

2022 Watershed Report Card



Results

Contaminant levels spiked following rainfall events. This was particularly evident following the August 7th rainfall of over 5 inches.

Our rivers and streams are regularly exceeding safe levels for E. coli.

Water quality decreases in the Big Sioux River as it flows south. Overall, the southern monitoring sites at Newton Hills and Akron, IA have higher levels of sediment and nitrates. In 2022, E. coli levels decreased at southern sites.

Nitrate levels continue to rise but are within safe levels. For the second year in a row, nitrates exceeded safe levels in the Big Sioux River.

Implications

Recreationists should avoid immersion recreation following heavy rainfall events.

More riparian buffers are needed to reduce contaminant runoff.

The actions taken by communities upstream affect those downstream. Eventually, the water flowing through the Big Sioux River watershed will reach and contribute to the Dead Zone in the Gulf of Mexico.

High nitrate levels can lead to Blue Baby Syndrome. Fertilizer application should be limited, based on accurate soil testing. Pet owners should pick up and properly dispose of pet wastes.

TOTAL SUSPENDED SOLIDS (TSS)

Safe Level: 90 mg/L

E. COLI

Safe Level: 126 CFU/100 mL

NITRATES

Safe Level: 10 mg/L

BIG SIOUX RIVER

F

F

A

SPLIT ROCK CREEK

C

F

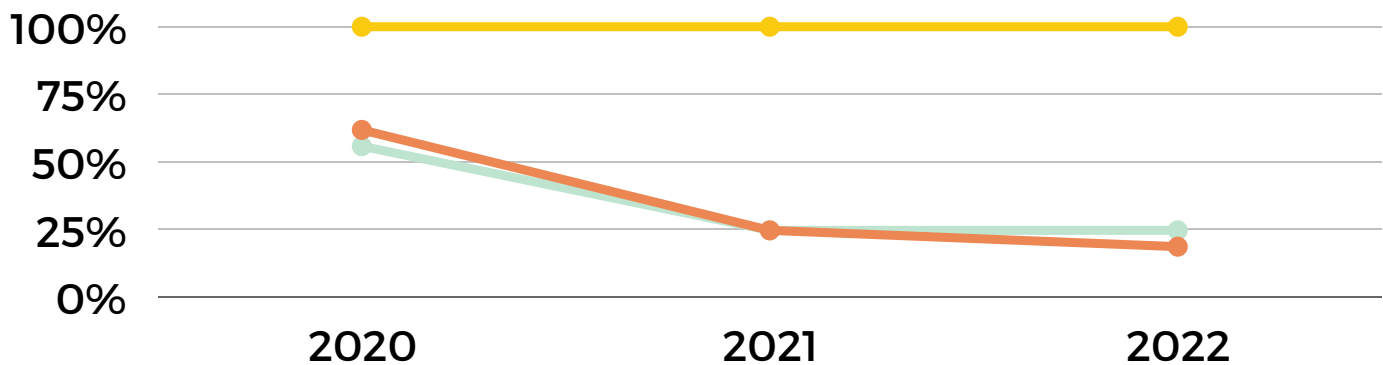
A

WALL LAKE & LAKE ALVIN

A

A

A



*All scores and trends are based on 2022 impairment data from SD DANR. The grades are determined by going through each segment of the BSR to determine if it was impaired for one of the above pollutants. These are then added up and divided by the total number of segments. For example, only 4 segments met the TSS standards for their designated uses out of 16 segments, which is 25%.

Learn more at fbsr.org/water-quality-monitoring.

The best way you can support our work for a cleaner Big Sioux River for everyone is to donate.

Visit fbsr.org/donate to contribute.



5 Year Overview of Water Quality in the Big Sioux River Watershed



For the past five years, Friends of the Big Sioux River has collected water samples in the Big Sioux River watershed. While some sites have changed over the years, six of our sample sites have remained the same. The following graphs plot the average contaminant levels at the six sites sampled by FBSR between 2018 and 2022 against the total rainfall between April and September of each year. These data can be used to help determine how rainfall affects average contaminant levels and, subsequently, water quality. A geometric mean was used to calculate the averages instead of arithmetic mean.

