereophotos. Contacts of other units are approximately located based on both landforms and field observation points.
-  **Material observed in hand-auger hole, exposure, or excavation.**
-  **Well or boring**—Upper number is identifier, lower number is thickness of surficial material. Identifiers of the form 'xxx' are N. J. Department of Environmental Protection well permit numbers (all carry the prefix '25-'). Identifiers denoted 'S' are borings from Sugarman, P.J. and Owens, J.P., 1994. Geologic map of the Asbury Park quadrangle, Monmouth and Ocean counties, New Jersey; N.J. Geological Survey Map Series GMS 94-2.

