

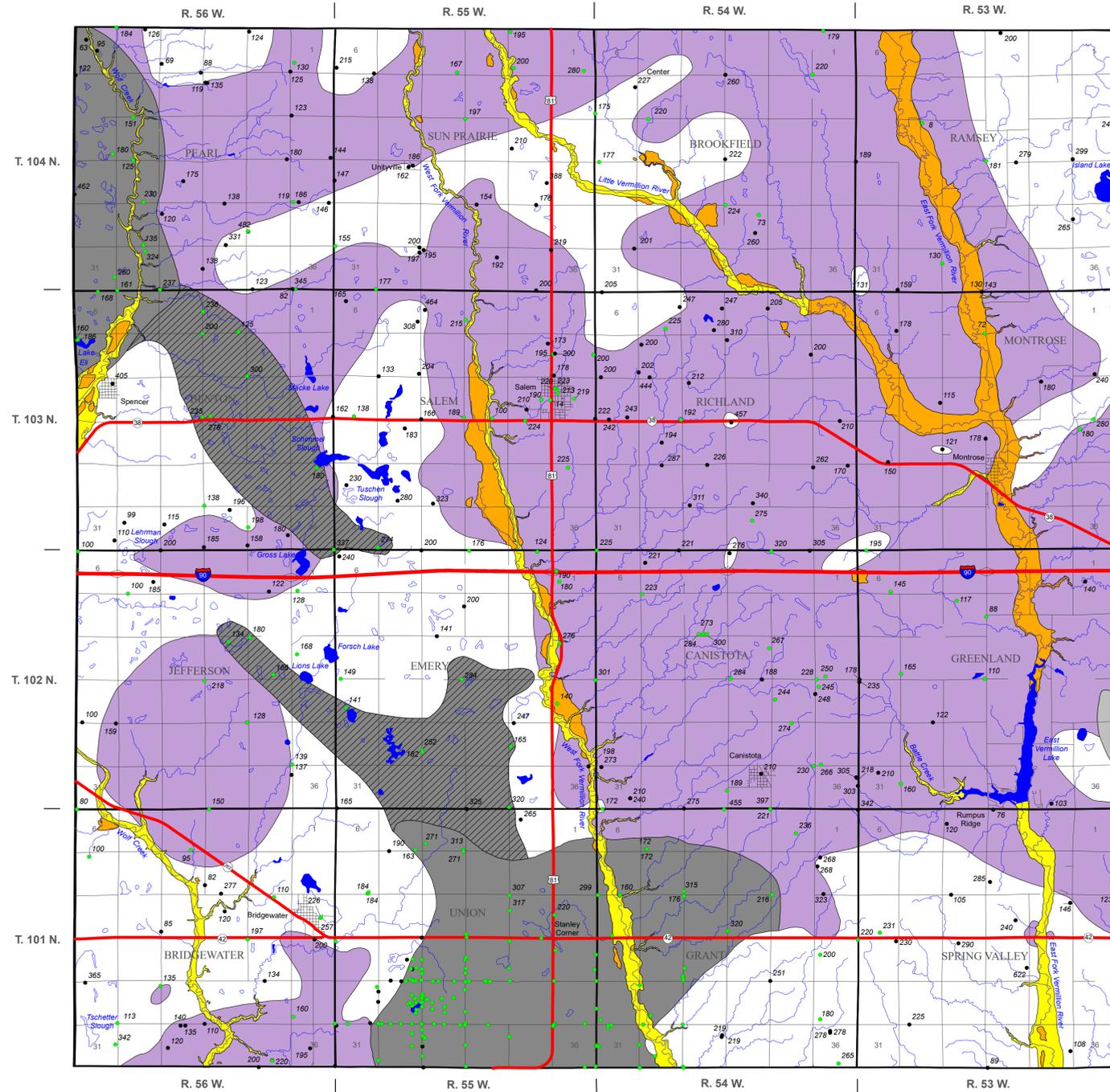
First Occurrence of Aquifer Materials in McCook County, South Dakota



Department of Environment and Natural Resources
 Division of Financial and Technical Assistance
 Geological Survey Program
 Aquifer Materials Map 37
 Stevie L. Holmes, 2019

State of South Dakota
 Kristi Noem, Governor

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Explanation

This map is intended for use as a tool to aid in identifying areas underlain by aquifer material. The aquifer materials shown on this map are categorized below. This map does not show individual aquifers. There may be more than one type of aquifer material present in an area. However, only the aquifer material that would be first encountered is shown. Within the boundaries of any given map unit, there may be localized areas where aquifer material is absent. The thickness and permeability of aquifer material may vary significantly. Also, no attempt was made to distinguish between saturated and unsaturated material. Therefore, not all of the areas defined on this map may be an aquifer. Site-specific information should always be examined when making land management or water development decisions.

