

LOCATIONS OF WELLS AND TEST HOLES

This map shows the locations of wells and test holes from which hydrogeologic data were obtained for this report. Well data were obtained from the U.S. Geological Survey (USGS) National Water Information System (NWIS) database and were supplemented by recent well records from the New York State Department of Environmental Conservation (NYSDEC) Water Well Driller's Registration Program. In addition, highway test borings and logs of test wells drilled for the NYS Correctional Facility at Napanoch were supplied by the New York State Department of Transportation. The locations and logs of test wells drilled for a proposed agricultural business located just north of the village of Wurtsboro, along with results of an aquifer test, were supplied by a consulting firm. Wells shown on this map also give the depth to bedrock, if bedrock was reached, or the lowest elevation of the bottom of the well, in cases where the well did not reach bedrock. Wells are identified by a county well number, issued by the NYSDEC on behalf of the USGS, preceded by a county prefix, "Sv" for wells in Sullivan County and "U" for wells in Ulster County. The types of wells, whether domestic, production, industrial/commercial, or test boring, are designated by different symbols which are explained in the map Explanation. The aquifer boundary, in this case taken as the boundary between stratified-drift and relatively impermeable till or bedrock, is shown as a heavy blue line. The traces of geologic sections, which are shown on sheet 3, are also shown here.

EXPLANATION

Note: Well numbers, assigned by the USGS, are preceded with a prefix "Sv" for wells in Sullivan County and "U" for wells in Ulster County. Number to right of well location is depth to bedrock, in feet below land surface. A "greater than" symbol (>) preceding this number indicates that the well did not reach bedrock and that the depth shown is the depth of the finished well. "NA" indicates that depth-to-bedrock information was not available for the well.

AQUIFER BOUNDARY - Indicates contact between stratified drift in the Port Jervis Trough and deposits of till or bedrock

TRACE OF GEOLOGIC SECTION - Geologic sections are depicted on sheet 5

U-973 (<159) **DOMESTIC WELL** - Completed in the surficial stratified drift (sand and gravel) aquifer, which is under unconfined (water-table) conditions

U-891 (90) **DOMESTIC WELL** - Completed in bedrock

U-917 (>39) **PRODUCTION WELL** - Large-capacity well serving production systems. Screened in surficial (water-table) aquifer

U-866 (213) **PRODUCTION WELL** - Moderate-capacity well serving production systems. Completed in bedrock

U-940 (53) **COMMERCIAL, INDUSTRIAL, OR IRRIGATION WELL** - Large-capacity well serving commercial, industrial, or agricultural water users. Screened in surficial (water-table) aquifer

Sv-913 (189) **COMMERCIAL, INDUSTRIAL, OR IRRIGATION WELL** - Moderate-capacity well serving commercial, industrial, or agricultural water users. Completed in bedrock

U-967 (>46) **OBSERVATION WELL** - Used for collection of ground-water quality and water-level data; includes exploratory wells in which casing was installed

U-895 (203) **TEST HOLE** - Test hole or test boring used to define subsurface characteristics for engineering construction properties or as an exploratory hole for water-supply investigations; no casing installed

ABSTRACT

The nature and extent of valley-fill aquifers in the Port Jervis Trough was evaluated for a 16 mile section of this valley from the Orange-Sullivan county line near Westbrookville to the village of Napanoch in Ulster County as part of the U.S. Geological Survey's Detailed Aquifer Mapping Program in New York State. The principal aquifer in the Port Jervis Trough is a 50 feet thick outwash aquifer that extends from the Phillipsport Moraine near Summitville, southward through the study area to Port Jervis, N.Y. Previous studies had estimated as much as 500 feet of saturated drift in parts of the Trough, but new well data show that much of the valley fill consists of fine-grained lacustrine sediments. Drillers' logs show that the outwash aquifer south of Summitville is underlain by as much as 275 feet of lacustrine silt and clay. North of the Phillipsport Moraine, three large glaciolacustrine deltas that were built into Glacial Lake Wawarsing provide some local and discontinuous confined aquifers through their coarser bottomset beds. Elsewhere in the Trough, collapsed and buried portions of kame deltas and terraces provide local confined aquifers. The outwash aquifer appears to be very transmissive, as evidenced by the high specific capacity of 130 gallons per minute per foot [(gal/min)/ft] of a commercial test well screened in the aquifer.

