

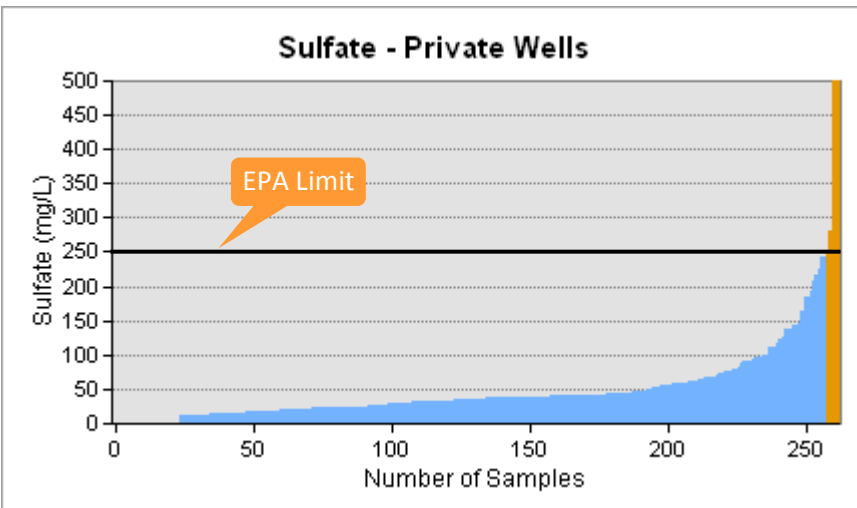
WDWDD-SDSMT Report Card for Sulfate

Private Well Tests	
Number of wells	262
Number of tests	273
Earliest test date	5/5/2013
Latest test date	11/03/2015
Lowest value detected	**
Highest value detected (mg/L)	1410
Number of wells above guideline	4
Percent wells above guideline	1.5%
Public Well Records	
Number of wells	48
Number of recorded tests	151
Earliest test date	4/12/1967
Latest test date	7/9/2007
Lowest value detected	**
Highest value detected	689
Number of wells above guideline	2
Percent wells above guideline	4%
** Below detection limit of 0.685 mg/L	

Dissolved sulfate occurs in well water because of natural weathering of certain minerals in rocks. It affects taste and odor of the water, and may cause laxative effects or diarrhea at high concentrations. The recommended maximum contaminant level for sulfate in public water supplies is 250 mg/L; this is an EPA recommended guideline rather than an enforced standard.

We sampled 262 private wells between 2013 and 2015, and compiled published data from 48 public wells to evaluate the presence of sulfate in well water in western Pennington County, SD. In some cases the wells were tested multiple times; we took the highest test in each case. We found that 1.5% of private wells and 4% of public wells had tests that exceeded the EPA guideline. The maximum value detected was 1410 mg/L, over five times the EPA guideline.

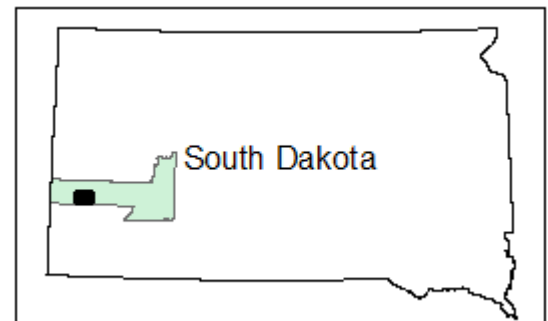
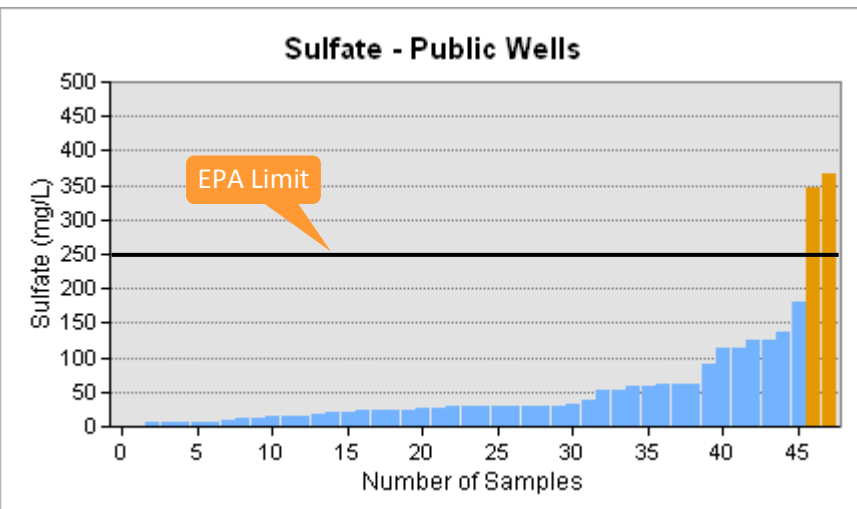
In the graphs, the blue bars represent arsenic values below the EPA guideline; the orange bars represent values above the guideline, and the



guideline is indicated by a black horizontal line at 250 mg/L. The graphs show that only a few sulfate values are higher than the EPA standard; one is extremely high and extends beyond the top of the graph.

Sulfate problems can be treated so that the water is safe to drink. Public water supplies are regulated by law. Public well managers are not required to mitigate sulfate in wells, although they may do so.

Private wells are not regulated by law and homeowners are not required to meet drinking water standards set by the EPA. However, homeowners are encouraged to test their water to ensure that it is healthy to drink and to protect their families.



To protect the privacy of homeowners who participated in the study, we do not plot individual well test locations on maps shown to the public. Instead, we selected the private and public wells with sulfate values greater than or equal to 50% of the EPA guideline and created a density map showing areas with more frequent sulfate problems. These regions are considered to represent a higher *risk* of sulfate issues. **It is important to understand that subsurface conditions can change rapidly from place to place, and not all wells in the shaded areas will have sulfate problems.** The only way to know whether a particular well has elevated sulfate levels is to test it. Homeowners in the shaded areas are especially encouraged to test their well water to ensure that it is healthy.

Sulfate does not appear to be a widespread problem in central Pennington County. Values on the eastern side of the study area tend to be higher, and the highest values are located along major faults. Several rock types that appear only on the eastern side of the map may play a role in the elevated sulfate values. For interactive maps showing sulfate and other contaminants in wells, click [here](#).

