

SURFICIAL GEOLOGY

By
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INTRODUCTION

The mapping was undertaken to compile available information on the limits and characteristics of one of the principal valley-fill aquifers in upstate New York. The valley-fill aquifer in the Cortland-Homer-Preble area underlies a 30-square-mile area in central New York in the Tiochongia River valley. It is a primary source of water for rural residents, industry, and community water systems in western Cortland County and a small portion of Onondaga County.

Findings relating to the aquifer are presented in this series of maps to provide water managers with current knowledge to aid in protecting and managing this prolific aquifer. The hydrologic data used in preparing these maps are available in the cited references and in the New York District Office of the U.S. Geological Survey in Albany, New York.

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EXPLANATION

- | | |
|-----|---|
| w | Open-water areas |
| pm | Peat, marl, muck, and clay; bog deposits of postglacial to recent age; low permeability |
| alg | Alluvial sand and gravel; stream, fan, channel, and terrace deposits of postglacial to recent age; high permeability |
| als | Alluvial silt and (or) very fine sand; flood-plain deposits of postglacial to recent age; low permeability |
| cl | Colluvium; unsorted rock debris of postglacial to recent age; high permeability |
| osg | Outwash sand and gravel; meltwater deposits; stratified and well sorted; high permeability |
| td | Ice-disintegration complex; moraine deposits of poorly sorted to unsorted silt and clay and an admixture of sorted sand and gravel; low to moderate permeability |
| ksg | Kame and kame-terrace sand and gravel; ice-contact deposits; some sorting and secondary calcite cementation; high permeability |
| lmt | Lateral moraine till; ice or ice-contact deposits of unstratified silt with sand and occasional cobbles and stratified sand and gravel; low to moderate permeability |
| lt | Lodgment till; subglacial deposits of unstratified compacted clay, silt, sand, and boulders; low permeability |
| t/r | Till over bedrock (undifferentiated); glacial deposits of unstratified silt and sand, with occasional pebbles, cobbles, and boulders, generally less than 30 feet thick; low permeability |
| r | Bedrock (undifferentiated); shales and siltstones; low to moderate permeability depending on extent of fracturing and jointing |
- GEOLOGIC CONTACT -- dashed where approximately located

WELL SYMBOLS

- CT 11 Well used to draw "Geologic Sections," sheet 2; with identifier used by Comer and Harsh (1978) and Buller (1978)
- 54-49b Well used to draw "Geologic Sections," sheet 2; with seconds of latitude-longitude from well number assigned by U.S. Geological Survey; b represents borehole log

- A — A' LINE OF SECTION—see sheet 2, "Geologic Sections"
- AQUIFER BOUNDARY — dashed where full extent of aquifer is not shown
- DRAINAGE DIVIDE

REFERENCES

- Bugh, James, 1981, Generic environmental impact statement for sand and gravel mining in the Cortland-Tully valley: New York State Department of Environmental Conservation, map, 1 sheet.
- Buller, William, 1978, Hydrologic appraisal of the water resources of the Homer-Preble valley, New York: U.S. Geological Survey Water-Resources Investigations, Open-File Report 78-94, 31 p.
- Comer, D. J., and Harsh, J. F., 1978, Digital-model simulation of the glacial outwash aquifer, Otter Creek-Dry Creek basin, Cortland County, New York: U.S. Geological Survey Water-Resources Investigations, Open-File Report 78-71, 34 p.
- LaFleur, R. G., Unpublished field maps: Albany, New York, U.S. Geological Survey.
- Muller, E. H., 1966, Glacial geology and geomorphology between Cortland and Syracuse: National Association of Geology Teachers, Eastern Section, Fieldtrip Guidebook, Cortland area, p. 1-15.

SCALE 1:24,000

INDEX MAP

GEOHYDROLOGY OF THE VALLEY-FILL AQUIFER IN THE CORTLAND-HOMER-PREBLE AREA, CORTLAND AND ONONDAGA COUNTIES, NEW YORK

GEOLOGY MODIFIED FROM R. G. LAFLEUR, UNPUBLISHED
FIELD MAPS, E. H. MULLER (1966) AND JAMES BUGH (1981)