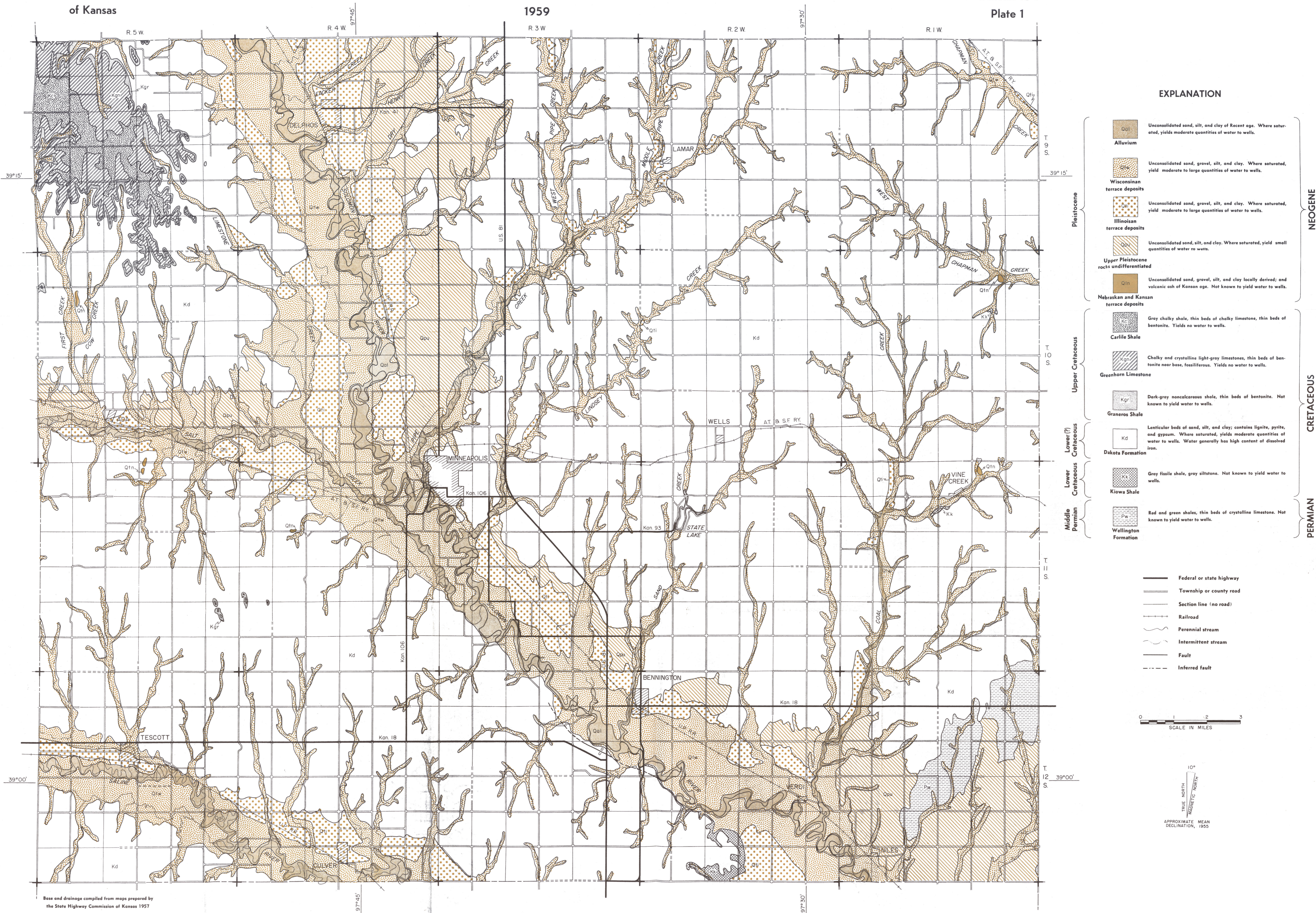


# AREAL GEOLOGY OF OTTAWA COUNTY, KANSAS

State Geological Survey  
of Kansas

By Leslie E. Mack  
1959

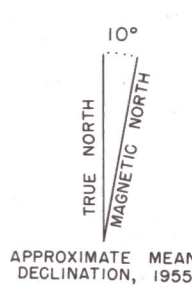
Bulletin 154  
Plate 1



## EXPLANATION

- Alluvium  
Unconsolidated sand, silt, and clay of Recent age. Where saturated, yields moderate quantities of water to wells.
- Wisconsinan terrace deposits  
Unconsolidated sand, gravel, silt, and clay. Where saturated, yield moderate to large quantities of water to wells.
- Illinoian terrace deposits  
Unconsolidated sand, gravel, silt, and clay. Where saturated, yield moderate to large quantities of water to wells.
- Upper Pleistocene rocks undifferentiated  
Unconsolidated sand, silt, and clay. Where saturated, yield small quantities of water to wells.
- Nebraskan and Kansan terrace deposits  
Unconsolidated sand, gravel, silt, and clay locally derived; and volcanic ash of Kansan age. Not known to yield water to wells.
- Carlile Shale  
Gray chalky shale, thin beds of chalky limestone, thin beds of bentonite. Yields no water to wells.
- Greenhorn Limestone  
Chalky and crystalline light-gray limestones, thin beds of bentonite near base, fossiliferous. Yields no water to wells.
- Graneros Shale  
Dark-gray noncalcareous shale, thin beds of bentonite. Not known to yield water to wells.
- Lower(?) Creta. Dakota Formation  
Lenticular beds of sand, silt, and clay; contains lignite, pyrite, and gypsum. Where saturated, yields moderate quantities of water to wells. Water generally has high content of dissolved iron.
- Lower Creta. Kiowa Shale  
Gray fissile shale, gray siltstone. Not known to yield water to wells.
- Middle Permian Wellington Formation  
Red and green shales, thin beds of crystalline limestone. Not known to yield water to wells.

- Federal or state highway
- Township or county road
- Section line (no road)
- Railroad
- Perennial stream
- Intermittent stream
- Fault
- Inferred fault



Base and drainage compiled from maps prepared by the State Highway Commission of Kansas 1957

NEOGENE  
PLEISTOCENE  
UPPER CRETACEOUS  
LOWER(?) CRETACEOUS  
LOWER CRETACEOUS  
MIDDLE PERMIAN  
PERMIAN