

WDWDD-SDSMT Report Card for Arsenic

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	0.441
Number of wells exceeding EPA ⁴	36
Percent wells exceeding EPA	14%

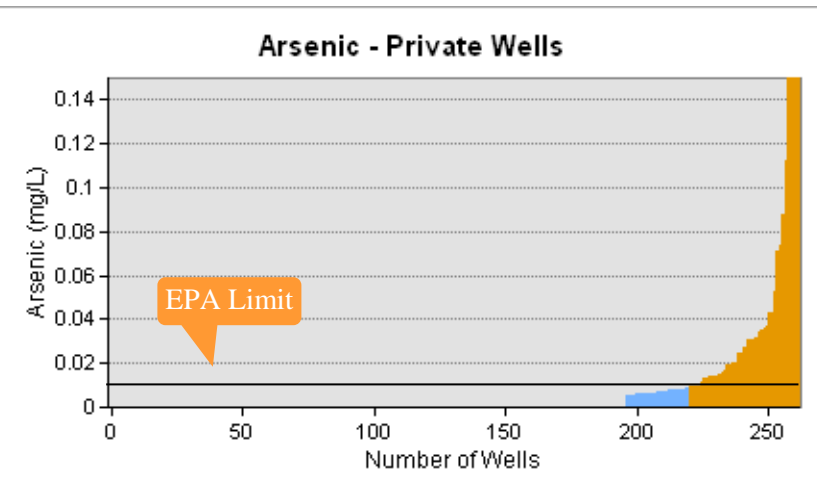
Public Well Records

Number of wells	62
Number of recorded tests	335
Earliest test date	12/5/1977
Latest test date	5/19/2014
Lowest value detected	**
Highest value detected	0.178
Number of wells exceeding EPA ⁴	7
Percent wells exceeding EPA	12%
** Below detection limit of 0.005 mg/L	

Dissolved arsenic can occur in well water because of natural weathering of certain minerals in rocks. The maximum contaminant level for arsenic in public water supplies is 0.010 mg/L. Arsenic is regulated in public water supplies because of links to cancer. It can also cause nerve damage and other problems.

We sampled 262 private wells and compiled published data from 62 public wells to evaluate the presence of arsenic in well water in central Pennington County, SD. In some cases the wells were tested multiple times; we show the highest test value in each case. We found that 14% of private wells and 12% of public wells had tests that exceeded the EPA standard. The maximum value detected was 0.441 mg/L, nearly 44 times the EPA standard.

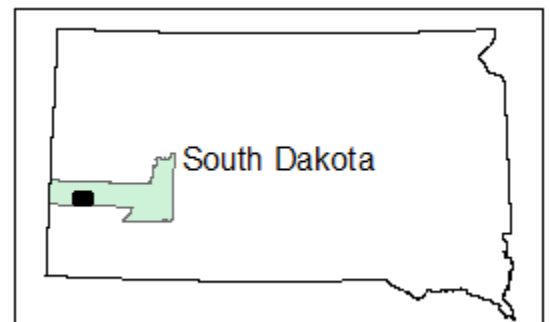
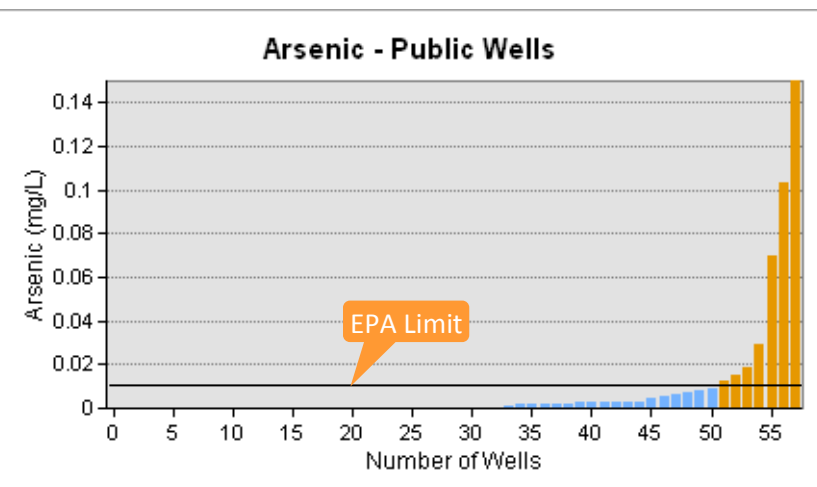
In the graphs, the blue bars represent arsenic values below the EPA standard; the orange bars represent values above the standard, and the standard is indicated by a black horizontal line at 0.01 mg/L. Arsenic was



below the detection limit of 0.005 in many wells and have no bars shown. The graphs show that many arsenic values are much higher than the EPA standard; a few are extremely high and sever extend beyond the top of the graph.

