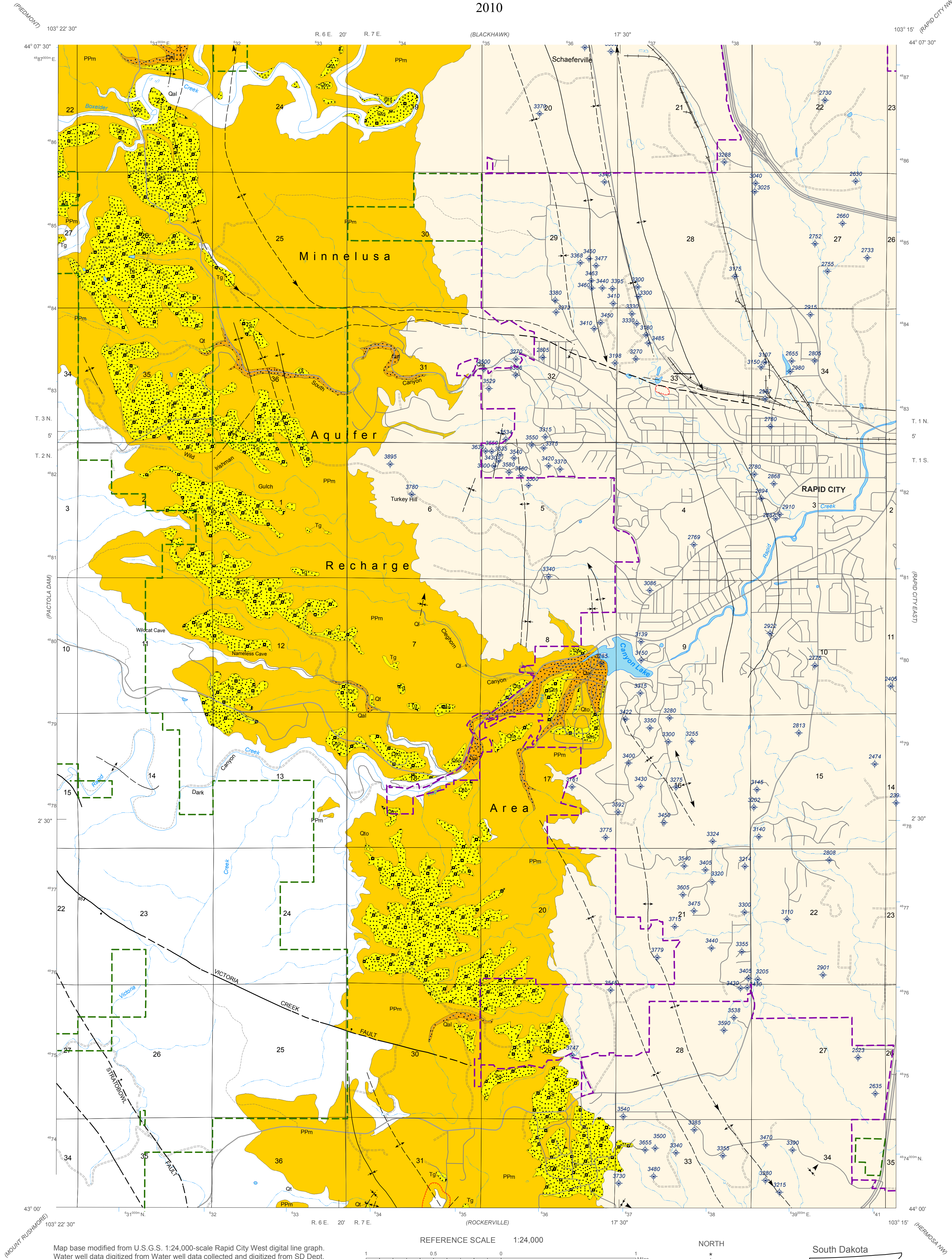


# Susceptibility of the Minnelusa Aquifer, Rapid City West Quadrangle

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Map base modified from U.S.G.S. 1:24,000-scale Rapid City West digital line graph. Water well data digitized from Water well data collected and digitized from SD Dept. of Environment & Natural Resources "Online Oil/Gas/Injection Well Data" database. Geology layer from J.L. Lester and P.H. Rahn, 2001; S.L. Miller, 2005. Projection is Universal Transverse Mercator, Zone 13, North American Datum 1983.

Digital Cartography: R.G. Hargrave, 2005, and D.J. Brewer, 2010.  
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## Definition of Susceptibility

Aquifer susceptibility is the inherent ability of a formation to accept and transmit liquids (potentially including contaminants).

### Susceptibility Ranges for Hydrogeologic Units

Hydrogeologic Units	Low		Medium		High		Very High							
Minnelusa Formation	24 - 37													
Gravel Deposits over Minnelusa Formation	13 - 32													
Alluvium over Minnelusa Formation	28 - 46													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65

Summary of ratings associated with the Minnelusa aquifer. Number falling within the range area indicates the qualitative rating for aquifer susceptibility (adapted from Hargrave, 2005).

Susceptibility Ratings Explanation:  
The susceptibility range is the sum of ratings for susceptibility parameters of the aquifer. The parameters used for the Minnelusa aquifer are rock type, overlying material, joints, minor karst, breccia and minor faults affecting the hydrogeologic units of the Minnelusa Fm. The ratings for these parameters are: Rock Type; 5-8 for sandstone; Overlying Material; 5-10 for alluvium and negative 5-10 for gravel, sand and clay mixture; Joints; 5-7; Minor Karst; 5-8; breccia; 5-7 and; Minor Faults; 4-6.  
The ratings suggested for the parameters are from Aller et al. (1987) and Davis et al., (1994).

## EXPLANATION

- Contact  
Solid where location certain; dashed where approximately located.
- Fault  
Solid where location certain; dashed where approximately located. Bar and ball on downthrown side.
- Anticline  
Showing crestline and direction of plunge. Solid where location certain; dashed where approximately located.
- Syncline  
Showing troughline and direction of plunge. Solid where location certain; dashed where approximately located.
- Monocline - Anticlinal bend  
Axis located on steepest part of structure. Solid where location certain; dashed where approximately located.
- Monocline - Synclinal bend  
Axis located on steepest part of structure. Solid where location certain; dashed where approximately located.

### Geologic Units

- Quaternary  
Alluvium  
Susceptibility rating ranges between 28 to 46 where alluvium (Qal) overlies the Minnelusa Formation.
- Quaternary/Tertiary  
Surficial Deposits  
Susceptibility rating ranges between 13 to 32 where alluvial fan (Qal), terrace deposits (Qt, Tg) and landslide blocks (Ql) overlie the Minnelusa Formation.
- Unconformity
- Pennsylvanian  
Minnelusa Formation  
Susceptibility rating ranges between 24 to 37. No distinction was made between the upper sandstone and the lower sandstone beds of the formation.
- Minnelusa Formation Absent
- Minnelusa Formation Present in Subsurface