- First occurrence is generally less than or equal to 50 feet below land surface**
 - Alluvium:** Consists of clay and silt with minor amounts of sand and gravel that occur in floodplain valleys of waterways
 - Sand and Gravel:** First occurrence is generally at land surface
- First occurrence is generally greater than 50 feet and less than or equal to 100 feet below land surface**
 - Sand and Gravel:** May not be uniform in depth and thickness and may be discontinuous in lateral extent
 - Sand and Gravel:** May not be uniform in depth and thickness; may be silty and clayey. Generally continuous in lateral extent
 - Sand and Gravel:** Generally discontinuous in lateral extent; may be silty and clayey
- First occurrence is generally greater than 100 feet below land surface**
 - Area underlain by undifferentiated sediments of Cretaceous age.** These sediments consist of chalk, shale, and quartz sandstone. This unit is not uniform in depth or thickness, and lithologic types within it are discontinuous. There may be local areas where these sediments occur at less than 100 feet below land surface. These deposits are not typically considered aquifer materials due to low yield potential; however, the chalk and sandstone in this unit can yield enough water for use in domestic and stock wells.
- Area where continuous aquifer material has not been mapped between the land surface and Sioux Quartzite.** Sioux Quartzite occurs from land surface to greater than 300 feet below land surface. The Sioux Quartzite is generally not considered an aquifer material; however, locally it may yield water from fractures.

Test Hole and Well Data from Geological Survey Program Lithologic Logs Database, Water Rights Well Completion Reports Database, and Water Rights Permit Files

- Well or test hole where no aquifer material greater than 10 feet in thickness was encountered between land surface and the bottom depth of hole. Numbers represent the total depth of the hole in feet. A location with no observed aquifer material may fall within a mapped area if it is surrounded by other wells or test holes with aquifer material.
- Well or test hole where aquifer material 10 feet or greater in thickness was encountered between land surface and the bottom depth of the hole. Numbers represent the total depth of the hole in feet. A site with aquifer material may occur outside of a mapped unit, or may not be included in a particular mapped unit, because it may be a different type of aquifer material or considered an isolated occurrence.

Legend:

- River or stream
- Lake
- Slough or intermittent lake
- Major highway
- Road
- Township boundary

This map was developed from lithologic logs and published reports. The major sources of information were:

Barari, A., Cowman, T.C., and Iles, D.L., 1989, *A summary of current hydrogeologic conditions in the Dalton aquifer*; South Dakota Geological Survey Open-File Report 59-UR, 11 p.

Christensen, C.M., 1989, *Geology of Davison and Hanson Counties, South Dakota*; South Dakota Geological Survey Bulletin B-33, 22 p.

Hammond, R.H., 1991, *Geology of Lake and Moody Counties, South Dakota*; South Dakota Geological Survey Bulletin B-35, 49 p.

Holly, D.E., Iles, D.L., and Barari, A., 1993, *Ground-water study for the TM Rural Water District in the vicinities of Dalton and Parker, South Dakota*; South Dakota Geological Survey Open-File Report 65-UR, 112 p.

Holmes, S.L., and Filipovic, D., 2015, *Hydrogeologic investigation of the Upper-Vermillion-Missouri aquifer*; South Dakota Geological Survey Open-File Report 93-UR, 26 p.

Jensen, A.R., 2002, *First occurrence of aquifer materials in Lake County, South Dakota*; South Dakota Geological Survey Aquifer Materials Map 11, scale 1:100,000.

_____, 2002, *First occurrence of aquifer materials in Miner County, South Dakota*; South Dakota Geological Survey Aquifer Materials Map 12, scale 1:100,000.

_____, 2007, *First occurrence of aquifer materials in Hutchinson County, South Dakota*; South Dakota Geological Survey Aquifer Materials Map 25, scale 1:100,000.

_____, 2008, *First occurrence of aquifer materials in Hanson County, South Dakota*; South Dakota Geological Survey Aquifer Materials Map 27, scale 1:100,000.