INTRODUCTION

In 1980, the U.S. Geological Survey began a Detailed Aquifer Mapping Program in upstate New York, in cooperation with the New York State Department of Health (NYSDOH), funded by the U.S. Environmental Protection Agency's (USEPA) Underground Injection Control Program. The objective of this program was to define the hydrogeology of 21 extensively used (primary) stratified-drift aquifers in upstate New York and to present the information as individual sets of maps at 1:24,000 scale. Each published report from this program describes the hydrogeology of a specific aquifer or segment of aquifer, and depicts selected hydrogeologic characteristics. The number of maps differs among reports, depending upon the amount of hydrogeologic data that was available for each area studied. Eleven of these primary aquifers were mapped by the USGS under the cooperative program with NYSDOH, and four were mapped by a consulting firm under contract with the USEPA, with the resulting reports published by the USGS. By 1983, 15 of these 21 primary aquifers had been mapped and the results published by the USGS, in addition to two summary atlases.

As a continuation of this program, a second project was begun in 1983 by the USGS in cooperation with the New York State Department of Environmental Conservation (NYSDEC) to define the hydrogeology of the remaining six primary aquifers. From 1983 to 1990, reports covering five of these primary aquifers were published by the USGS. A report covering the remaining primary aquifer (Waverly-Sayre) was published in 2002.

In 1987, a companion project was begun in cooperation with the NYSDEC to define the hydrogeology of additional, extensively used (principal) aquifers in New York. As before, the reports resulting from this project each consist of a set of 1:24,000 scale (or larger) maps that describe the hydrogeology of a specific aquifer and depict selected hydrogeologic characteristics, such as well and test-hole locations, surficial geology, bedrock-surface altitude, geologic sections, land use, soil permeability, altitude of the water table or potentiometric surface, and saturated thickness of the aquifer. The number of maps and topics presented differs among the reports, depending upon the amount of hydrogeologic data available. As of 2006, 10 reports from this second series have been published, for a total of 31 reports from the Detailed Aquifer Mapping Program since its inception in 1980. In addition, seven other related reports, funded in cooperation with other agencies but produced in the same map format, were published by the USGS from 1984-89 and effectively increase the number of aquifers mapped in upstate New York to 38. These reports provide a foundation for many wellhead protection programs in upstate New York. In 2005, the USGS, in cooperation with the NYSDEC, began an appraisal of the aquifers within the Port Jervis Trough in Sullivan and Ulster Counties, N.Y. as part of an ongoing cooperative aquifer mapping program.

