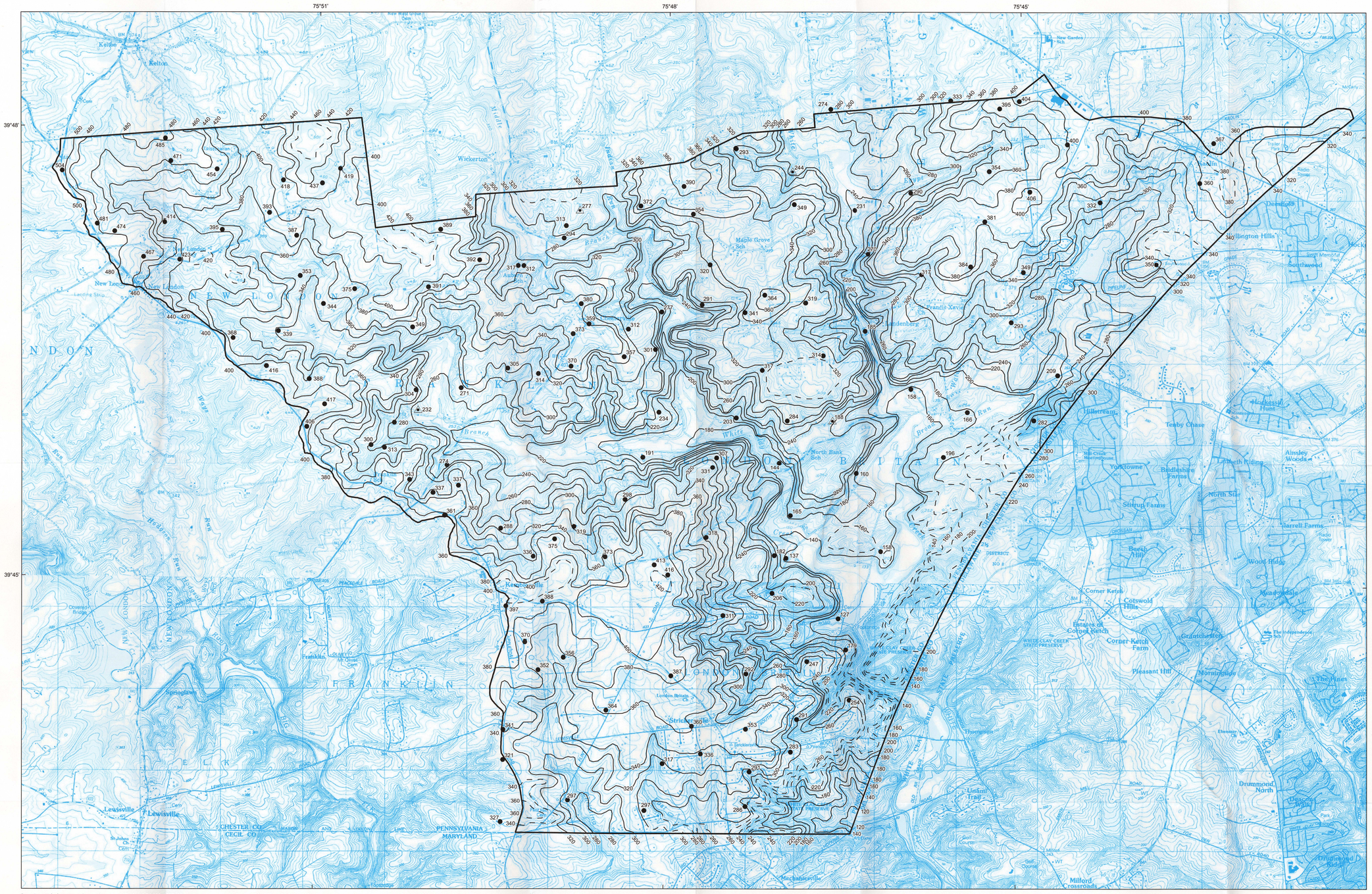
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
CHESTER COUNTY WATER RESOURCES AUTHORITY

SCIENTIFIC INVESTIGATIONS MAP 2939



Base from U.S. Geological Survey Bayview, MD.-PA., 1,24:000, 1997, 10-foot contours; Kennett Square, PA.-DEL., 1:24,000, 1993, 10-foot contours; Newark East, DEL., 1:24,000, 1993, 10-foot contours; Newark West MD.-DEL.-PA., 1:24,000, 1992, 10-foot contours; Oxford, 1:24,000, 1992, 10-foot contours; West Grove, PA., 1:24,000, 1999, 10-foot contours; National Geodetic Vertical Datum of 1929

SCALE 1:24,000

1 MILE
1,000 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 FEET
1 KILOMETER

INTRODUCTION

Since 1984, the U.S. Geological Survey (USGS) has been mapping the altitude and configuration of the potentiometric surface in Chester County as part of an ongoing cooperative program to measure and describe the water resources of the county. Areas where the potentiometric surface has been mapped are shown on figure 1. These maps can be used to determine the general direction of ground-water flow and are frequently referenced by municipalities and developers to evaluate ground-water conditions for water supply and resource-protection requirements (Wood, 1998).