_____, 2015, *First occurrence of aquifer materials in Turner County, South Dakota*; South Dakota Geological Survey Aquifer Materials Map 36, scale 1:100,000.

Lindgren, R.J., and Hansen, D.S., 1990, *Water resources of Hutchinson and Turner Counties, South Dakota*; U.S. Geological Survey Water-Resources Investigations Report 90-4093, 100 p.

_____, 1993, *Major aquifers in Hutchinson and Turner Counties, South Dakota*; South Dakota Geological Survey Information Pamphlet 45, 12 p.

Lindgren, R.J., and Niehus, C.A., 1992, *Water resources of Minnehaha County, South Dakota*; U.S. Geological Survey Water-Resources Investigations Report 91-4101, 80 p.

Schroeder, W., 1988, *Geology and water resources of Miner County, South Dakota; Part I: Geology*; South Dakota Geological Survey Bulletin B-31, 38 p.

Schulz, L.D., 1991, *Investigation of the basal outwash in the Dalton vicinity*; South Dakota Geological Survey Open-File Report 64-UR, 32 p.

_____, 1993, *Evaluation of the basal aquifer in the vicinity of the Hanson Rural Water System wellfield*; South Dakota Geological Survey Open-File Report 74-UR, 20 p.

South Dakota Department of Environment and Natural Resources Geological Survey Program, Lithologic logs database. <http://cf.sddnr.net/lithdb/>

South Dakota Department of Environment and Natural Resources Water Rights Program, South Dakota Water Rights database. <https://denr.sd.gov/des/wr/dwrsearch.aspx>

_____, South Dakota Well Completion Reports database. <https://apps.sd.gov/mr68wells/>

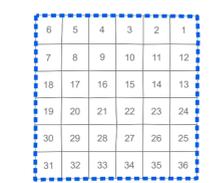
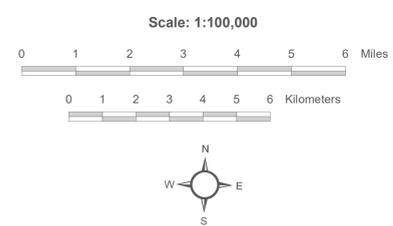
Tomhave, D.W., 1994, *Geology of Minnehaha County, South Dakota*; South Dakota Geological Survey Bulletin 37, 53 p.

_____, 2001, *First occurrence of aquifer materials in Minnehaha County, South Dakota*; South Dakota Geological Survey Aquifer Materials Map 9, scale 1:100,000.

The Geological Survey Program, Department of Environment and Natural Resources, engages in an ongoing data collection and interpretation process. An outcome of that process is to reflect those interpretations on maps such as this one. Reasonable efforts have been made to ensure that this map accurately reflects the source data used in its preparation. This map is date specific. As additional data become available, geologic interpretations may be revised and the map may be updated by the Geological Survey Program. This map should not be enlarged or otherwise used in an attempt to interpret more detail than can be seen at a scale of 1:100,000.



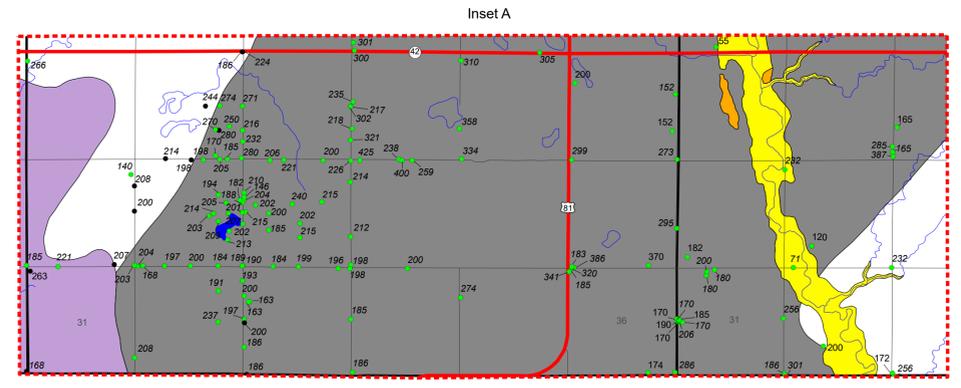
Index map of South Dakota showing the location of McCook County



Township section numbering system



Index map of McCook County showing the location of Inset A



Scale 1:50,000