

INTRODUCTION

MAP SYMBOLS

- Contact**—Approximately located. Triangle indicates contact observed in outcrop. Open triangle indicates contact formerly exposed, as reported in field notes on file at N. J. Geological Survey.
- Formation observed in outcrop, excavation, or hand-auger hole.**
- Formation observed in former outcrop or excavation**—Field notes on file at N. J. Geological Survey.

Well showing formations penetrated—Location accurate to within 200 feet. Identifiers of the form 5-xxx are U. S. Geological Survey Ground-Water Site Inventory identification numbers. Identifiers of the form 27-xxxx or 31-xxxx are N. J. Department of Environmental Protection well-permit numbers. Identifiers prefixed by B are test borings for the Tacony-Palmyra bridge. Identifiers prefixed by J, CB, and TP are test borings for channel dredging, from the U. S. Army Corps of Engineers. Identifiers prefixed by JPO are auger borings recorded on unpublished field maps of J. P. Owens (U. S. Geological Survey, maps on file at the N. J. Geological Survey). Identifiers prefixed by DM are test borings made in 1958 by the Dames and Moore Co. (provided by J. A. Fischer) on file at the N. J. Geological Survey. Identifiers of the form 27-xx-xxx are N. J. Atlas Sheet coordinates of records of wells or borings in the permanent note collection of the N. J. Geological Survey. Number following formation symbol is depth, in feet below land surface, of base of unit, as inferred from driller's log. Final number is total depth of well or boring rather than base of unit. Depth of surficial deposits is shown where they are thicker than 30 feet. Units joined with a hyphen cannot be separately identified in the driller's description. Driller's logs vary in detail and accuracy. They are used in combination with outcrop data and geophysical well logs to map contacts, and so depths of some contacts inferred from the logs may not match those shown on the sections and maps.

Well showing formations penetrated—Location accurate to within 500 feet. Identifiers and symbols as above.

Geophysical log—On sections. Gamma-ray log is shown by red line, intensity increasing to right. Electric log is shown by paired blue lines, with spontaneous potential shown on left-hand curve (voltage increasing to right) and resistance shown on right-hand curve (resistance increasing to right).

Surficial deposits—On sections, shown where more than 10 feet thick.

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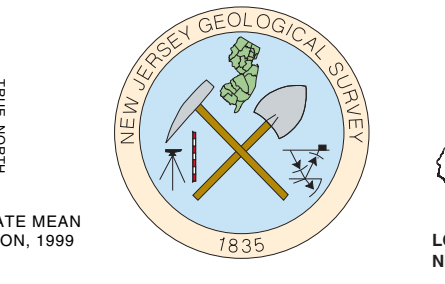
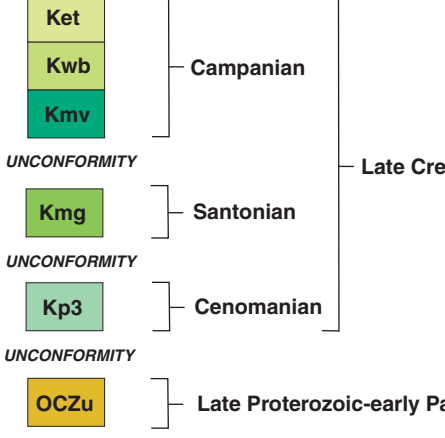
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CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

ENGLISHTOWN FORMATION—Quartz sand, fine- to medium-grained, minor coarse sand, with thin beds of clay and silt. Sand is white, yellow, and light gray where weathered, gray where unweathered. Silt and clay are light gray to brown where weathered, dark gray to black where unweathered. The Englishtown is as much as 20 feet thick in the map area; full thickness in the adjacent Moorestown and Bristol quadrangles is 70-80 feet (Owens and Minard, 1964; Stanford and Sugarman, 2005). Sand contains some lignite, mica and minor amounts of glauconite, mica, carbonaceous matter and pyrite are common in the clay. Late Cretaceous (early Campanian) in age, based on pollen (Wolfe, 1976). Grades downward into the Woodbury Formation.

WOODBURY FORMATION—Clay, with minor thin beds of very fine quartz sand. Dark gray and black where unweathered, yellowish-brown to brown where weathered. As much as 80 feet thick. Clay is micaceous with some pyrite and carbonaceous material and traces of glauconite. Late Cretaceous (early Campanian) in age, based on pollen (Wolfe, 1976). Grades downward into the Merchantville Formation. In wells, contact with Merchantville placed at change from gray or black clay to green clay or marl.

