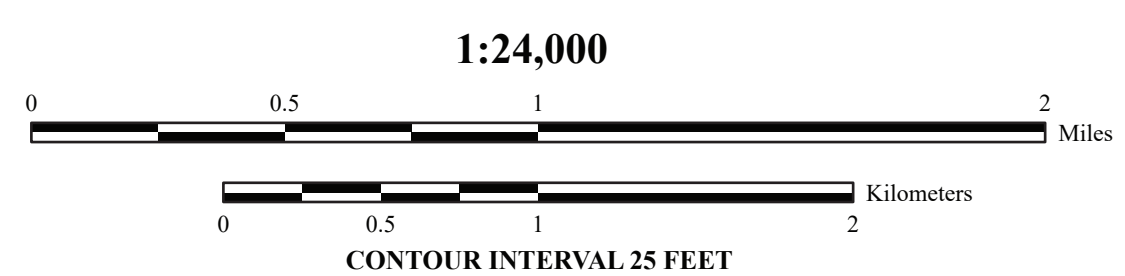
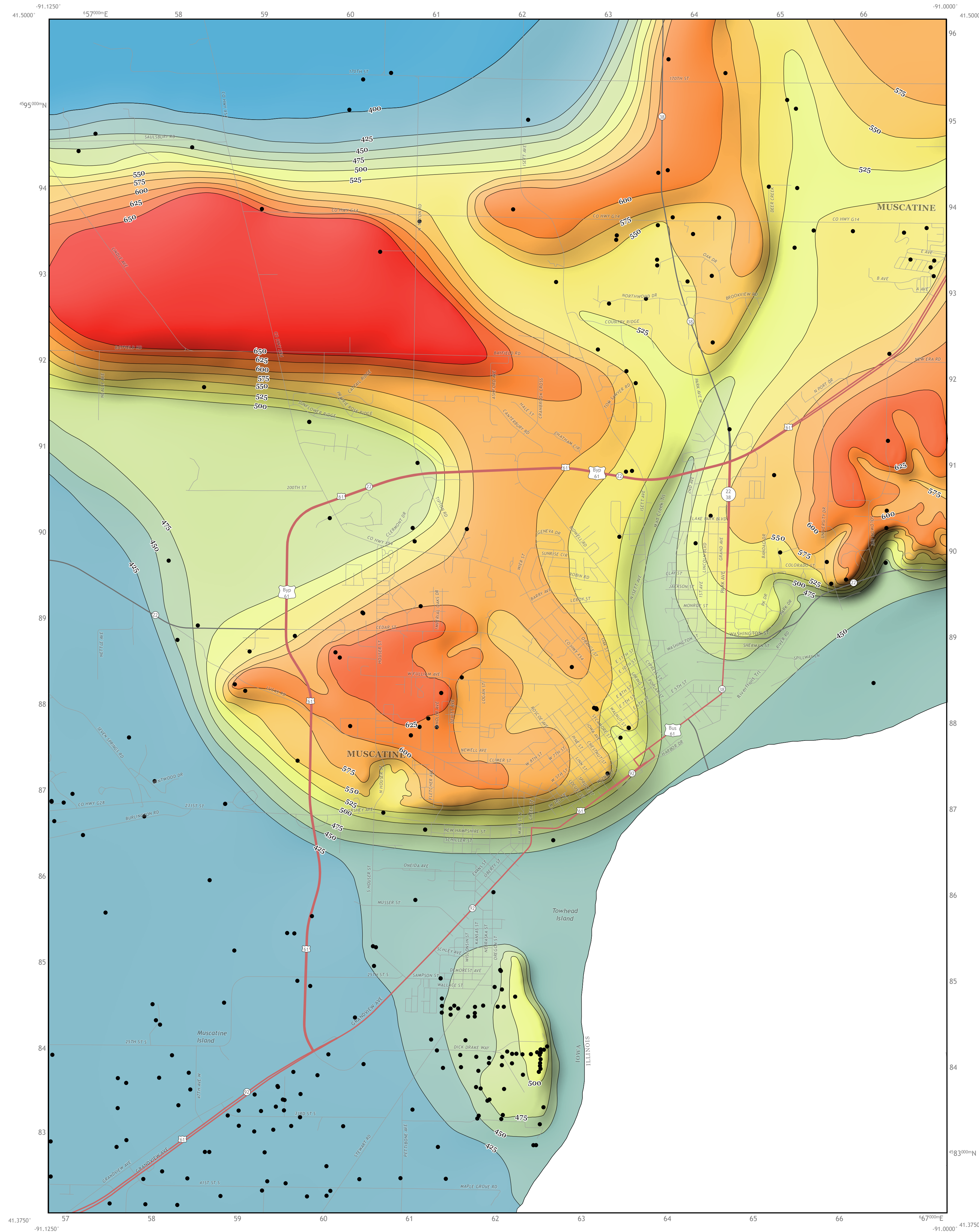


