

PRELIMINARY SURFICIAL GEOLOGY OF THE LAKE AFTON QUADRANGLE, SEDGWICK COUNTY, KANSAS

by Kate A. Andrzejewski

2022

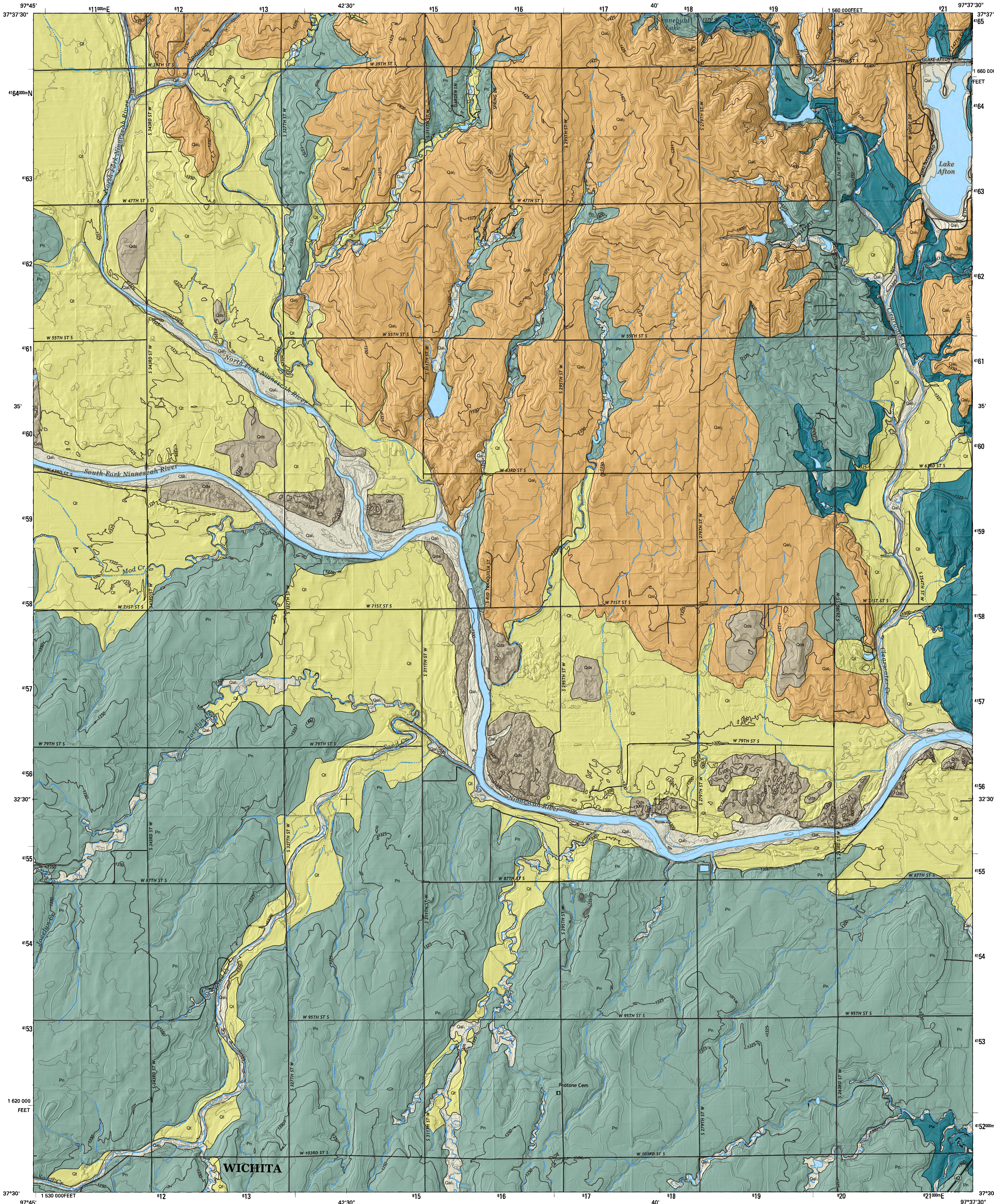
Computer compilation and cartography by Kolbe D. Andrzejewski, Cesalea N. Osborne, and John W. Dunham



