

# BEDROCK TOPOGRAPHY OF YATES COUNTY, NEW YORK

Hailey M. Forgeng and Richard A. Frieman

2024

## Introduction

Beginning in 2019, under the guidance and funding provided by the United States Geological Survey - Great Lakes Geological Mapping Coalition (award G20AC00401), the New York State Museum - Geological Survey began a statewide effort to conduct geologic mapping of bedrock elevations throughout New York. Yates County, of central New York, is within the Alleghany Plateau physiographic province. The county is nestled between Ontario, Seneca, Schuyler, and Steuben Counties. Yates County is also located along three large bodies of water, Canandaigua Lake, Keuka Lake, and Seneca Lake. Surficial and subsurface bedrock point data and maps were compiled from publicly available sources, vetted, and organized into a comprehensive geospatial database. A technical workflow was developed to categorize the overall geology and differentiate between the underlying bedrock and overlying unconsolidated sediments. The resulting bedrock elevation map provides a detailed representation of bedrock topography across Yates County. This map is useful for various applications, including geological studies, engineering and construction, natural resource management (such as water or mineral resources), and environmental studies.

## Methodology

A total of 1,174 bedrock control points were used to delineate bedrock topography in Yates County. These points consisted of 930 water wells, 214 bedrock outcrops and 30 thruway engineering boreholes. These data were compiled from a variety of public sources and imported into ESRI's ArcMap 10.8 software platform. Ground surface elevations for all control points were extracted from a digital elevation model (DEM) which was resampled to match a 1-meter LIDAR DEM cell size. Bedrock elevations were calculated at each location by subtracting the depth-to-bedrock from the ground surface elevation. Fifty-foot bedrock elevation contours were auto-generated and manually refined through a multi-step quality control process to resolve any interpolation errors. The finalized contours were converted into a 1-meter raster, using the "Topo to Raster" tool, that represents county-wide bedrock topography.

## Explanation

- Data Point
- 50ft Bedrock Elevation Contour
- 100ft Bedrock Elevation Contour
- Highway
- Yates County Line
- Adjacent County
- Water Body

