

# BEDROCK TOPOGRAPHY OF CHAUTAUQUA COUNTY, NEW YORK

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### 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. Chautauqua County, of Western New York, is bound to the west and the south by the Pennsylvania border, to the east by Cattaraugus County, to the north by Erie County and Lake Erie to the northwest. 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 Chautauqua 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

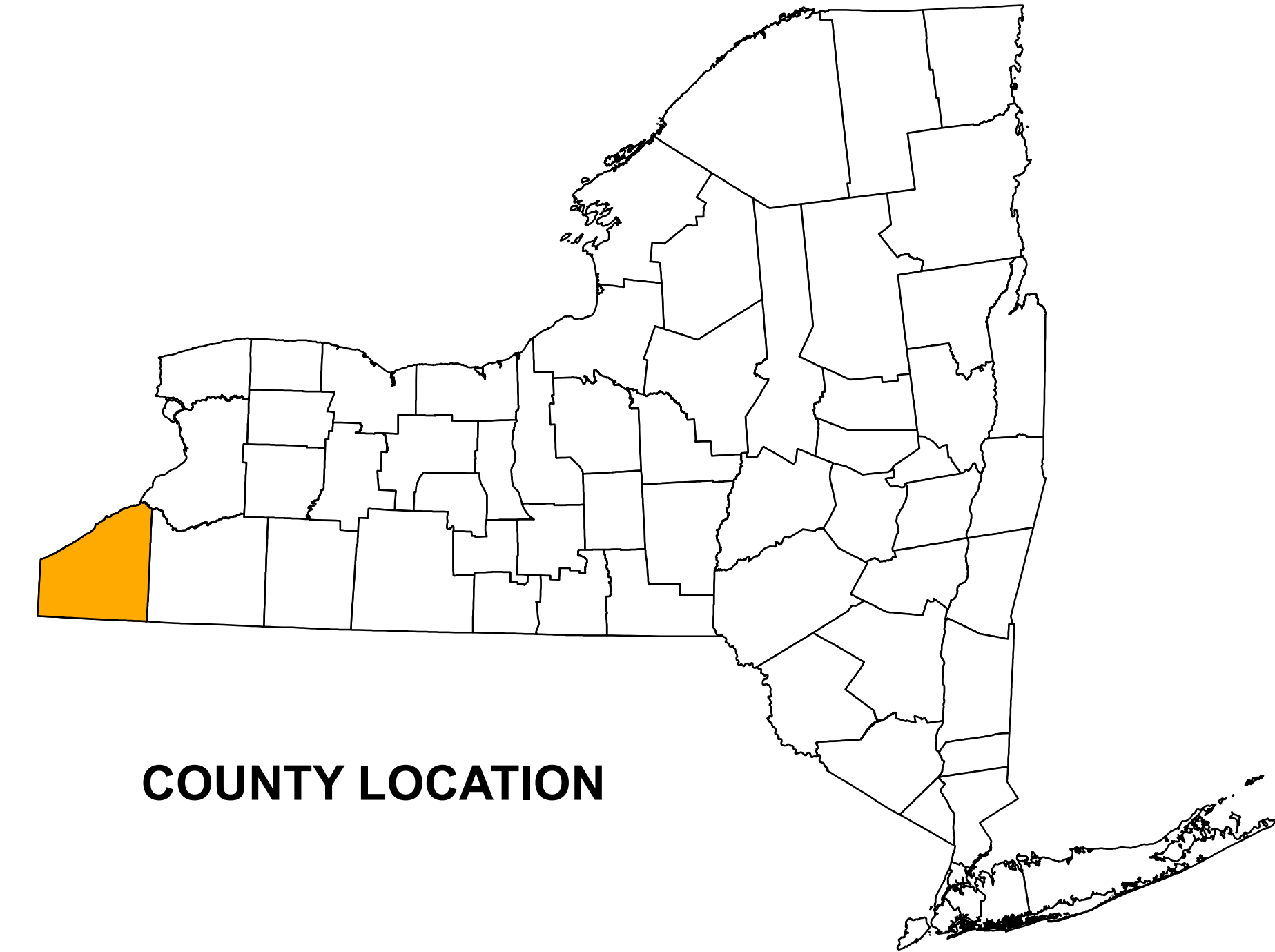
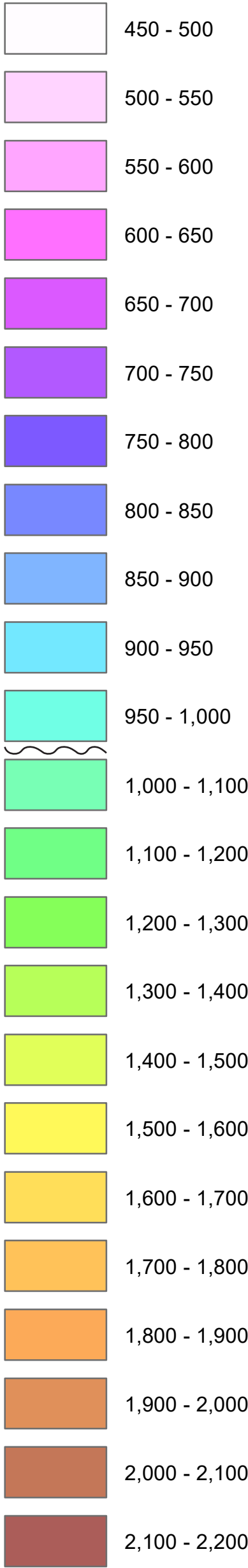
A total of 3,718 bedrock control points were used to delineate bedrock topography in Chautauqua County. These points consisted of 3,013 water wells, 325 bedrock outcrops, 318 engineering boreholes and 62 waterfall locations. These data were compiled from a variety of public sources and imported into ESRI's ArcMap 10.8 software platform. Ground surface elevations for all control points were extracted from the highest available resolution LIDAR DEM data available and subsequently resampled to a cell size/resolution of 1m x 1m. Bedrock elevations were calculated at each location by subtracting the depth-to-bedrock from the ground surface elevation. Bedrock elevation contours generated by ArcMap at a 50-foot interval were 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, the product of which is the county-wide bedrock topography map.