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BEDROCK ELEVATION



INTRODUCTION

The Muscatine Quadrangle in Muscatine County, Iowa, and Rock Island County, Illinois, is located within the Southern Iowa Drift Plain (SIDP) and Mississippi Valley Alluvial Plain (MVAP) landform regions. The SIDP is an area with a topography defined by loess-mantled uplands and slopes, whereas the MVAP is a low-relief floodplain consisting of sediment deposited by the Mississippi River. The top of the till package of the SIDP in this map area is Illinoian-age diamiction of the Glasford Formation. Glacial till is largely missing in the MVAP due to the development of the Mississippi River Bedrock Channel throughout the Quaternary. There is very little bedrock outcrop in the map area due to burial by Quaternary materials.

The bedrock surface of the Muscatine Quadrangle is dominated by Middle Devonian strata of the Wapsipicon and Cedar Valley groups which are unconformably overlain by erosional outcrops of the Lower and Middle Pennsylvanian Racoon Creek Group (Muscatine [formerly "Caseyville"] and Tradewater formations). In the northwest corner of the quadrangle the Silurian Scotch Grove Formation is exposed at the bedrock surface. Erosion during the Quaternary has exposed Devonian units along the Mississippi River Bedrock Channel, however both Devonian and Pennsylvanian strata outcrop along its bluffs.

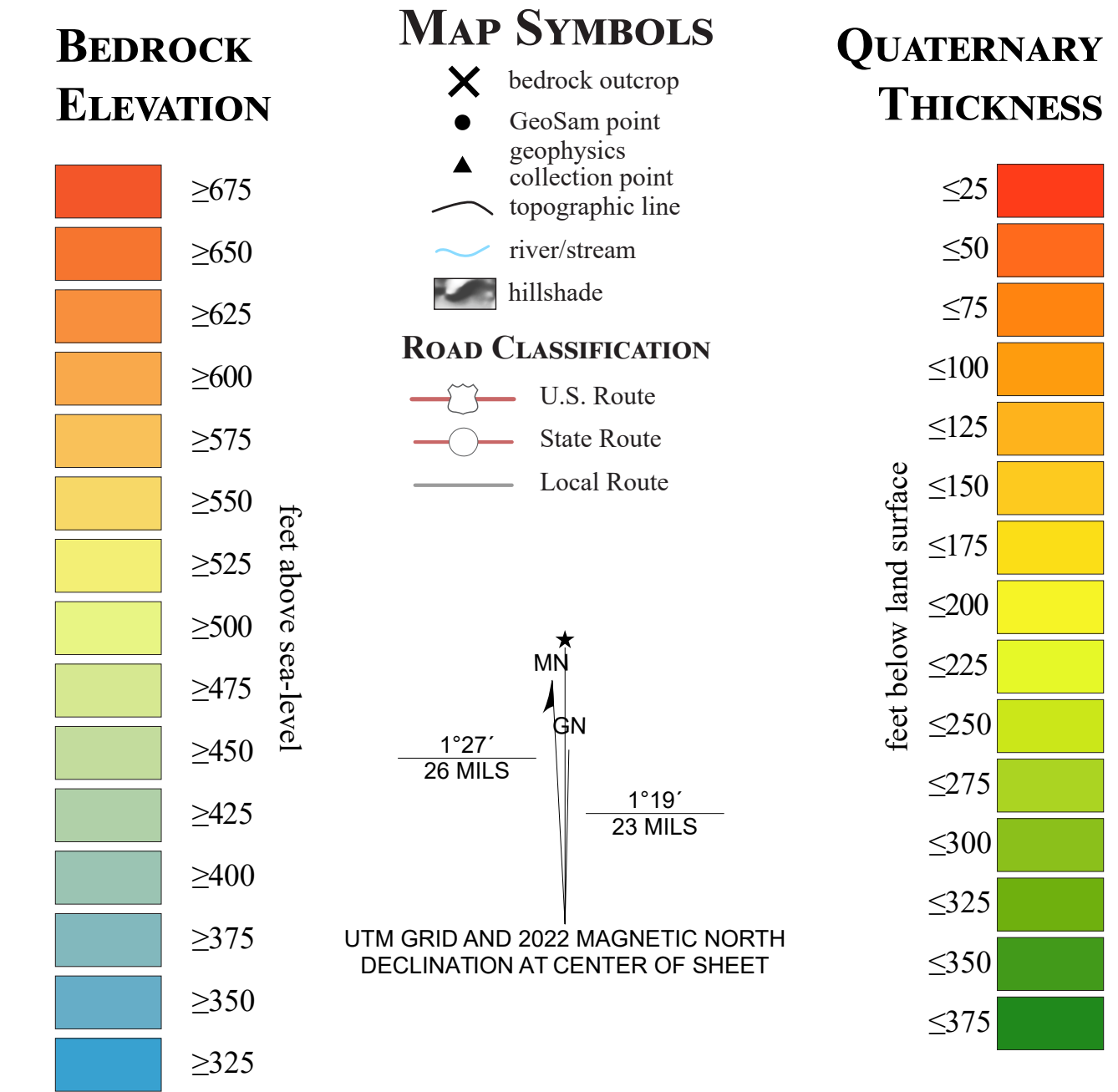
The Bedrock Elevation and Quaternary Thickness Maps of the Muscatine 7.5' Quadrangle were produced concurrently with the Bedrock Geologic Map (Open File Map OFM-22-4). Like much of Iowa, the bedrock surface within the quadrangle is mostly concealed by glacial deposits. The boundary between Paleozoic bedrock and unconsolidated Quaternary deposits is likely just as irregular as the land surface itself, as a result, the thickness of the Quaternary varies widely across the quadrangle and ranges from 7 to 100 m (25-325 ft).