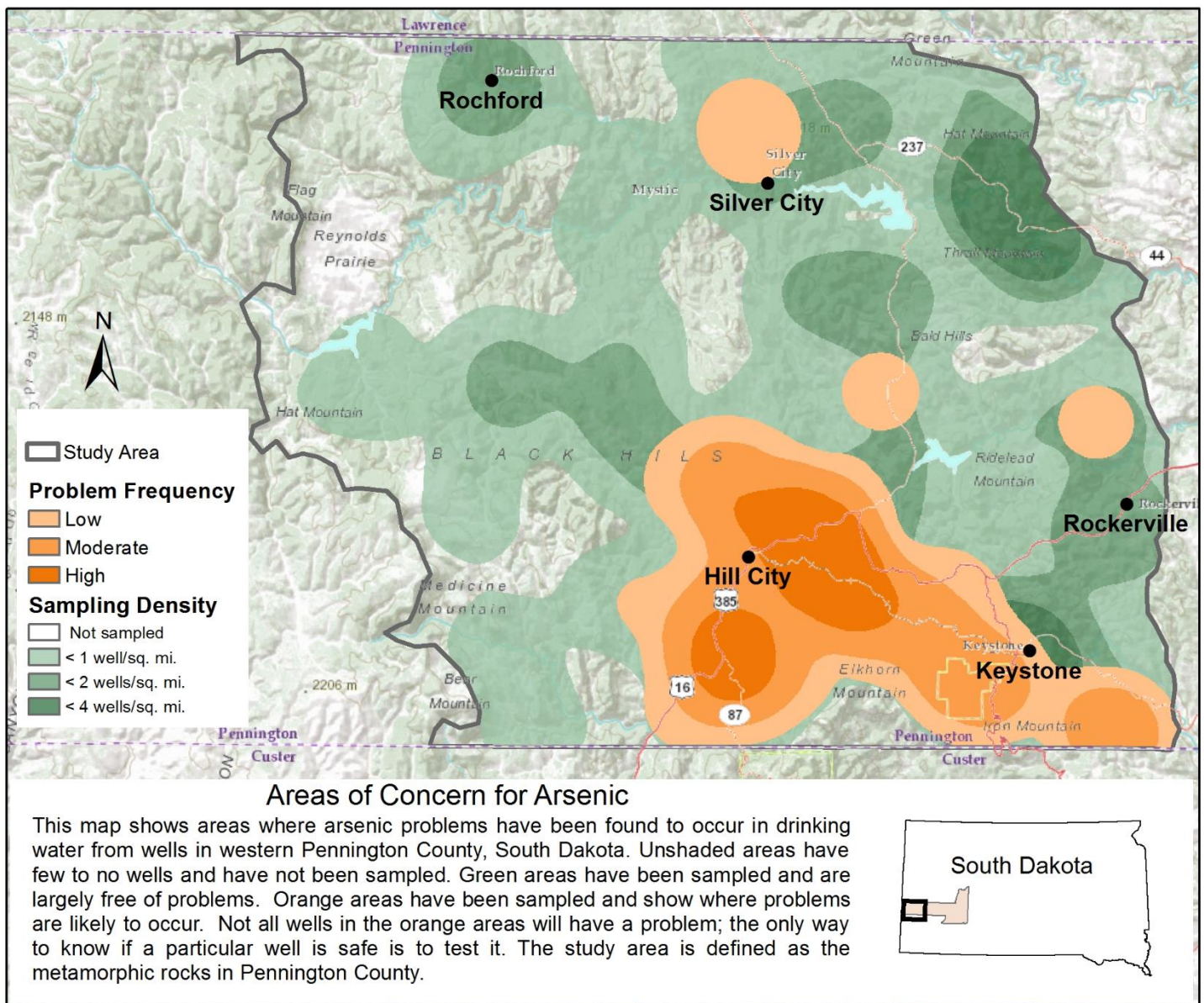
Arsenic problems can be treated so that the water is safe to drink. Public water supplies are regulated by law. Although the tests are performed prior to treatment, water from public wells should be safe.

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 safe 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 arsenic values greater than or equal to 50% of the EPA standard and created a density map showing areas with more frequent arsenic problems. These regions are considered to represent a higher *risk* of arsenic 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 arsenic problems.** The only way to know whether a particular well has elevated arsenic levels is to test it. Homeowners in the shaded areas are especially encouraged to test their well water to ensure that it is safe.

Problems with arsenic show a strong association with historic mining districts in the Black Hills, which is also where home sites tend to cluster. For interactive maps showing these associations, click [here](#).



<http://www.sdsmt.edu/aquifers>



This document describes the results of a study conducted by the South Dakota School of Mines and Technology from 2013 to 2015 and funded by the West Dakota Water Development district to assess potential water quality issues in Pennington County.