



Base from U.S. Geological Survey  
Ellenville and Kerhonkson,  
1989; Napanoch, 1956

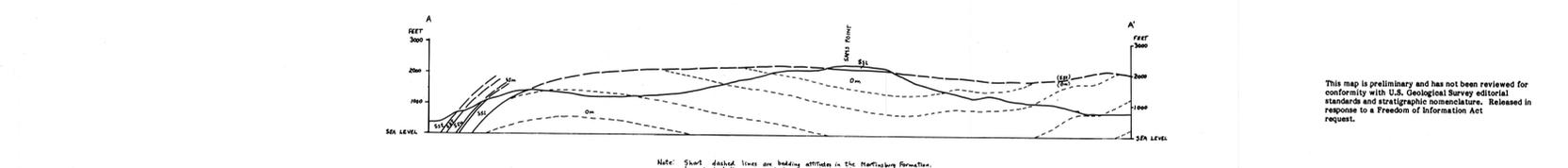
SCALE 1:24,000

CONTOUR INTERVAL 20 FEET  
DATUM IS MEAN SEA LEVEL

UTM GRID AND 1983 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET

QUADRANGLE LOCATION

Geology mapped 1985-1987



This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature. Released in response to a Freedom of Information Act request.

CORRELATION OF MAP UNITS

D	Holocene	Quaternary
Qal		
Qet	Pleistocene	Quaternary
Qaf		
Ql		
Qsd		
Qt		
unconformity		
Da	Middle Devonian	Devonian
Dm		
Db		
Do	Lower Devonian & Upper Silurian	Devonian
SDu		
Shf	Middle Silurian	Silurian
Sst		
Sbt		
Ssu		
Ssm		
Ssl	Upper to Middle Ordovician	Ordovician
Om		

DESCRIPTION OF MAP UNITS

- Surficial Deposits**
- D DUMPS (Holocene)--Waste blocks of slate from the Martinsburg Formation from excavation of the Delaware Aqueduct.
- Qal ALLUVIUM (Holocene)--Well to moderately sorted clay, silt, sand, and gravel in river-bed and flood-plain deposits of present streams. Probably does not exceed 20 feet (6 m) in thickness.
- Qet STREAM TERRACE DEPOSITS (Holocene)--Clayey silt and sand with minor cobbles and boulders along Shawangunk Kill and Dwaar Kill. At least 10 feet (3 m) thick.
- Qaf ALLUVIAL FAN DEPOSITS (Pleistocene)--Poorly sorted cobbles and boulders in a clay-silt matrix. At least 50 feet (15 m) thick.
- Ql LAKE-BED DEPOSITS (Pleistocene)--Dark olive gray clay and silt south of the Shawangunk Mountains, and clay with interbedded sand and minor gravel along the valley of Rondout Creek.
- Qsd STRATIFIED DRIFT (Pleistocene)--Stratified and sorted sand and gravel with minor clay and silt. Includes deltaic deposits north of Rondout Creek. Probably exceeds 100 feet (30 m) in thickness.
- Qt TILL (Pleistocene)--Poorly sorted compact mixture of clay, silt, sand, and boulders. May comprise northeast-trending drumlin in southeast part of map. Some of the erratics are more than 10 feet (3 m) long. Mixed with colluvium in many places, especially on the steep slopes of the Shawangunk Mountains. More than 50 feet (15 m) thick in places.
- AREA OF THIN TILL (Pleistocene)--Veneer of till in the Shawangunk Mountains. Not labeled with a separate symbol on the map because there are many scattered exposures of the Shawangunk bedrock. Generally less than 3 feet (1 m) thick, but may be more than 20 feet (6 m) thick in places. Determined in part by aerial photo interpretation.
- Bedrock Units**
- Da ASHOKAN FORMATION (Middle Devonian): Thin- to thick-bedded, olive-gray sandstone, and minor siltstone and shale. 500-700 feet (150-210 m) thick.
- Dm MOUNT MARION FORMATION (Middle Devonian): Olive-gray to dark-gray, platy, very fine- to medium-grained sandstone, siltstone, and shale. Probably more than 1000 feet (300 m) thick.
- Db BAKOVEN SHALE (Middle Devonian): Dark-gray shale; probably buried under glacial drift in map area. About 250 feet (75 m) thick.
- Do ONONDAGA LIMESTONE (Middle Devonian): Medium-gray, cherty fossiliferous limestone. About 100 feet (30 m) thick.
- SDu UNEXPOSED SILURIAN AND DEVONIAN ROCKS: Includes the SCHONARIE FORMATION (Lower Devonian); calcareous mudstone and limestone; SEQUE FORMATION (Lower Devonian; non-calcareous, siliceous, argillaceous siltstone and silty shale); GLENHIEB FORMATION of Chadwick (1908) (Lower Devonian); siliceous limestone, chert, and CONNELLY CONGLOMERATE (Lower Devonian); pebble conglomerate, quartz arenite, shale, and chert; PORT EMMEN FORMATION (Lower Devonian); calcareous, partly cherty mudstone and limestone; ALSEN LIMESTONE (Lower Devonian); argillaceous and partly cherty limestone; BECHAFT LIMESTONE (Lower Devonian); crinoidal limestone; NEW SCOTLAND FORMATION (Lower Devonian); calcareous mudstone and silty limestone; KALKBERG LIMESTONE (Lower Devonian); cherty limestone and calcareous shale; RAYNA LIMESTONE MEMBER of COPRANS FORMATION (Lower Devonian); limestone with abundant thin shaly partings; THACHER MEMBER OF THE MANLIUS LIMESTONE (Lower Devonian); laminated limestone with some shale; RONDOUT FORMATION (Lower Devonian and Upper Silurian); limestone and argillaceous dolomite; BINNEWATER SANDSTONE of Hartnagel (1905) (Upper Silurian); quartz arenite, with shale and shaly limestone; probably limestones with the Pokono Island Formation in this area); POKONO ISLAND FORMATION (Upper Silurian); dolomite and shale, possibly with red shales in the lower part. About 1,000 feet (300 m) thick.
- Shf HIGH FALLS SHALE (Upper Silurian): Red and green, laminated to massive, calcareous shale and siltstone, occasional thin argillaceous limestone and dolomite. Ripple marks, desiccation cracks. About 50 feet (15 m) thick.
- Sst TONGUE OF THE SHAWANGUNK FORMATION (Middle Silurian): Cross-bedded, cross-laminated (distinctive heavy-light and medium-dark-gray laminae), and planar bedded, thin- to thick-bedded, medium-grained quartzite and conglomerate with quartz pebbles as much as 2 in long and greenish-gray silty shale and siltstone. 125-350 feet (40-110 m) thick.
- Sbt TONGUE OF THE BLOOMSBURG RED BEDS (Middle Silurian): Grayish-red siltstone and shale, and slightly conglomeratic, partly cross-bedded sandstone with pebbles of milky quartz, jasper, and rock fragments, and gray sandstone. 07-125 feet (0-40 m) thick.
- Ss SHAWANGUNK FORMATION (Middle Silurian): UPPER MEMBER (Ssu) AND LOWER MEMBER (Ssl): Cross-bedded and planar-bedded, medium- and light-gray, channelled, quartz-pebble conglomerate (rose quartz conspicuous in upper part), and quartzite; MIDDLE MEMBER (Ssm); gray shale and siltstone, thin-bedded and cross-bedded quartzite, and lesser red and green shale. Lower contact unconformable. 500-600 feet (150-180 m) thick. Rests unconformably on poorly exposed Lower Silurian or Upper Ordovician diastictite (colluvium with exotic pebbles that is less than one foot (0.3 m) thick, shale-chip gravel probably less than 5 feet (1.5 m) thick, and fault gouge of sheared clay and quartz veins) which is unconformable on the underlying Martinsburg Formation.
- Om MARTINSBURG FORMATION (Upper and Middle Ordovician): Laminated to medium-bedded, medium dark-gray shale and slate with fine-grained graywacke siltstone interbedded with very thin- to thick-bedded graywacke (as much as 6 feet (2 m) thick). Probably more than 10,000 feet (3,000 m) thick.

