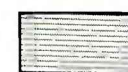









EXPLANATION

-  SAND OR INTERBEDDED SAND AND GRAVEL
-  SILT, CLAY, OR MIXTURE OF SILT AND CLAY
-  TILL MIXED WITH LENSES OF SAND AND GRAVEL,
AND SILT AND CLAY--These deposits generally
formed as glacial moraines
-  TILL OR BEDROCK
-  AREAS THAT HAVE NOT BEEN GLACIATED--Surficial
deposits derived from weathering of underlying
bedrock
-  GEOLOGIC CONTACT
-  SOUTHERN LIMIT OF WISCONSIN GLACIATION
-  BASIN BOUNDARY

PREFACE

These maps were first published at this scale, but in page-size segments, in a ground-water report done by the U.S. Geological Survey in cooperation with the New York State Department of Environmental Conservation (Frimpter, 1974). Here they are presented in their original format for use in regional ground-water appraisals and planning.

INTRODUCTION

New York State's need to develop a ground-water-management program for protection of its aquifers led in 1985 to a cooperative program between the U.S. Geological Survey and the New York State Department of Environmental Conservation (through regional planning agencies) to publish data from previous studies. The two maps presented here are from original compilations done in a 1967 study (Frimpter, 1974). Sheet 1 depicts the surficial geology as mapped in 1967; sheet 2 shows the ground-water availability (well yield) throughout the basin. These maps are presented at 1:250,000 scale for compatibility with published maps of adjacent river basins.

Readers who require well locations to relate to the well-yield map (sheet 2) or to the well data given in Frimpter (1974) can obtain a computer-generated well-location map on request from the U.S. Geological Survey offices in Ithaca, Albany, and Syosset, N.Y. Such plots can be correlated with the well data in Frimpter (1974) through the well-numbering system described in that report.

GEOLOGIC SETTING

Most of the area is a mature, dissected plateau. The plateau ends in an irregular escarpment at the Lake Erie Plain, a few miles southeast of Lake Erie. The Lake Erie Plain is a narrow belt of nearly flat land that slopes gently from the base of the escarpment, about 800 feet above sea level, to the lake shore, about 50 feet above sea level.

A mantle of unconsolidated deposits covers nearly all bedrock in the area. In most localities, the mantle is thin on hilltops and hillsides and is thickest in the larger valleys. Most potable ground water is in thick, unconsolidated deposits in the valleys.

Most of the study area was covered at least twice by continental glaciers that moved southward across the region. Rock fragments embedded in the ice abraded the bedrock, and additional rock fragments and soils became incorporated into the ice sheets. Glacial erosion rounded the hilltops and deepened valleys that were parallel to the direction of ice movement.

Glaciation also disrupted the surface-drainage system of the area. Glacial ice and moraines dammed most of the preglacial drainage channels, which caused lakes to form in some places and caused some streams to develop new channels. Before glaciation, most of the streams in the area drained northward, but since then, areal drainage has been southward.

As the glacial ice receded, large finger-shaped lakes formed in what are now the present valleys of Conewango Creek, Cassadaga Creek, and Chautauqua Lake. A moraine near Randolph blocked southward drainage of these lakes into the Allegheny River, and the glacial ice prevented northward drainage. Because great amounts of silt and clay were deposited in these lakes, the preglacial Cassadaga and Conewango Creek valleys today are partially filled, and more than half of Chautauqua Lake is less than 20 feet deep.

REFERENCES CITED

- Frimpter, M. H., 1974, Ground-water resources, Allegheny River basin and part of the Lake Erie basin, New York: New York State Department of Environmental Conservation, Basin Planning Report ARB-2, 98 p.
- Muller, E. H., 1963, Geology of Chautauqua County, New York, part II, Pleistocene geology: New York State Museum and Science Service Bull. 392, 60 p.