The Port Jervis Trough

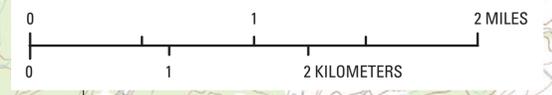
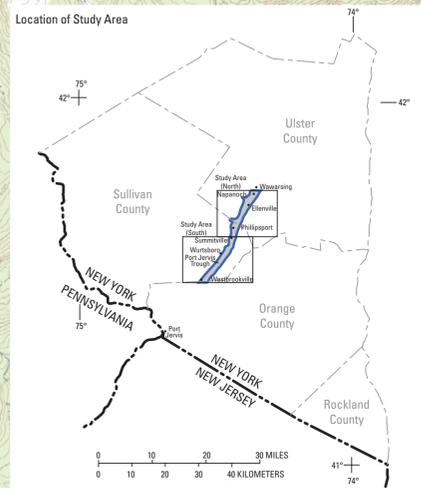
The Port Jervis Trough is a deep, glaciated valley that extends from Milford, PA, northward to Kerhonksen, N.Y. It is a "through" valley, which means that it crosses a major surface drainage divide, in this case, the divide between the Delaware River and Hudson River basins. In New York, the trough extends northward about 21 miles from Port Jervis, through the lower Neversink and Basherkill valleys, to the Delaware and Hudson drainage divide at Summitville, N.Y. From Summitville, the trough extends northward for another 13 miles to Kerhonksen, beneath the Rondout Creek valley, and separates the Shawangunk Mountains, to the east, from the Catskill Front (eastern side of the Catskill Mountains) to the west. The southern part of the trough, from Port Jervis to the Orange-Sullivan county line, was mapped in a related USGS study (Garry, 1999). Both Soren (1961) and Frimpter (1972) reported that the northern extension of this trough (the Basherkill Valley) from the Orange-Sullivan county line northward to Summitville, contains much coarser outwash than at Port Jervis. Frimpter (1972) estimated that the aquifer between Godfrey and Summitville, a distance of only 14 miles in the Basherkill valley, had a potential ground water yield of 39 Mgal/d (Million gallons per day) from storage alone; however, this value was based on an estimated saturated thickness of the aquifer much larger than current well data shows. North of Phillipsport, the valley slopes northward and contains thick deposits of lacustrine clay and silt, as well as both unconfined and locally confined sand and gravel aquifers. Major municipal water users in this area include the Village of Ellenville (4,400), the Village of Wurtsboro (1,250), the Eastern New York Correctional Facility (700), and numerous trailer parks, totaling about 7,000 municipal ground-water users (New York State Department of Health, 1982). The transmissivity of the aquifer near Ellenville appears to be very high, as evidenced by a 39 feet deep supply well for the village of Ellenville that was test pumped at 1,000 gal/min (Frimpter, 1972).

Purpose and Scope

This report summarizes the hydrogeology of the valley-fill aquifer system in the Port Jervis Trough from the Orange County-Sullivan County border at Westbrookville, northward approximately 16 miles to the village of Napanoch in Ulster County. The maps and geologic sections herein are based on hydrogeologic data from previous USGS ground-water studies (Soren, 1961; Frimpter, 1970, 1972) and from recent well records obtained from the NYSDEC Water Well Drillers Registration Program. The well data enabled the construction of two sets of maps—locations of wells and test holes, and surficial geology—and three geologic sections. The maps are divided into northern and southern sections for ease of use at 1:24,000 scale.

PREVIOUS INVESTIGATIONS

Most of the previous geologic investigations in the Port Jervis Trough have centered around the mining of lead from bedrock beneath the adjacent Shawangunk Mountains; however, six reports have discussed, at least peripherally, the stratified drift in the trough. Rich (1935) described the general recession of glacial ice in the Catskill Mountains and was one of the first to recognize the Phillipsport Moraine and glaciolacustrine deltas that occupy the valley segment from Phillipsport north to Napanoch. Heroy (1974), a contemporary of Rich, was the first to describe the existence of Glacial Lake Wawarsing, although his work on this was not published until 1974. Soren (1961) described the general bedrock geologic structure of the Port Jervis Trough in Sullivan County as part of a USGS ground-water study of that county and also provided tables of well records and selected drillers' logs. Fluhr (1950) provided descriptions of the results of test borings conducted in the upper Delaware River Basin as part of an exploratory program of potential dam sites funded by the Interstate Commission on the Delaware River Basin (INCODEL). Frimpter (1970) compiled well records and drillers' logs for wells inventoried for a USGS study of the ground-water resources of Orange and Ulster Counties and later estimated the availability of ground water from valley-fill aquifers in that area, including the Port Jervis Trough (Frimpter, 1972).



**Hydrogeologic Appraisal of the Valley-Fill Aquifer in the
Port Jervis Trough, Sullivan and Ulster Counties, New York**
by
Richard J. Reynolds
2007

Base from U.S. Geological Survey Digital Raster Graphics, 1:24,000, Universal Transverse Mercator projection, Zone 18, North American Datum of 1983

Hydrogeology by R.J. Reynolds, 2005