UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH
THE STATE OF MAINE
PUBLIC UTILITIES COMMISSION

HYDROLOGIC INVESTIGATIONS
ATLAS HA-76

GEOLOGIC MAP OF THE SURFICIAL DEPOSITS OF PART OF SOUTHWESTERN MAINE AND THEIR WATER-BEARING CHARACTERISTICS

By
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SCALE 1:62 500

1 ½ 0 1 2 3 4 5 MILES

1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

1963

Base from U.S. Geological Survey
topographic quadrangles

Geology mapped in 1959–1961

EXPLANATION

Recent

Qdb — Coastal dune and beach deposits
Fine to medium sand and some coarse sand and gravel on beaches and in dunes inland from the beaches. Deposits may be as much as 25 feet thick. They are moderately permeable and may contain a few feet of fresh water overlying salt water. Yield water to a few wells

Qal — Alluvium
(Shown only where extensive)
Silt, sand, and clay on river flood plains. Deposits may be as much as 15 feet thick. Probably contain small amount of water in places but not known to yield water to wells in this area. Subject to flooding

Qs — Swamp deposits
(Shown only where extensive)
Chiefly organic material—partly decayed leaves, roots, moss, ferns, wood, and heath plants and grasses (peat)—and some silt, clay, sand, or gravel. Includes salt-marsh deposits. Thickness is as much as 20 feet. Occur in low-lying and poorly drained areas. Not known to yield water to wells but may supply a few springs. May be a source of recharge to underlying sand and gravel deposits. Water may be acidic, highly colored, or high in nitrate or other organic matter

Qes — Eolian sand deposits
(Exclusive of coastal dune sand)
Fine to medium sand in vegetated, fixed dunes in Old Orchard Beach area. Thickness is as much as 30 feet. Not known to yield water to wells in southwestern Maine

Qob — Glacial outwash deposits
Stratified sand and gravel deposits beneath glacial outwash plains and in deltas. Grain size generally is coarser near the ice-contact deposits and becomes finer seaward. Include some outwash sand that was deposited in a marine environment. Thickness is as much as 100 feet. Ground-water yield depends upon thickness and grain size of deposits. Near the ice-contact deposits outwash may yield several hundred gallons per minute to properly constructed wells . Seaward, where deposits are finer grained and thinner, they may yield enough water to dug or driven wells for domestic use. Many springs occur at contact between outwash and underlying marine clay. Water is generally soft and of good quality

Qic — Ice - contact deposits
Well to poorly stratified deposits of sand, gravel, cobbles, and boulders. Estimated to be as much as 100 feet thick. Land forms include kames, kame terraces, kame fields, eskers, and crevasse fillings. In most areas the deposits grade into glacial outwash deposits. They are the best source of large supplies of ground water in southwestern Maine, particularly where relatively thick and in contact with a body of surface water. Under most favorable conditions as much as 1000 gpm (gallons per minute) may be obtained from wells tapping ice-contact deposits. Water generally is of good quality, although in certain areas it contains excessive iron

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Qb — Beach deposits
Consists generally of steeply dipping beds of sand and gravel occurring primarily as fringes or aprons around drumlins in Kittery, Eliot, York, and South Berwick. Thickness is as much as 80 feet. Generally occur at relatively high levels and contain water only near the base. Yield water to a few wells and springs but, because of small areal distribution, are not important aquifers

Qgm — Glacial marine deposits
Predominantly black, dark-blue, or gray silt and clay locally grading to silt and very fine sand. Contains layers of medium sand a few inches to several feet thick. Where weathered the clay may be tan. Thickness is as much as 190 feet. Deposits occur in coastal lowlands and in the lower parts of stream valleys. They generally underlie outwash and may crop out in stream valleys where overlying outwash has been removed by erosion. Deposits may be saturated with water, but, because of fine grain size, yield water slowly and do not constitute an important aquifer although they supply small quantities of water to dug wells from sandy zones. In places water-bearing sand lies between clay and bedrock

Qgt — Glacial till deposits
(Includes areas of bedrock outcrop; also may include some unconsolidated stratified deposits which are too small and isolated to map separately)
Till is a heterogeneous mixture of clay, silt, sand, gravel, cobbles, and boulders that generally covers the uplands in a thin layer. It may occur also beneath younger deposits in the valleys. Thick clay-rich till deposits constitute numerous glacially molded hills (drumlins) such as Cider Hill in York, Powderhouse Hill in South Berwick, and Hanson Ridge in Sanford. In places till deposits may be very sandy and resemble ice-contact deposits. Thickness may be as much as 100 feet. Till deposits are widespread and are the source of small quantities of water to the many dug wells in the area. Drilled wells penetrating gravel beds in deposits of thick till may yield as much as 10 to 15 gpm. Dug wells in till are likely to go dry during dry periods. Water is generally of good quality.
Bedrock formations consist of igneous rocks (chiefly granite, gabbro, diorite, granodiorite, and pegmatite) and metamorphic rocks (chiefly slate, schist, gneiss, quartzite, argillite, and phyllite). Rocks are dense and almost impermeable; water is found only in joints, fractures, and bedding planes in the rock. Yields of bedrock wells range from less than 1 to 150 gpm. Average yield is about 5 gpm. Most wells in bedrock obtain sufficient water for domestic use from a depth of less than 200 feet below the surface

Pleistocene — QUATERNARY

Contact

APPROXIMATE MEAN MAGNETIC NORTH DECLINATION, 1963

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