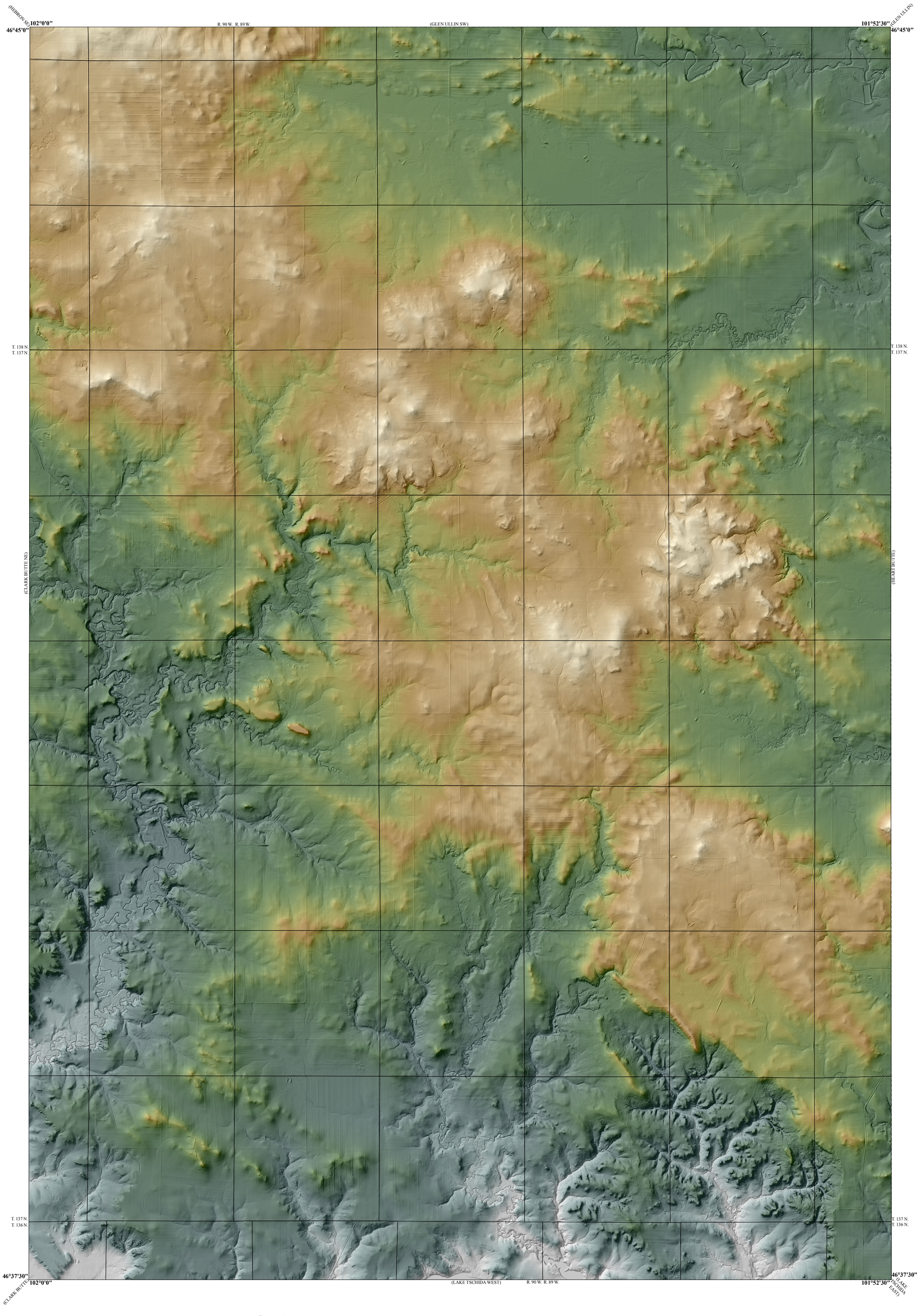
North Dakota Geological Survey
24K: HrtB NW- lid

Edward C. Murphy, State Geologist
Lynn D. Helms, Director Dept. of Mineral Resources

LiDAR
Heart Butte NW Quadrangle, North Dakota



Christopher A. Maike

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EXPLANATION

Light Detection and Ranging (LiDAR) is a remote sensing tool used to gain detailed observations of the earth's surface. LiDAR is collected by a near-infrared laser pulsing at the earth's surface in order to measure the distance and deduce an elevation value. The resulting data consists of x-value (latitude), y-value (longitude), and a z-value (elevation), allowing the location and elevation to be known for a given point. On this map, these points are typically collected with a spacing of approximately 1-meter and then assembled into separate tiles. These tiles are then assembled and mosaicked into a larger area (such as a 1:24,000 quadrangle) as a digital elevation model (DEM). The DEM of this dataset is represented as a raster to reveal surface expression and topographic relief of earth's surface.

The Geological Survey assembled this map using LiDAR data published in 2014. LiDAR data was available in ASCII formatted tiles from the North Dakota State Water Commission website. These tiles were imported into ArcGIS and mosaicked to one another using raster features within ArcMAP, and clipped to fit with this 24k quadrangle. For more details on how the North Dakota Geological Survey LiDAR Maps were constructed, please contact Chris Maike at camaike@nd.gov.

The Shaded Relief LiDAR Topographic series could not have been compiled without the financial support of numerous individuals, agencies, and organizations within the state of North Dakota over the last several years, LiDAR collection began with a massive effort led by the International Water Institute to create a consortium of stakeholders, both public and private, to contribute funding for the collection of LiDAR data for the U.S. portion of the Red River Valley. Efforts than turned to the James River Valley where the US Fish and Wildlife Service (funding lead), Natural Resources Conservation Service, the Army Corps of Engineers, and the North Dakota State Water Commission worked together to collect the data. The Mouse (Souris) River Valley collection was funded by the ND State Water Commission to address flooding concerns in the region. A number of forward thinking counties (e.g., Ward, McKenzie, Mercer, Dunn and Williams) partnered with the State Water Commission to complete collections for their areas. The US NRCS office in Bismarck was able to procure funding to essentially finish collections along the Missouri Coteau and the vast majority of the south-west corner of the state. FEMA has also contributed resources to finish the collection of data in Williams and Stark counties. We would like to acknowledge these organizations and the dedicated individuals involved with the collection of this vast and detailed dataset across the State of North Dakota.

The North Dakota State Water Commission is further acknowledged for providing the state-wide LiDAR dissemination map service (http://lidar.swc.nd.gov/) which stores the extremely large volume of LiDAR data thus enabling the Geological Survey to generate this map.

Elevation

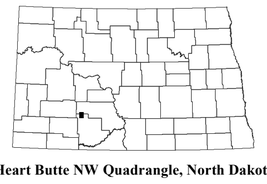
Above Sea-Level (feet)

2444

2065

Other Features

Section Line



Heart Butte NW Quadrangle, North Dakota

0 0.25 0.5 1

Miles

Lambert Conformal Conic Projection
North American 1983 Datum
Central Meridian 101°56'15"W
Standard Parallels 46°37'30"N, 46°45'0"N

N
W E
S

Cartographic Compilation: Steve Kranich