MERCHANTVILLE FORMATION—Glauconite clay with some fine sand and silt. Olive, dark gray, black where unweathered, olive-brown to yellowish-brown where weathered. As much as 50 feet thick. Glauconite occurs primarily in soft fractions of fine-to-medium-size. Sand fraction is chiefly quartz, feldspar, mica, and pyrite are minor constituents. Iron cementation is common. Late Cretaceous (early Campanian) in age, based on ammonite fossils (Owens and others, 1977). Unconformably overlies the Magothly Formation. In wells, contact with Magothly placed at change from green clay or marl to gray clay and white or gray sand. On geophysical logs, contact with Magothly is marked by transition to increased resistance and decreased gamma-ray intensity.

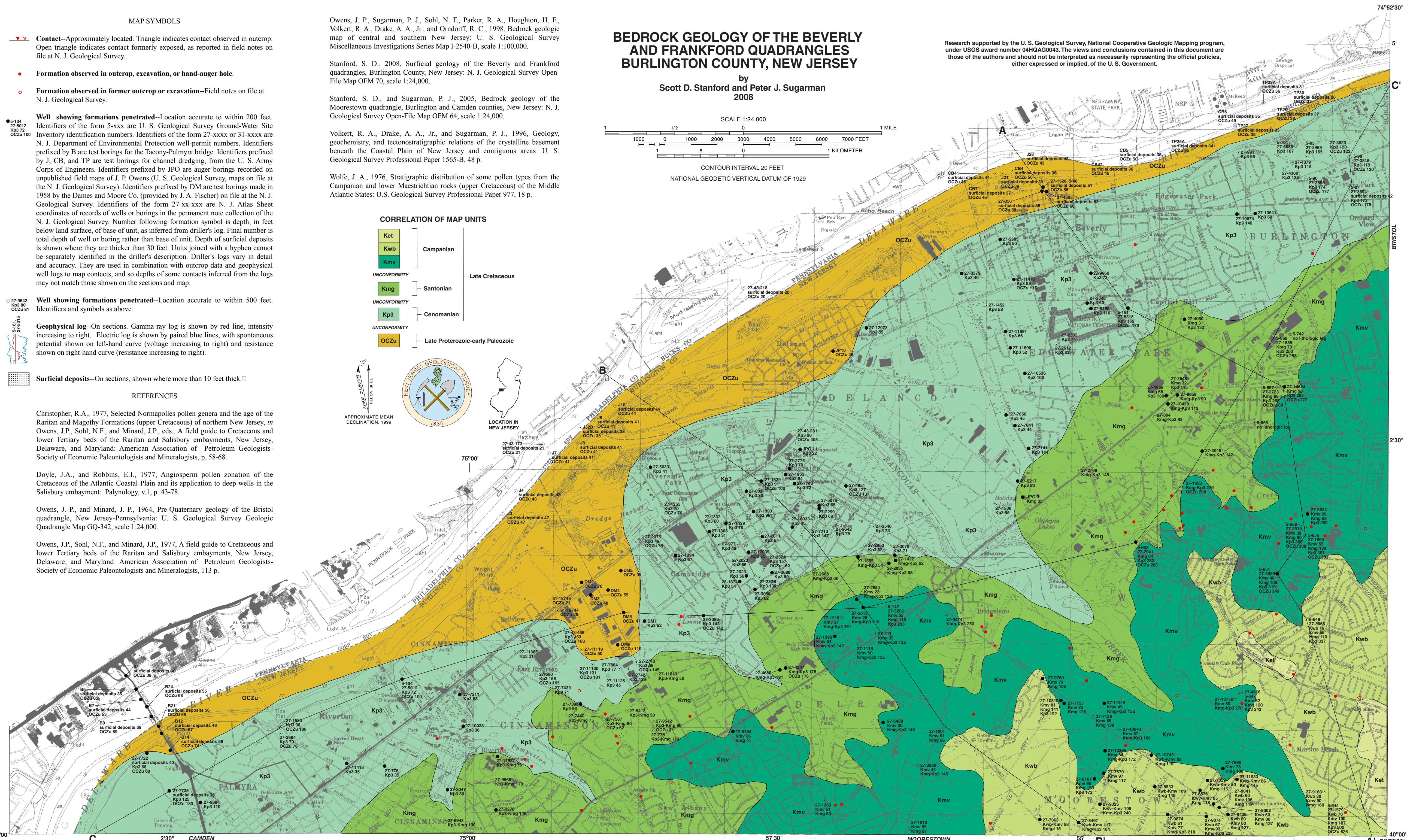
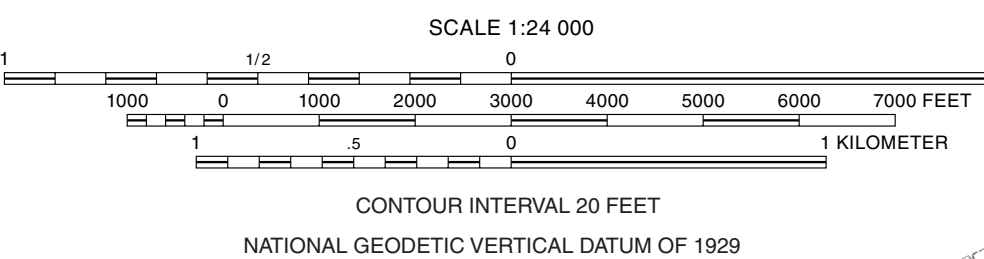
MAGOTHLY FORMATION—Quartz sand, fine- to very coarse-grained, clay and silt, thin-bedded. Sand is white, yellow, light gray where weathered, gray where unweathered. Clay and silt are white, yellow, brown, reddish-yellow where weathered, gray to black where unweathered. Unweathered beds are more common than in the underlying Potomac Formation. As much as 100 feet thick in the southwestern part of the map, in the New Albany-Cinnaminson area, thins to 40-50 feet thick at the eastern edge of the map area, near Orchard View. Sand includes some lignite, pyrite, and minor feldspar and mica. Silt and clay beds include abundant mica and carbonaceous material. Late Cretaceous (Santonian) in age, based on pollen (Christopher, 1977). Unconformably overlies the Potomac Formation. In wells, contact with Potomac placed at change from white and gray clay and sand to red clay and yellow, brown, or white coarse sand. On geophysical logs, contact with Potomac is marked by a transition to generally increased resistance and increased gamma-ray intensity on most but not all logs.

