

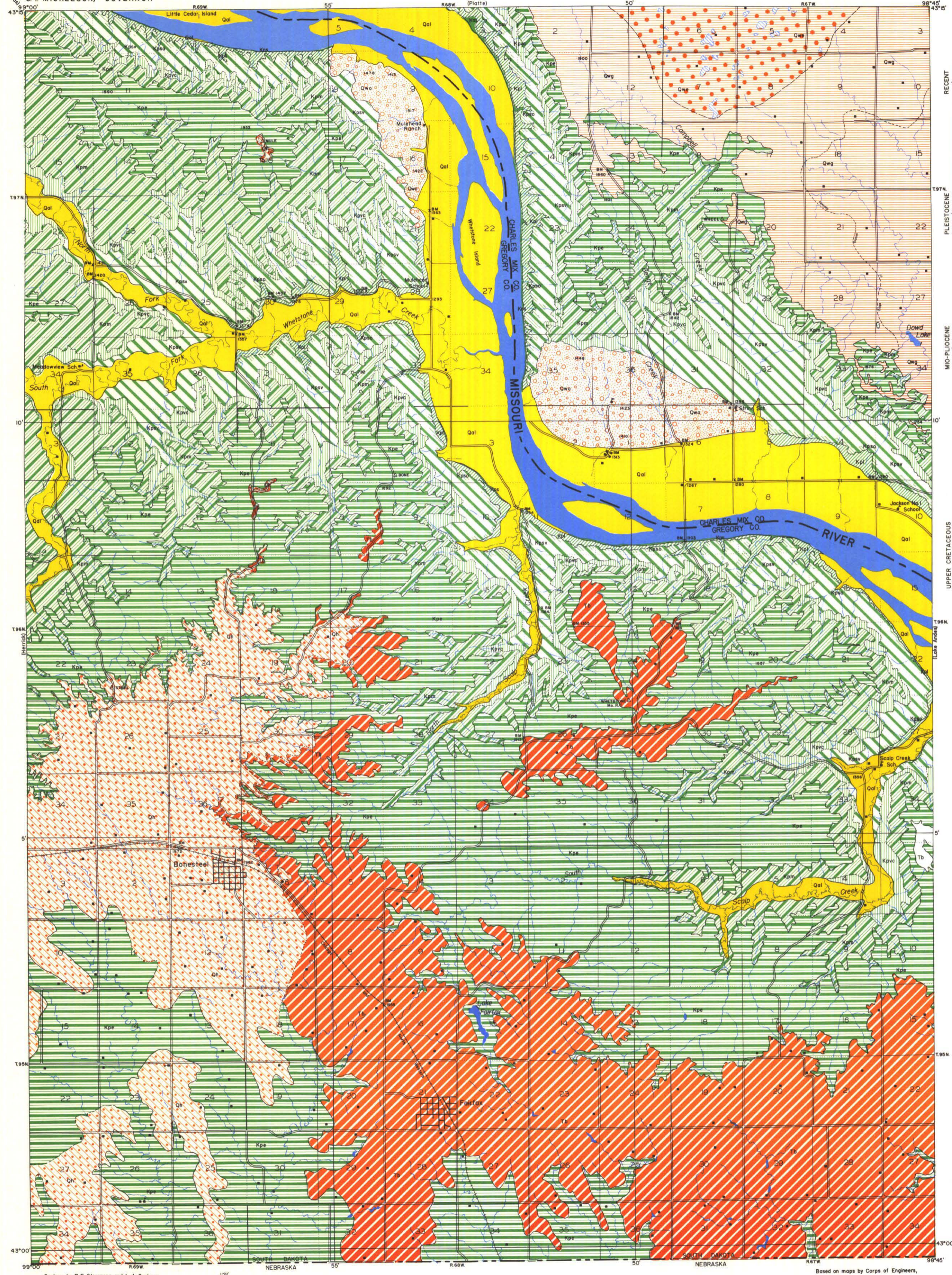
# AREAL GEOLOGY

## OF THE

### BONESTEEL QUADRANGLE

STATE OF SOUTH DAKOTA  
G.T. MICKELSON, GOVERNOR

STATE GEOLOGICAL SURVEY  
E.P. ROTHROCK, STATE GEOLOGIST



#### EXPLANATION

##### SEDIMENTARY ROCKS

- RECENT**
- QUATERNARY**
  - Wisconsin**
    - Qal**  
Alluvium  
*(Floodplain deposits of silt, sand, and gravel in present stream valleys)*
    - Qwg**  
Glacial Outwash  
*(Fluvial and glacio-fluvial terrace deposits of coarse sand and gravel)*
    - Qwm**  
End Moraine  
*(Undifferentiated drift characterized by a well and wide topography. Material is a boulder till)*
    - Qwg**  
Ground Moraine  
*(Undifferentiated drift dominantly boulder and pebble till)*
    - Qh**  
Herrick Gravels  
*(Fluvial coarse to medium sands and gravels on upland surface)*
- MIO-PLIOCENE**
  - Tb**  
Bijou Formation  
*(Dark-brown to blackish-brown, silty, sandy siltstone, sandstone, and pebbly conglomerate. Partly calcified)*
- UPPER CRETACEOUS**
  - Pierre Formation**
    - Kpe**  
Elk Butte Member  
*(Brownish-grey bentonitic clay with ferruginous and lime concretions)*
    - Kpm**  
Mabridge Member  
*(Grey calcareous fossiliferous claystone. Weathers buff)*
    - Kpvc**  
Virgin Creek Member  
*(Black carbonaceous clay-shale with numerous bentonites and concretions)*
    - Kpsu**  
Sully Member  
*(Upper Mowbray facies. Kpsu has to olive-grey bentonitic clay with numerous ferruginous concretions, Upper Mowbray facies. Kpsu black to grey highly bentonitic clay with abundant manganese concretions)*
    - Kpl**  
Lower Pierre undifferentiated  
*(Upper - Gregory member, a dark to light grey clay with bentonites. Includes Crow Creek facies, or slightly sandy calcareous claystone. Lower - Sharon Springs member, a black to brown bituminous shale with numerous bentonites)*
  - Nidra Formation**
    - Kns**  
Smoky Hill Member  
*(Light grey dense fossiliferous limestone)*

##### DRAINAGE

- Intermittent Streams
- Intermittent Lakes

##### CULTURE

- Buildings  
*(House, church, and school)*
- Roads and Trails
- Altitudes  
*(In feet above sea level)*
- Bench Marks  
*(Monument marking point of known altitude)*
- Triangulation Stations  
*(Monument marking point of exact geographic location)*

Geology by R.E. Stevenson and L.A. Carlson  
Surveyed in 1950

Based on maps by Corps of Engineers,  
U.S. Army, and Geodetic data from U.S.  
Coast and Geodetic Survey



APPROXIMATE MEAN  
DECLINATION 1948

1950