U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY



LAKE AFTON QUADRANGLE
KANSAS - SEDGWICK COUNTY
7.5-MINUTE SERIES



GEOLOGIC UNITS

CENOZOIC

Quaternary System

Holocene

- Qal₁** **Undifferentiated floodplain alluvium**
- Qt** **Alluvial terrace deposits**
- Qal₂** **Upland alluvium**
- Qds** **Dune sand**

PALEOZOIC

Permian System
Leonardian Series
Summer Group

- Pn** **Ninnescah Shale**
- Pwe** **Wellington Formation**

EXPLANATION

Geologic Unit Boundaries

— Observed contact

SOURCES

- Kansas Geological Survey, 2022. Water well completion records (WWCS). <http://www.kgs.ku.edu/Magellan/WaterWell/index.html>.
- Lane, C. W., and Miller, D. E., 1965. Geology of Sedgewick County, Kansas: Kansas Geological Survey of Kansas, Bulletin 176, 100 p.
- Lane, C. W., and Miller, D. E., revised 1991. Geologic map of Sedgewick County, Kansas: Kansas Geological Survey, Map M-25, scale 1:50,000.
- Penner, H. L., and Wehmueller, W. A., 1979. Soil survey of Sedgewick County, Kansas: U.S. Department of Agriculture, Soil Conservation Service and Kansas Agricultural Experiment Station, 126 p.
- Swineford, A., 1955. Petrography of Upper Permian rocks in south-central Kansas: Kansas Geological Survey of Kansas, Bulletin 111, 179 p.
- Ver Wiebe, W. A., 1937. The Wellington formation of central Kansas: Municipal University of Wichita: Bulletin 12, no. 5, p. 1-18.

Elevation contours are presented for general reference. Used in the U.S. Geological Survey's current US Topo 1:24,000-scale topographic map series, they were generated from hydrographically-improved 1/3 arc-second National Elevation Dataset (NED) data and smoothed during processing for use at 1:24,000 scale. In some places, the contours may be more generalized than the base data used for compilation of geologic outcrop patterns. Outcrop patterns on the map will typically reflect topographic variation more accurately than the associated contour lines. Repeated fluctuation of an outcrop line across a contour line should be interpreted as an indication that the mapped rock unit is maintaining a relatively constant elevation along a generalized contour.

1-meter LiDAR hillshades and 1-meter 2010 and 2012 U.S. Department of Agriculture - Farm Services Agency (USDA-FSA) National Agriculture Imagery Program (NAIP) digital imagery were used as references in the digital mapping. USGS 7.5-min 1:24,000-scale topographic maps, USDA Natural Resources Conservation Service (NRCS) soil surveys, and other geologic maps and bulletins were used to supplement the mapping. Roads and highways are shown on the base map as represented by data from the Kansas Department of Transportation (KDOT), U.S. Census Bureau, and other sources. U.S. Department of Agriculture - Farm Services Agency (USDA-FSA) National Agriculture Imagery Program (NAIP) imagery also was used to check road locations.

Shaded relief is based on 1-meter hydroflattened bare-earth DEMs from the State of Kansas LiDAR Database. The DEM images, in ERDAS IMAGINE format, were mosaicked into a single output DEM, downsampled to 2-meter resolution, and reprojected to decimal degrees. The output DEM was then converted to a hillshade, a multidirectional shaded-relief image using angles of illumination from 0°, 225°, 270°, and 315° azimuths, each 45° above the horizon, with a 4x vertical exaggeration.