POTOMAC FORMATION—Quartz sand, fine- to very coarse-grained, and clay and silt, thin- to thick-bedded; minor pebble-to-cobble gravel. Sand is white, yellow, light gray where weathered, gray where unweathered. Clay and silt are white, yellow, brown, reddish-yellow where weathered, gray to black where unweathered. Unweathered beds are less common than in the overlying Magothly Formation. As much as 350 feet thick. Sand includes some lignite, minor feldspar, and minor mica. Clay and silt beds include abundant mica and carbonaceous material. The Potomac Formation in the map area is equivalent to the Potomac Formation, unit 3 (Doyle and Robbins, 1977), based on pollen (Owens and others, 1998), and is of Late Cretaceous (early Cenomanian) age. Owens and Minard (1964) mapped these deposits in the adjacent Bristol quadrangle as Raritan Formation, but subsequent palynologic studies indicated recorelation to the Potomac Formation (Owens and others, 1998). Unconformably overlies Late Proterozoic and early Paleozoic bedrock. In wells, contact with bedrock placed at change from red, yellow, or white clay and sand to saprolite, decomposed bedrock, weathered rock, schist, or granite.

LATE PROTEROZOIC AND EARLY PALEOZOIC METAMORPHIC ROCKS—Chiefly schist, minor gneiss and quartzite. Upper 10-100 feet are commonly weathered to a grayish-brown to gray micaceous sandy clayey saprolite. Of Late Proterozoic, Cambrian, and Ordovician age. Includes the Wissahickon Formation and related rocks of the Potomac-Philadelphia-Hartland terrane (Volkert and others, 1996). Outcrop belt in the map area along the Delaware River is entirely covered by surficial deposits.

BEDROCK GEOLOGY OF THE BEVERLY AND FRANKFORD QUADRANGLES
BURLINGTON COUNTY, NEW JERSEY

by
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2008



Research supported by the U. S. Geological Survey, National Cooperative Geologic Mapping program, under USCS award number 04HQAG0043. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U. S. Government.

Base from U. S. Geological Survey Frankford quadrangle (1997) and Beverly quadrangle (1995). Geology mapped 2004-2005. Cartography by S. Stanford and M. Girard.