### Explanation

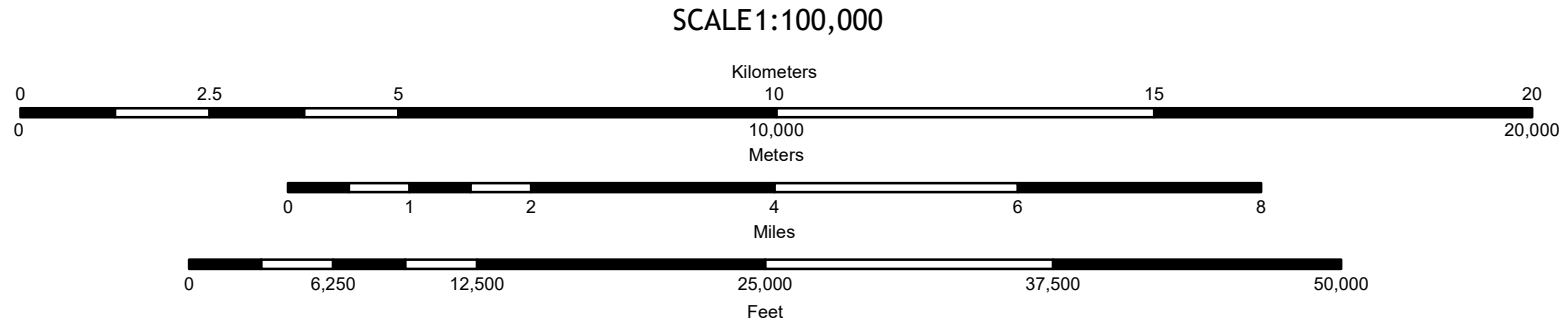
- Data Point
- 50ft Bedrock Elevation Contour
- 100ft Bedrock Elevation Contour
- Highway
- Chautauqua County Line
- New York State Line
- Adjacent County
- Water Body

### Bedrock Topography

Feet-amsl



COUNTY LOCATION



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