Note: For a more complete description of the geology of the area see Epstein, J.B. and Lytle, P. T., 1987, Structure and stratigraphy above, below and within the Taconic unconformity, southeastern New York, in Walnes, Russell H. ed., New York State Geological Association, 59th annual meeting, Kingston, N.Y., November 6-8, 1987, Fieldtrip Guidebook: New Paltz, N.Y. State University of New York, College at New Paltz, p. C1-C78.

EXPLANATION OF MAP SYMBOLS

- CONTACT---Long dashed where approximately located; short dashed where inferred; dotted where concealed
- FAULTS---Long dashed where approximately located; short dashed where inferred; dotted where concealed; U, D, U, up
- LAKE AMONGING SHEAR ZONE--Highly folded and faulted horse with northwest-verging folds
- FOLDS--Shows trace of axial surface. Long dashed where approximately located; short dashed where inferred; dotted where concealed. Fold of Taconic age in the Martinsburg Formation along the west slope of Shawangunk Mountain is shown as concealed under the Shawangunk Formation
- Anticline
- Syncline
- PLANAR FEATURES**
- Strike and dip of bedding--May be combined with slaty cleavage where parallel in strike but divergent in dip
- Inclined
- Vertical
- Horizontal
- Overturned
- Strike and dip of slaty cleavage--May be combined with bedding where parallel in strike but divergent in dip
- Strike and dip of crenulation cleavage
- LINEAR FEATURES**
- Bearing and plunge of intersection of bedding and slaty cleavage
- Inclined
- Horizontal

PRELIMINARY GEOLOGIC MAP AND CROSS SECTION OF THE ELLENVILLE AND KERHONKSON QUADRANGLES (IN PART) AND THE NAPANOCH QUADRANGLE, ULSTER AND ORANGE COUNTIES, NEW YORK

By  
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1990