

The Big Sioux River Watershed



What is the Big Sioux River Watershed?

A watershed is an area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel. Watersheds can be as small as a footprint or large enough to encompass all the land that drains water into rivers and eventually the ocean. The land within a watershed directly affects water quality. All of the land in the United States is part of a watershed – in other words, we all have a direct impact on water quality. Source: USGS

Beginning in the high hills near the town of Summit, South Dakota, the loopy, ever-growing channel of the Big Sioux River meanders approximately 420 miles before merging with the Missouri River near Sioux City, Iowa. The Big Sioux River watershed is 8,500 square miles or about the size of New Jersey, and touches South Dakota, Minnesota, and Iowa. Approximately 40% of South Dakota's population lives in the watershed.

How Does the Watershed Affect Water Quality?

Runoff from farmland and cities in the Big Sioux River watershed travels to the Missouri River, then on to the Mississippi River, and eventually empties into the Gulf of Mexico. Here, this pollution contributes to the Dead Zone, an aquatic wasteland measuring 6,000 to 7,000 square miles. Water pollution also affects us locally by changing the habitat of local animals and fish and preventing our full use of the river for recreation or drinking water. We can quantify water pollution issues in the Big Sioux River watershed by measuring Total Suspended Solids (TSS), E Coli, and Nitrates.

1. Total Suspended Solids (TSS) can include a wide variety of materials, such as silt, decaying plant and animal matter, industrial wastes, and sewage. High TSS levels decrease water clarity and can interfere with water chemistry and photosynthesis processes.
2. E Coli is a bacterium commonly found in the intestines of humans and other animals, where it usually causes no harm. Some strains can lead to illness, especially in older people and children. The presence of fecal coliform bacteria in aquatic environments indicates that the water has been contaminated with the fecal material of people or other animals. Common sources of E Coli include wastewater treatment plants, failing septic systems, domestic and wild animal waste, and stormwater runoff.
3. Nitrates are an essential source of nitrogen for plants and are commonly used in fertilizers. When nitrogen fertilizers are used to enhance soil fertility, nitrates may be carried by rain over or through the soil and deposited in surface water. High levels of nitrates in drinking water can lead to Blue Baby Syndrome.

What Can We Do?

Farmers can implement buffer strips, which are strips of perennial grasses or woody plants that separate cropland from waterways. These strips help mitigate the movement of sediment, nutrients, and pesticides. They also reduce the speed of water as it travels toward the river and provides additional habitat for native animals.

Urban landowners can make an impact by reducing lawn size by planting native plants and perennial flowers, judiciously using fertilizer and cleaning up any spills, picking up and disposing of pet waste, and reducing the amount of paved surfaces.

Learn more at fbsr.org

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