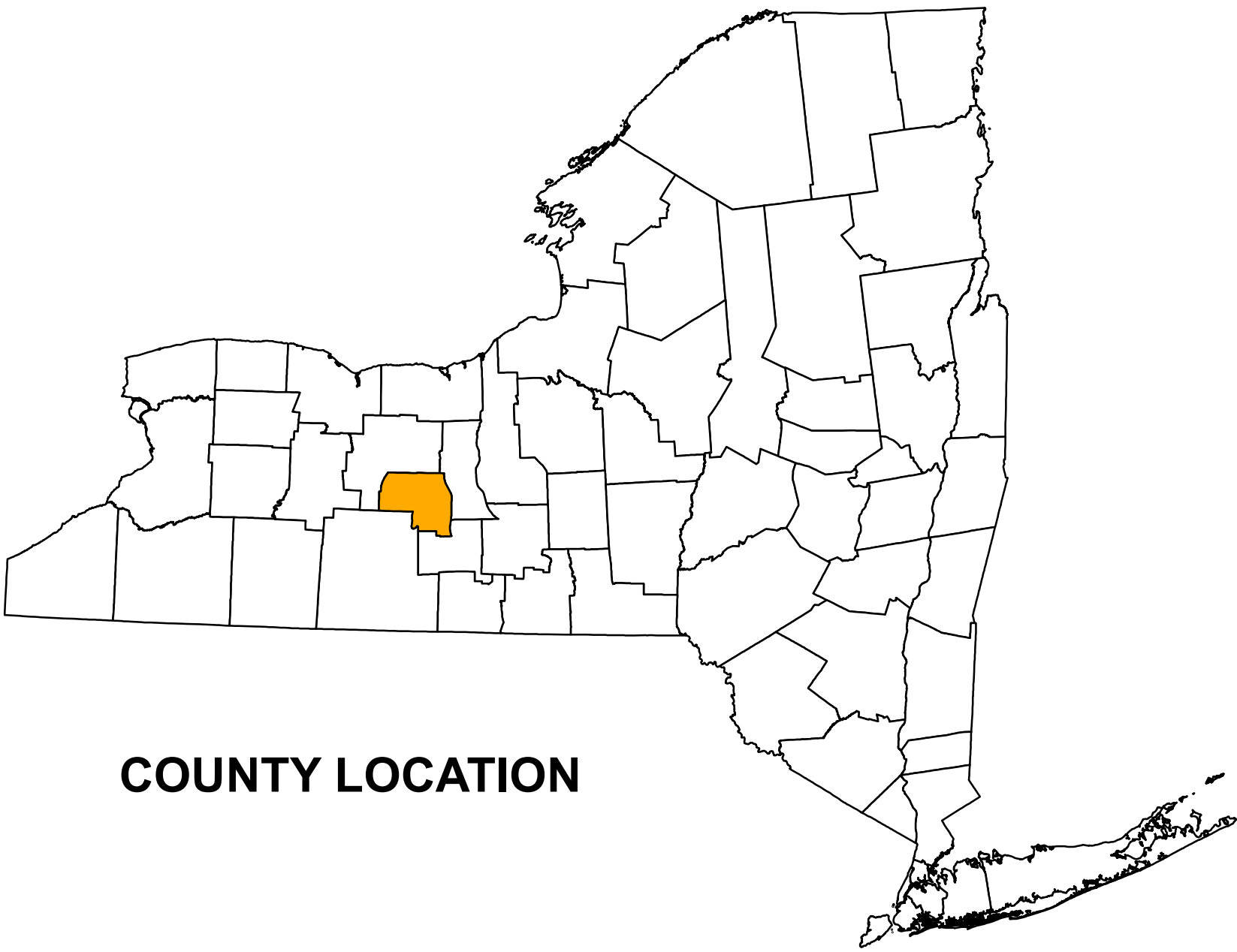
### Bedrock Topography

Feet-amsl

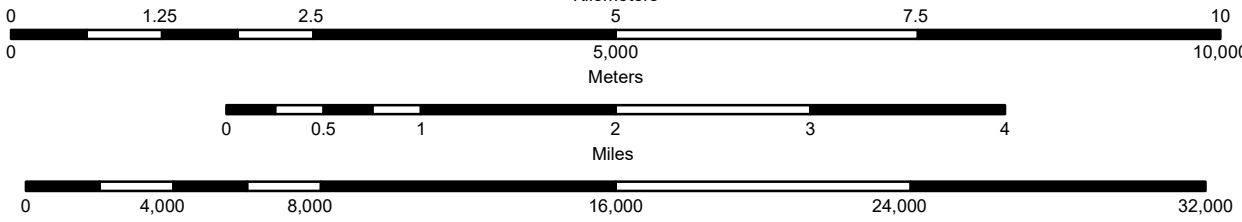
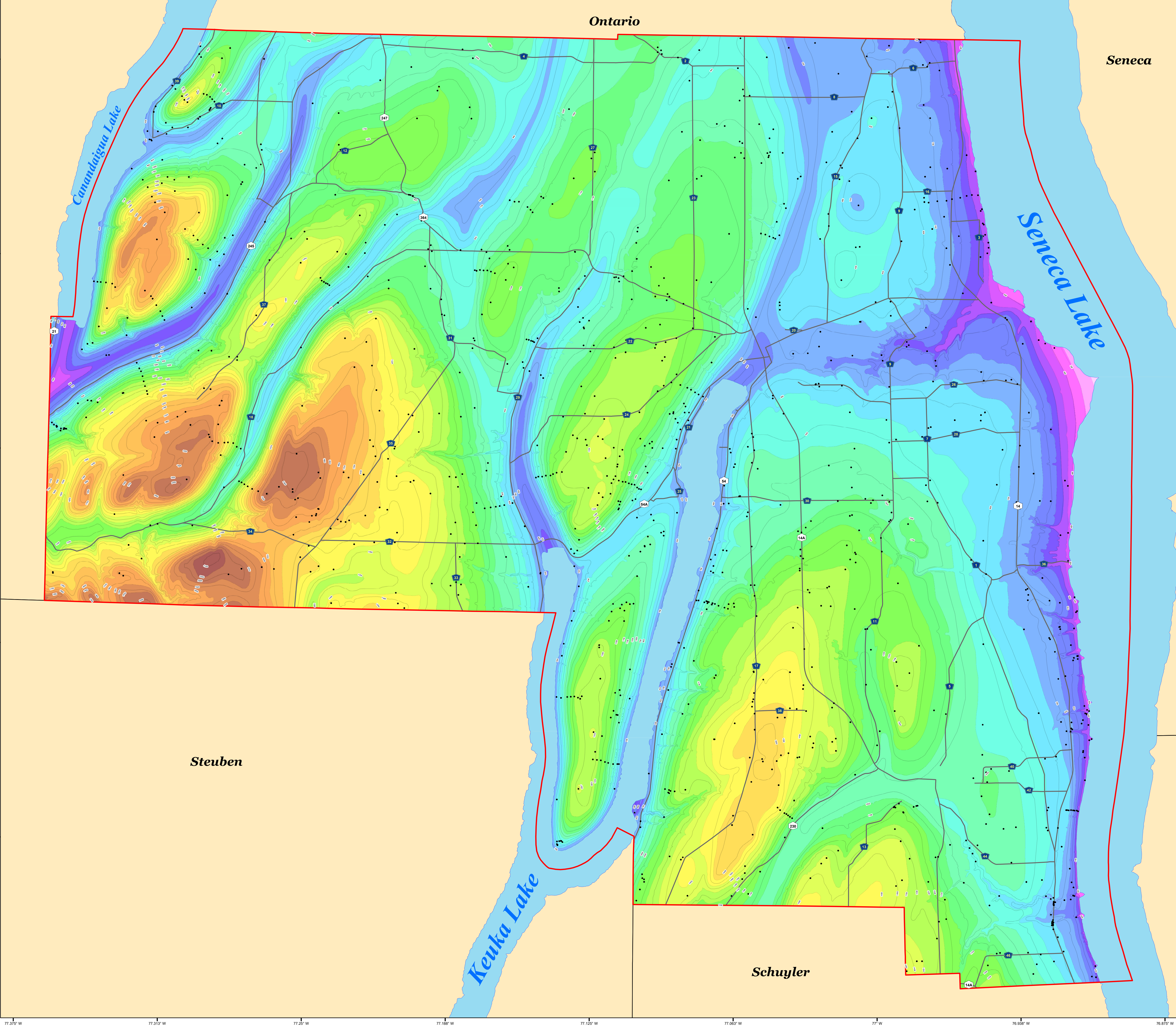
- 200 - 250
- 250 - 300
- 300 - 350
- 350 - 400
- 400 - 450
- 450 - 500
- 500 - 550
- 550 - 650
- 650 - 750
- 750 - 850
- 850 - 950
- 950 - 1,050
- 1,050 - 1,150
- 1,150 - 1,250
- 1,250 - 1,350
- 1,350 - 1,450
- 1,450 - 1,550
- 1,550 - 1,650
- 1,650 - 1,750
- 1,750 - 1,850
- 1,850 - 1,950
- 1,950 - 2,050
- 2,050 - 2,150

## Summary

The New York State Museum – Geological Survey has developed a detailed Bedrock Topography Map for Yates County. This map represents a compilation of various surficial and subsurface bedrock data sources, analytical methods, and quality control procedures. The resulting bedrock elevations reveal a range of distinct geological features including a variety of Paleozoic bedrock erosional profiles, and evidence of past glaciation. These characteristics are likely the result of a variety of functions including bedrock stratigraphy, structural deformation, and erosional processes such as past glaciation and fluvial geomorphology. This map is significant for applications in geological research, engineering, natural resource management, and environmental studies. Continued research and work on subsurface geology will provide additional data and insight and enhance the geologic framework of bedrock geology throughout New York State.



COUNTY LOCATION



NOTICE  
This geologic map was funded in part by the USGS National Cooperative Geologic Mapping Program (NCGMP) award number G30400416 in the year 2021.  
The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.  
While every effort has been made to ensure the integrity of this digital map and the factual data upon which it is based, the New York State Department of Environmental Conservation (DEC) cannot be held responsible for any errors or omissions, or for any consequences arising from the use of the information contained herein. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by DEC.