For this study, the potentiometric surface was mapped for an area along the southeast boundary of Chester County that includes London Britain Township and parts of Franklin, New London, and New Garden Townships. The study area is mostly underlain by metamorphic rocks of the Wissahickon Formation and also mafic gneiss--amphibolite facies and pegmatite intrusions (Sloto, 1994). Ground water is obtained from these bedrock formations by wells that intercept fractures.

The altitude and configuration of the potentiometric surface was contoured from water levels measured in available wells and from the altitude of springs and perennial streams. Topography was used as a guide for contouring so that the altitude of the potentiometric surface was inferred nowhere to be higher than the land surface. The potentiometric surface shown on this map is an approximation of the water table. The altitude of the actual potentiometric surface may differ, especially in areas where wells are completed in a semi-confined zone or have long open intervals that reflect the composite hydraulic head of multiple water-yielding fractures. A composite head may differ from the potentiometric-surface altitude, particularly beneath hilltops and valleys where vertical hydraulic gradients are significant.

EXPLANATION

STUDY AREA BOUNDARY

360 POTENTIOMETRIC SURFACE CONTOUR--Shows the altitude of the potentiometric surface as defined by measured water levels in wells, altitudes of streams, springs, and topography. Contours are dashed where approximately located. Contour interval is 20 feet. Altitude in feet above National Geodetic Vertical Datum of 1929.

WATER-LEVEL MEASUREMENT SITES--Symbol gives location of site. Number is altitude of water level in feet above National Geodetic Vertical Datum of 1929. Sites outside the study area are shown if they were used to contour the potentiometric surface.

337 ALTITUDE OF STATIC WATER LEVEL IN WELL

270 ALTITUDE OF FLOWING SPRING

232 ALTITUDE OF STATIC WATER LEVEL NOT USED--Number is anomalous
Water-level altitude not used to contour the potentiometric surface. Included for information only.

Figure 1. Areas in Chester County where potentiometric-surface mapping has been completed. (Shaded area shows area mapped for this study.)

REFERENCES CITED

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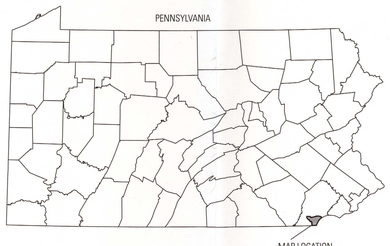
Wood, C.R., 1998, U.S. Geological Survey Cooperative Water-Resources Programs in Chester County, Pennsylvania: U.S. Geological Survey Fact Sheet 067-98, 6 p.



MAP LOCATION

REFERENCES FOR COMPLETED POTENTIOMETRIC MAPS CITED IN FIGURE 1

Aichele, S.S., and Wood, C.R., 1996, Altitude and configuration of the potentiometric surface in the crystalline and metasedimentary rocks in East Brandywine, Upper Uwchlan, and Uwchlan Townships and parts of Caln, East Caln, and West Whiteland Townships, Chester County, Pennsylvania, April 1993 through June 1994: U.S. Geological Survey Open-File Report 96-338, 1 plate, scale 1:24,000.

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McManus, B.C., and Sloto, R.A., 1994, Altitude and configuration of the potentiometric surface, May and June 1993, and change in water level 1983-93, in the carbonate rocks in part of East Whiteland and Charlestown Townships, Chester County, Pennsylvania: U.S. Geological Survey Open-File Report 93-659, 1 plate, scale 1:24,000.

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Mohammad, Abdul, 2001, Altitude and configuration of the potentiometric surface in the lower Elk Creek watershed, Chester County, Pennsylvania, March through September 2000: U.S. Geological Survey Open-File Report 01-329, 1 plate, scale 1:24,000.

Mohammad, Abdul, 2002, Altitude and configuration of the potentiometric surface in Highland and West Fallowfield Townships, Chester County, Pennsylvania, March through July 2001: U.S. Geological Survey Open-File Report 02-167, 1 plate, scale 1:24,000.

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ALTITUDE AND CONFIGURATION OF THE POTENTIOMETRIC SURFACE IN THE LOWER WHITE CLAY CREEK AND UPPER CHRISTINA RIVER BASINS INCLUDING PORTIONS OF FRANKLIN, LONDON BRITAIN, NEW GARDEN, AND NEW LONDON TOWNSHIPS, CHESTER COUNTY, PENNSYLVANIA, JUNE THROUGH SEPTEMBER 2005

By
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2006