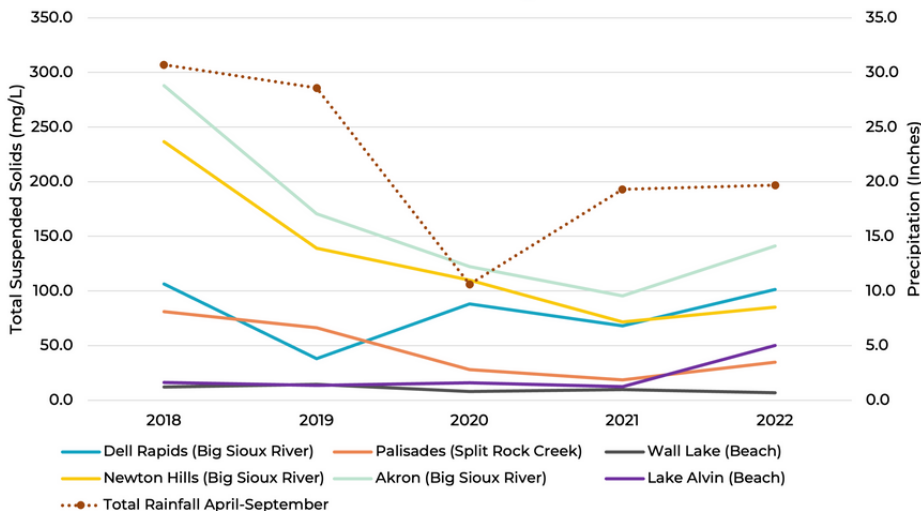
Total Suspended Solids

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.

TSS levels are elevated in years with higher total rainfall. In periods of drought, TSS levels decrease. These data signify a direct correlation between precipitation and TSS levels.

The Effects of Rainfall on TSS Levels 2018-2022
Safe Level: 90 mg/L



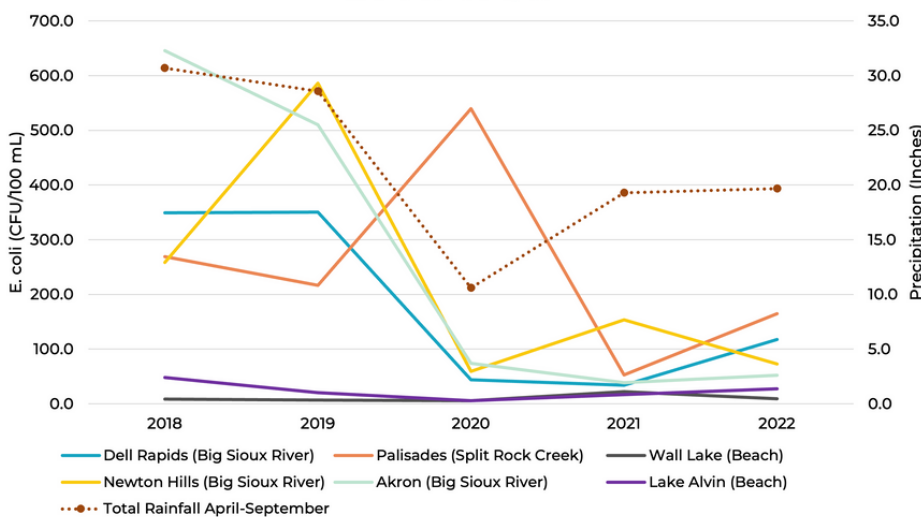
E. coli

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 agriculture runoff, wastewater treatment plants, failing septic systems, domestic and wild animal waste, and stormwater runoff.

E. coli levels are elevated in years with higher total rainfall. In periods of drought, E. coli levels generally decrease. However, Palisades saw a significant increase in 2020. Overall, these data signify a direct correlation between precipitation and E. coli levels.

The Effects of Rainfall on E. coli Levels 2018-2022
Safe Level: 126 CFU/100 mL



Nitrates

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 and an increased risk of certain cancers and thyroid dysfunction.

Nitrate levels are elevated in years with higher total rainfall. In periods of drought, nitrate levels decrease. These data signify a direct correlation between precipitation and nitrate levels.

The Effects of Rainfall on Nitrate Levels 2018-2022
Safe Level: 10 mg/L