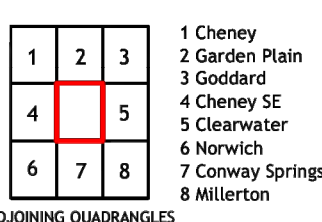
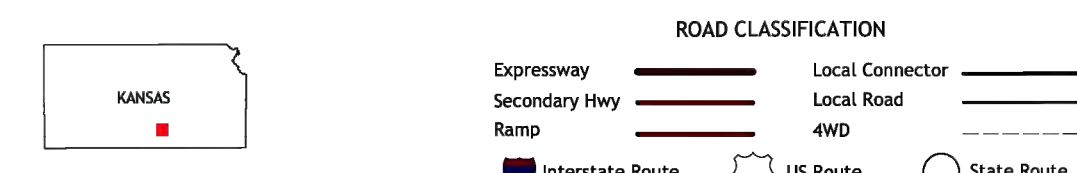
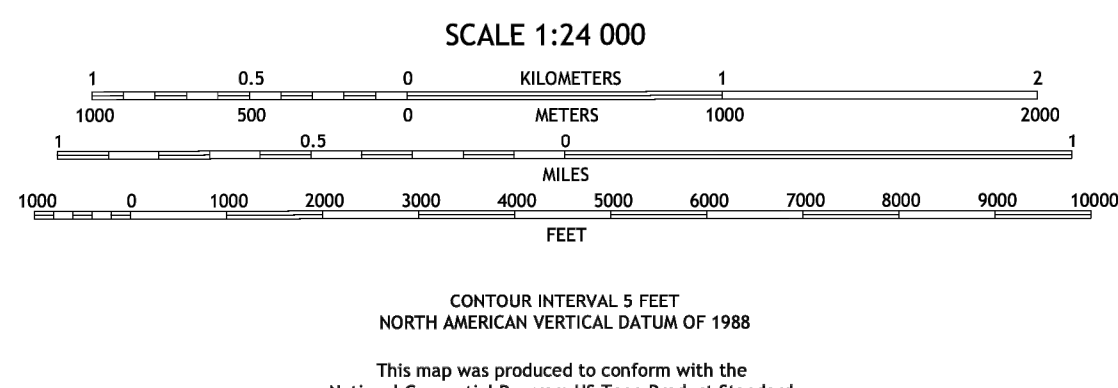
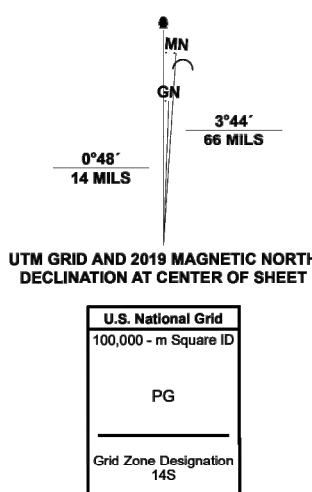
This geologic map was funded in part by the USGS National Cooperative Geologic Mapping Program, award number G20AC00241 (FY2020).

This map was produced using the ArcGIS system developed by Esri (Environmental Systems Research Institute, Inc.).

This map is a preliminary product and has had less scientific and cartographic review than the Kansas Geological Survey's M-series geologic maps. The KGS does not guarantee this map to be free from errors or inaccuracies and disclaims any responsibility or liability for interpretations made from the map or decisions based thereon.

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid: Universal Transverse Mercator, Zone 14S
This map is not a legal document. Boundaries may be
generalized for this map scale. Private lands within government
reservations may not be shown. Obtain permission before
entering private lands.

Imagery.....NAIP, July 2017 - September 2017
Roads.....U.S. Census Bureau, 2015 - 2018
Names.....GNIS, 1995 - 2021
Hydrography.....National Hydrography Dataset, 2004 - 2018
Contours.....National Elevation Dataset, 2009
Boundaries.....Multiple sources; see metadata file 2019 - 2021
Public Land Survey System.....BLM, 2018
Wetlands.....FWS National Wetlands Inventory 1985



LAKE AFTON, KS
2022

SUGGESTED REFERENCE TO THE MAP

Andrzejewski, K. A., 2022. Preliminary surficial geology of the Lake Afton quadrangle, Sedgewick County, Kansas: Kansas Geological Survey, Open-File Report 2022-12, scale 1:24,000, unpublished.