

Category: Water Quality

Indicator: Groundwater Exceedances of Drinking Water Quality Standards

Methodology

Groundwater Exceedances of Drinking Water Quality Standards is an indicator of the potential for drinking water quality concerns in Texas aquifers. This indicator is measured by calculating a percentage of groundwater quality samples exceeding drinking water standards divided by the total number of samples taken for each county from each aquifer. This indicator analyzed this information for five constituents: nitrate, total dissolved solids, chloride, fluoride and sulfate.

The EPA's "Primary and Secondary Drinking Water Regulations" have set maximum allowable contamination levels for many water quality constituents to protect human health. The standards for the five constituents analyzed are in Table 1.

Table 1. EPA's primary and secondary drinking water standards for the five constituents included in this indicator.

Primary Standards	
Constituent	Level
Fluoride	4 mg/l
Nitrate (as N)	10 mg/l
Secondary Standards	
Constituent	Level
Chloride	300 mg/l
Sulfate	300 mg/l
TDS	1000 mg/l

The TWDB groundwater database was the primary source of water quality data used in this study. Water quality information for this indicator was gathered from 3,167 wells throughout the entire state. Wells were not selected based on use but included domestic and livestock, irrigation, municipal, manufacturing, mining, and power from which there is constituent data from 2008 to 2013.

We summarized these data first by determining the number of measurements exceeding the relevant drinking water standard (i.e., exceedances) for each parameter for each aquifer in each Texas county within the last 5 years. We then calculated the percentage of exceedance as the ratio of the number of exceedances to the total number of constituent samples from 2008-2013.

This indicator is mapped at the aquifer (major and minor aquifers mapped separately) and county level as the percent of wells exceeding the standard for each of the five constituents.

Data Sources

Texas Water Development Board. Groundwater Database. Accessed March 25, 2014.

<http://www.twdb.texas.gov/groundwater/data/gwdb rpt.asp>