METHODOLOGY

The Bedrock Elevation and Quaternary Thickness Maps of the Muscatine 7.5' Quadrangle were constructed using the same datasets as the Bedrock Geologic Map (Open File Map OFM-22-4). Geologic information utilized included drilling records housed in the Iowa Geological Survey (IGS) GeoSam database, existing maps and technical reports, Iowa Department of Transportation data, and reports from engineering projects and quarry operators.

More than 200 boring records from the IGS GeoSam database, including both driller's logs and lithologic descriptions of well cutting samples (strip logs), were evaluated for the Muscatine Quadrangle. Each record was checked for locational accuracy using information from the driller's logs, historic plat blocks, county assessor information, and direct communication with landowners. The depth to the surficial-bedrock contact was determined for each well and assigned an elevation value by subtracting it from the surface digital elevation model (DEM). These data points provided the framework for the Bedrock Elevation Map. Additional information was gained from an assessment of the Natural Resources Conservation Service county soil survey by identifying soil series that indicate shallow bedrock.

To create the Bedrock Elevation Map bedrock elevation contours were digitized manually on-screen using ArcGIS software at a 25-foot contour interval. The bedrock elevation raster was generated using interpolations of the bedrock surface created with the 'Topo to Raster' and 'Empirical Bayesian Kriging' tools in ArcGIS Pro 3.0. The Quaternary Thickness Map was created by subtracting the bedrock elevation raster values from the surficial DEM raster. The resulting surface was rounded to the nearest integer and contours were generated from this result and then smoothed.



ADJOINING QUADRANGLES	
1	2
3	4
5	6
7	8

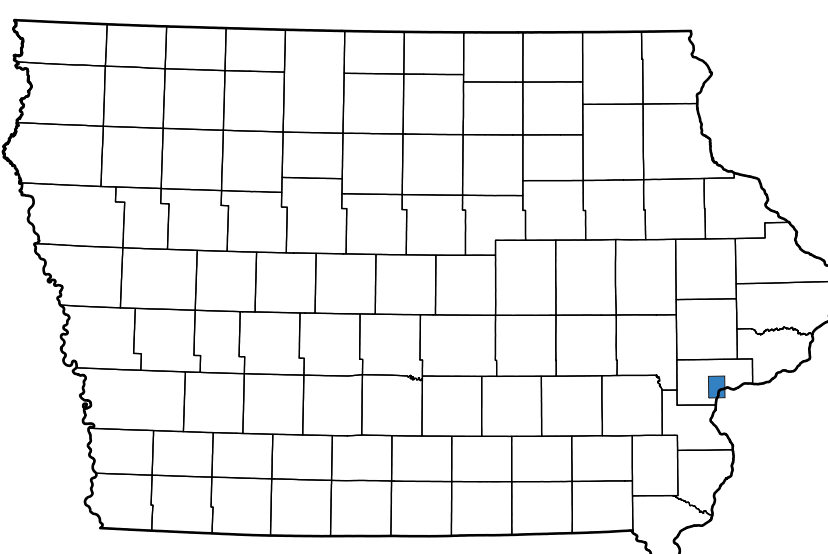


Figure 1. The location of Muscatine Quadrangle in Iowa.

ACKNOWLEDGEMENTS

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Revised from the USGS Muscatine 7.5' Quadrangle map published by the U.S. Geological Survey in 2016. Map projection and coordinate system based on Universal Transverse Mercator (UTM) Zone 16N, datum NAD 83. The map is based on an interpretation of the best available information at the time of mapping. Map interpretations are not a substitute for detailed site-specific data reported or compiled by the U.S. Government. This map is provided as a public service and should not be interpreted as representing the official policies, either expressed or implied, of the U.S. Government. Reprinted by permission of the U.S. Geological Survey Cooperative Agreement Number G12AC0000 National Cooperative Geologic Mapping Program (NCGMP).

QUATERNARY THICKNESS

