



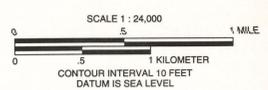
- EXPLANATION**
- YEAR-ROUND PUMPING SITE
 - △ Average Pumpage (in gallons per day)
 - 32 10,000 to less than 20,000. Number within symbol refers to supplier listed in table 3
 - 10 20,000 to less than 50,000. Number within symbol refers to supplier listed in table 3
 - 4 50,000 or greater. Number within symbol refers to supplier listed in table 3
 - THALWEG (VALLEY AXIS) OF BURIED BEDROCK CHANNEL ---
Range of numbers indicates approximate altitude of thalweg, in feet above or below sea level. Order of numbers reflects trend in altitude. Location inferred. <, less than; >, greater than
 - CONTACT—between adjacent surface deposits. Approximately located, dashed where inferred

HYDROGEOLOGICAL CHARACTERISTICS OF SURFICIAL DEPOSITS

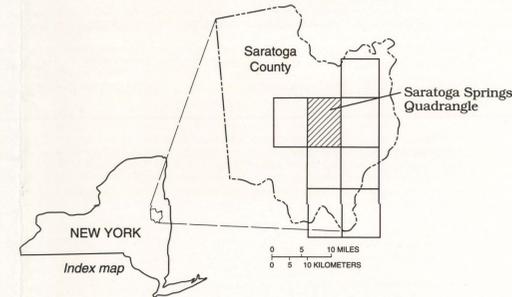
Deposits of High Permeability	
Symbol	Description
al	FLOOD-PLAIN ALLUVIUM —recent deposits derived from frequent flooding within a stream valley; generally fine sand and gravel, although sediments commonly reflect the character of the deposits that the stream traverses. Up to 10 ft thick. Alluvium associated with large streams and rivers has potential for water supply through induced infiltration of surface water into the aquifer during pumping periods. Alluvium is generally not a major source of water along small stream valleys, where its thickness or extent is limited.
alf	ALLUVIAL FAN —fan-shaped accumulation of alluvium made by a stream as it flows from sloped valley walls onto a level flood plain; poorly stratified silt, sand, and boulders. Up to 20 ft thick. Generally permeable but of limited extent; commonly unsaturated.
alt	ALLUVIAL TERRACE —deposits of fluvial sand and gravel with laterally continuous lenses of silt (flood-plain alluvium) deposited at a level higher than the recent flood plain. Up to 50 ft thick. These deposits are generally permeable but commonly unsaturated.
d	DUNES —fine to medium sand, well sorted, stratified; generally reworked lacustrine sand and deltaic deposits. Up to 50 ft thick. Permeable but commonly unsaturated.
de	RECENT DELTA —gravel and sand deposited at lakeshore; thickness variable. Generally permeable but of limited extent.
k	KAME DEPOSIT —gravel and/or sand, lateral variability in sorting, coarseness, thickness; deposited adjacent to ice. Includes kames, eskers, kame terraces, kame deltas; up to 100 ft thick. Ice-contact (kame) deposits in preglacial bedrock channels, such as the Colonic channel (Simpson, 1949) overlain by lacustrine silt and clay form a discontinuous, confined aquifer of variable thickness (up to about 100 ft) (Dineen and Hanson, 1988; Reynolds, 1985; Dunn Geoscience, 1981). This type of aquifer represents an important water source for several developments in the Town of Clifton Park (Dunn Geoscience, 1981; Reynolds, 1985). Well yields as high as 800 gal/min have been reported (Dunn Geoscience, 1981), although most supply wells that tap the confined aquifer yield far less as a result of well design, limited aquifer extent and permeability, or interference from other production wells.
ld	LACUSTRINE DELTA —gravel and sand, stratified, generally well sorted, deposited at former lakeshore. Up to 120 ft thick. Ground water from lacustrine delta and lacustrine sand deposits west of Saratoga Springs supplies several housing tracts and parts of the city of Saratoga Springs and the village of Ballston Spa. The largest withdrawals from these deposits are at the Geyser Crest well field, where the six wells are screened within 60 ft of land surface and where the maximum individual well yield is 600 to 700 gal/min (Dunn Geoscience, 1988). The principal source of water used at a government reactor-research installation at West Milton is a confined aquifer composed of lacustrine deltaic sand. Studies of this aquifer suggest that yields of 800 gal/min can be obtained from a single well (Mack, 1963).
ls	LACUSTRINE SAND —sand deposits associated with large glacial lakes, generally a nearshore deposit or near a sand source; well sorted, stratified, generally quartz sand; up to 95 ft thick. Hydraulic properties of thin lacustrine sand deposits at the Saratoga National Historical Park (fig. 1) were investigated by Heath and Tannenbaum (1963), who estimated, from aquifer-test data, a horizontal hydraulic conductivity of about 94 ft/d and a storage coefficient of 0.16.
og	OUTWASH SAND AND GRAVEL —gravel with sand; proglacial fluvial deposition, well rounded and stratified; texture becomes increasingly fine away from ice border; up to 25 ft thick. Areas of saturated outwash sand and gravel and alluvium in the valley of Kayaderosseras Creek also represent a potential water source. Although these deposits are less extensive than those previously mentioned, downward gradients from pumping induce flow from the creek and tributary streams into the shallow aquifer, increasing the amount of water available for extraction. Water pumped from a shallow collector well near Kayaderosseras Creek in West Milton supplied the entire government reactor research installation (fig. 1) for 8 years (before use of the confined aquifer in the valley) and was capable of yielding 750 gal/min for extended periods (Mack, 1963), although the maximum yield fluctuated seasonally with the level of Kayaderosseras Creek.
Deposits of Low Permeability	
pm	SWAMP DEPOSITS —peat, muck, organic silt and sand in poorly drained areas, generally 0 to 20 ft thick. Yields little water.
lsc	LACUSTRINE SILT AND CLAY —generally a laminated silt and clay deposited in proglacial lakes; maximum thickness is 275 ft in one part of the Colonic bedrock channel (Reynolds, 1985). Typically yields little water. Generally is a confining unit where underlain by permeable deposits (buried-valley aquifers).
t	TILL —lodgment or ablation till of variable thickness (up to 250 ft) and texture (clay, silty clay, bouldery clay). Can yield small amounts of water to large-diameter (2 ft or greater) dug wells; the water is derived primarily from localized sand lenses within the till.
tt	THIN TILL —variable mantle of rock debris and till; sporadic bedrock outcrops; up to 10 ft thick. Yields little water.
tw	WASHED TILL —venuers of cobbles and boulders on channels and terraces, can be imbricate, up to 10 ft thick. Yields little water.
Other Symbols	
r	BEDROCK —predominantly shale, but sandstone, carbonates, and crystalline rock are present in the northwestern part of the study area. Permeability is variable.
w	WATER

HOLOCENE
PLEISTOCENE
HOLOCENE
PLEISTOCENE

Base from New York State Department of Transportation, Saratoga Springs, N.Y., 1974, 1:24,000



Surficial geology by D.H. Cadwell and R.J. Dineen 1980-88; Bedrock geology by R.J. Dineen, 1957-88, New York State Geological Survey - New York State Museum



SURFICIAL GEOLOGY AND LOCATIONS OF BURIED BEDROCK CHANNELS AND GROUND-WATER PUMPING FACILITIES, SARATOGA COUNTY, NEW YORK

By
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