UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

WATER-RESOURCES INVESTIGATIONS REPORT 87-4042
PLATE 1

## INTRODUCTION

Protection of New York State's aquifers has become an important issue among water-resource managers in State and municipal government. Aquifer delineation is necessary as an initial phase in aquifer management and protection. Many of the State's most heavily used aquifers consist of unconsolidated deposits.

A comprehensive ground-water-protection plan, developed by the New York State Department of Environmental Conservation in 1985, identified the need to delineate significant aquifers within the State. During the late 1950's and early 1970's, the U.S. Geological Survey completed several studies of the State's ground-water resources on a county-by-county basis and, in the early 1980's, prepared a series of reports on selected aquifers within major river basins. These reports incorporated data from the previous county studies along with updated hydrogeologic information. No basinwide studies delineated the unconsolidated aquifers on maps, however.

### Purpose and Scope

In 1985, the U.S. Geological Survey, in cooperation with the New York State Department of Environmental Conservation, began a study to map all significant unconsolidated aquifers within the State. As a part of that study, this map of the unconsolidated aquifers in the lower Hudson and Delaware River basins was compiled from available data on the surficial geology and well yields. This map delineates the significant unconsolidated aquifers and indicates the potential yield of wells that tap these aquifers.

## AQUIFER DELINEATION

The aquifer boundaries and potential well yields shown were estimated from data given in many sources, including the above-mentioned county and river-basin reports, hydrogeologic reports by consultants, unpublished preliminary surficial geologic maps prepared by the New York State Geological Survey (D. H. Cadwell and R. J. Dineen, New York State Geological Survey, written commun., 1986), the U.S. Geological Survey's Ground-Water Site Inventory (GWSI) data base, and unpublished U.S. Geological Survey reports (I. R. Kantrowitz, U.S. Geological Survey, written commun., 1969; E. F. Bugliosi and R. A. Trudell, U.S. Geological Survey, written commun., 1987, S. W. Wolcott and D. J. Irwin, U.S. Geological Survey, written commun., 1987).

The unconsolidated aquifers shown on this map represent surficial deposits that consist of outwash sand and gravel, kame sand and gravel, and lake sand. Thin recent alluvium cover in river valleys is shown as an aquifer where hydrologic and stratigraphic data indicate its water-bearing potential. Units of lake clay or silt and clay are not considered to be aquifers, nor are areas of till overlying bedrock; although such areas may be hydraulically connected to deposits that are considered to be significant aquifers.

## POTENTIAL WELL YIELD

The potential well yield within each aquifer was estimated from reported well data and is a function of the aquifer's hydraulic properties and the design of the well. The potential well yield is categorized into three ranges on this map: less than 10 gallons per minute; 10 to 100 gallons per minute; and more than 100 gallons per minute. Where no well-yield data were available within an aquifer boundary, a range of less than 10 gallons per minute was assigned to that aquifer. Wells drilled in these areas may yield more than 10 gallons per minute, however, especially where thick sand and gravel are present or in areas near a river or lake. No yield range is given for till, but some large-diameter or dug wells in till may yield up to 10 gallons per minute.

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POTENTIAL WELL YIELD FROM UNCONSOLIDATED DEPOSITS, IN GALLONS PER MINUTE

1 LESS THAN 10

2 10 TO 100

3 GREATER THAN 100

NONAQUIFER AREAS SURROUNDED BY UNCONSOLIDATED DEPOSITS

BASIN BOUNDARY

0 5 10 15 MILES
0 10 20 KILOMETERS

Base from U.S. Geological Survey, 1986, 1:250,000

# POTENTIAL WELL YIELDS FROM UNCONSOLIDATED DEPOSITS IN THE LOWER HUDSON AND DELAWARE RIVER BASINS, NEW YORK

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