First Occurrence of Aquifer Materials in Hyde County, South Dakota

State of South Dakota
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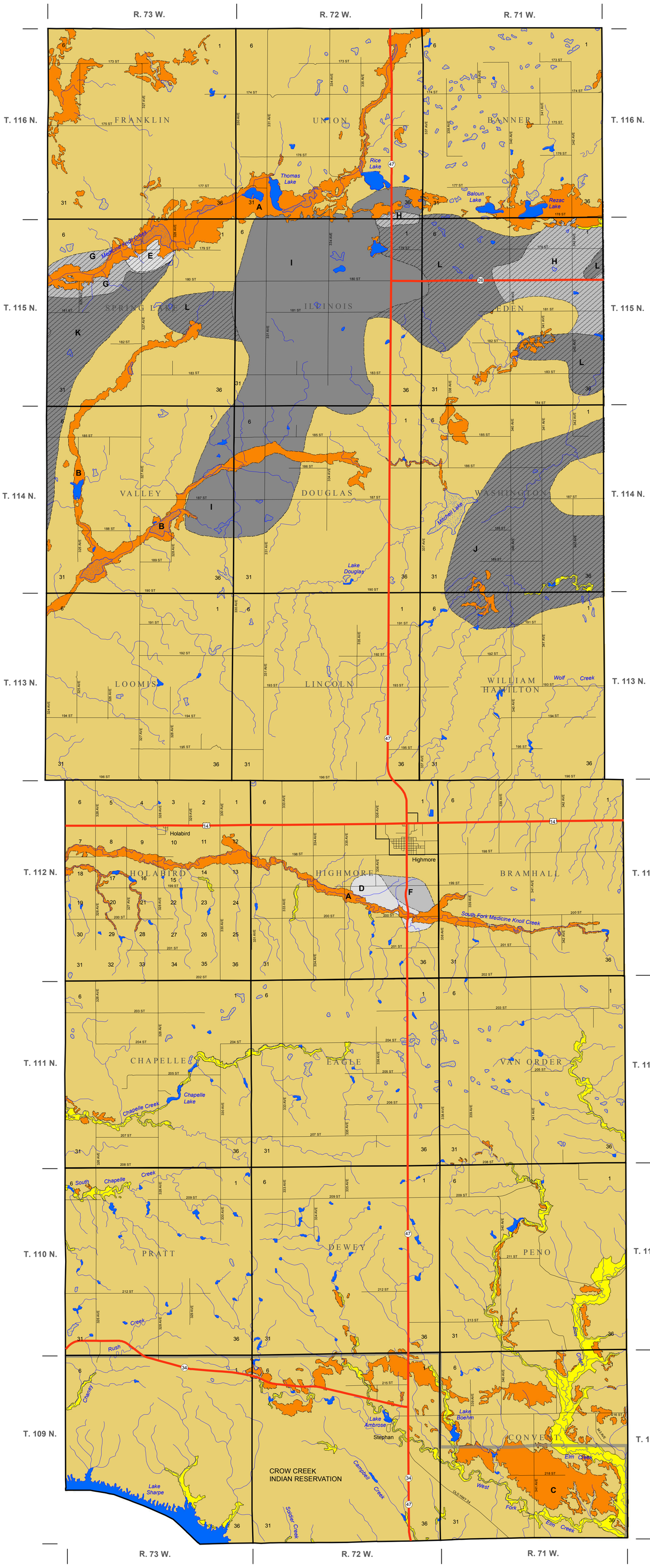
Division of Financial and Technical Assistance
Geological Survey Program
Aquifer Materials Map 33
Tom Rich, 2012



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; occurs at land surface

Sand and Gravel: First occurrence is generally at land surface; may be silty and clayey

All mapped areas in this category that are not labeled **A**, **B**, or **C** are sand and gravel mapped on the basis of the presence of soil derived from alluvium or outwash; maximum thickness is approximately 30 feet

A Valley train outwash sand and gravel of Medicine Knoll Creek and South Fork Medicine Knoll Creek; maximum thickness is approximately 30 feet; the outwash in South Fork Medicine Knoll Creek partially comprises the Highmore-Blunt aquifer

B Valley train outwash sand and gravel occupying former stream channels; maximum thickness is approximately 30 feet; may occur sporadically in some of its mapped area

C Outwash terrace sand and gravel adjacent to and northwest of the confluence of Elm Creek and the West Fork Elm Creek; maximum thickness is approximately 35 feet

Sand and Gravel: First occurrence is generally below land surface and is probably continuous in lateral extent; may be silty and clayey

D Outwash sand and gravel located 1 mile south of Highmore; maximum thickness is approximately 120 feet; bottom of interval lies directly on or nearly on the bedrock surface; partially comprises the Highmore-Blunt aquifer

Sand and Gravel: First occurrence is generally below land surface and is probably discontinuous in lateral extent; may be silty and clayey

E Outwash sand and gravel located in northwestern part of the county; maximum thickness is approximately 50 feet; bottom of interval lies directly on or nearly on the bedrock surface

First occurrence is generally greater than 50 feet and less than or equal to 100 feet below land surface

Sand and Gravel: Generally continuous in lateral extent; may be silty and clayey

F Outwash sand and gravel located 1 mile south of Highmore; maximum thickness is approximately 35 feet; bottom of interval lies directly on or nearly on the bedrock surface; partially comprises the Highmore-Blunt aquifer

Sand and Gravel: Generally discontinuous in lateral extent; may be silty and clayey

G Outwash sand and gravel located in northwestern part of the county; maximum thickness is approximately 40 feet; bottom of interval lies directly on or nearly on the bedrock surface

H Outwash sand and gravel located in northeastern part of the county; maximum thickness is approximately 30 feet; bottom of interval lies well above the bedrock surface

First occurrence is generally greater than 100 feet below land surface

Sand and Gravel: Generally continuous in lateral extent; may be silty and clayey

I Outwash sand and gravel located in the north-central part of the county; consists of two outwash bodies; one outwash body is positioned directly on or nearly on the bedrock surface with a maximum thickness of approximately 60 feet; occurs approximately 250 feet below land surface; the other outwash body has a maximum thickness of approximately 40 feet and occurs from 120 to 170 feet below land surface, well above the bedrock surface; one or both outwash bodies may be present depending upon the location

Sand and Gravel: Generally discontinuous in lateral extent; may be silty and clayey

J Outwash sand and gravel located in the northeastern part of the county; consists of sand and gravel directly on or nearly on top of the bedrock surface with a maximum thickness of approximately 50 feet; usually occurs approximately 200 feet below land surface

K Outwash sand and gravel located in the northwestern part of the county; consists of sand and gravel directly on or nearly on top of the bedrock surface with a maximum thickness of approximately 50 feet; usually occurs approximately 200 feet below land surface

L Outwash sand and gravel located in four areas in the northern part of the county; occurs at a depth of approximately 120 feet with a maximum thickness of approximately 50 feet; bottom of outwash lies well above the bedrock surface

Dakota Sandstone: Consists of interbedded sandstone, siltstone, and shale; maximum thickness is approximately 300 feet; depth below land surface to the Dakota Sandstone ranges from 900 feet along the Missouri River to 1,750 feet in the south-central part of the county

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

CENDAK Drainage Steering Committee, 1987, *Comparison of irrigated land in southern Alberta, Canada, with the CENDAK area, South Dakota*: South Dakota Geological Survey Open-File Report 8-BAS, 212 p.

Helgerson, R., and Duchossois, G.E., 1987, *Geology and water resources of Hand and Hyde Counties, South Dakota; Part I: Geology*: South Dakota Geological Survey Bulletin 28, 46 p.

Koch, N.C., 1976, *Major aquifers in Hand and Hyde Counties, South Dakota*: South Dakota Geological Survey Information Pamphlet 14, 5 p.

_____1980, *Geology and water resources of Hand and Hyde Counties, South Dakota; Part II: Water resources*: South Dakota Geological Survey Bulletin 28, 46 p.

Martin, J.E., Sawyer, J.F., Fahrenbach, M.D., Tomhave, D.W., and Schulz, L.D., 2004, *Geologic map of South Dakota*: South Dakota Geological Survey General Map 10, scale 1:500,000.

Rich, T., 2001 [2005], *Results of monitoring from 1989 through 1997 for the statewide ground water quality monitoring network*: South Dakota Geological Survey Open-File Report 89-UR, 37 p.

Schroeder, W., 1976, *Sand and gravel resources in Hyde County, South Dakota*: South Dakota Geological Survey Information Pamphlet 13, 9 p.

South Dakota Geological Survey, Lithologic logs database.

U.S. Department of Agriculture, 1998, *Soil survey of Hyde County, South Dakota*, 278 p.

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

For township section numbering system, see T. 112 N., R. 73 W.

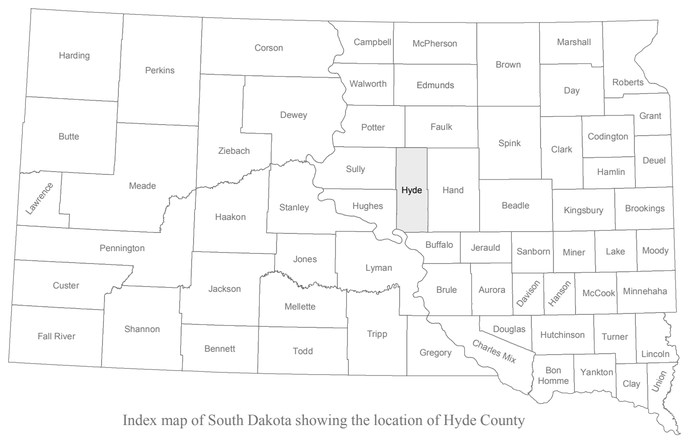
Scale: 1:100,000

0 1 2 3 4 5 6 Miles

0 1 2 3 4 5 6 Kilometers

N W E S

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 Hyde County