

Squaw Creek:

What are we monitoring?



Prairie Rivers of Iowa, in collaboration with the City of Ames, installed an automatic monitoring station on Squaw Creek at Lincoln Way in Ames. The monitoring unit takes monthly grab samples and extra samples at times of high flow after rain events. The samples are collected from the monitoring unit and taken to be analyzed by the lab technicians at the state-certified lab in Ames.

Monthly results are posted on the Prairie Rivers of Iowa webpage for your viewing.

Nitrogen

Nitrogen is an essential plant nutrient that is applied to crops and lawns to ensure healthy growth. Nitrogen changes between several forms in the soil—ammonia, nitrate, and nitrite—but nitrate is dominant form in water, and can wash off the soil surface or leach into drainage tiles. Once it reaches bodies of water, nitrate and phosphorus can fertilize algae, whose growth and decay uses up the oxygen in the water, killing fish and other aquatic life. Nitrogen is the main cause of the dead zone in the Gulf of Mexico.

Typical sources of Nitrogen: Commercial fertilizers, legumes, livestock manure, atmospheric deposition, leaking septic systems, municipal and industrial wastewater

Drinking water standard for nitrate: 10.0 mg/L

High levels of nitrate in drinking water are linked to “blue baby syndrome.” Water utilities that do not have the equipment to remove nitrate will issue warnings to customers when levels approach this level. Squaw Creek is not used as a source of drinking water, so this standard does not apply.

EPA ecoregion recommendations for Total Nitrogen in streams: 3.26 mg/L

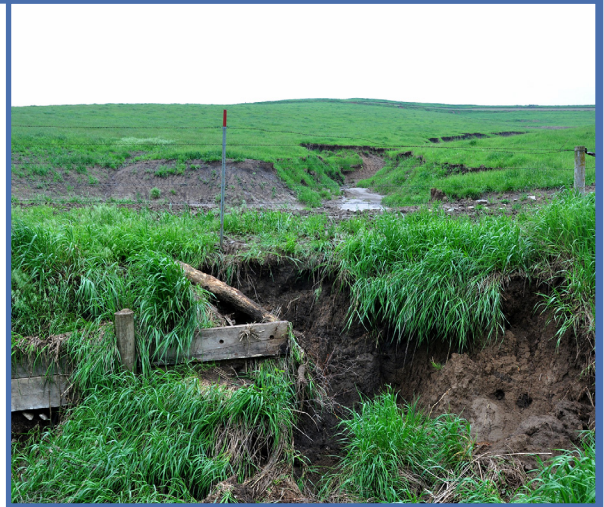
The EPA studied nutrient levels in streams in the Corn Belt ecoregion—an area with similar geology, soils and climate—to determine what levels are present in streams with minimal human impact. They recommended that states in the Corn Belt set nitrogen criteria for streams between 0.712 and 3.26 mg/L to protect streams from nutrient enrichment. Iowa has not chose to set numeric nutrient criteria, so this is just a useful benchmark but has no legal weight. Our monitoring equipment measures nitrate only. Total nitrogen also includes small amounts of nitrite, ammonia, and other organic forms of nitrogen, so it would be slightly higher.



Phosphorus

Like nitrogen, phosphorus is an essential plant nutrient. Phosphorus takes several forms in the soil, but unlike nitrogen, most remains bound to soil particles. Soil erosion carries phosphorus to streams and lakes, where it can fertilize algae and cyanobacteria. Excessive growth of algae and cyanobacteria can kill fish by using up the oxygen in the water. Some cyanobacteria also produce toxins that can be unsafe for humans and pets if ingested.

Typical sources of Phosphorus: Soil erosion, livestock manure, commercial fertilizers, leaking septic systems, municipal and industrial wastewater



EPA ecoregion recommendations for Total Phosphorus in streams: 0.118 mg/L

The EPA studied nutrient levels in streams in the corn-belt ecoregion—an area with similar geology, soils and climate—to determine what levels are present in streams with minimal human impact. They recommended that states in the Corn Belt set phosphorus criteria between 0.07 and 0.118 mg/L to protect streams from nutrient enrichment. Iowa has chosen not to set numeric nutrient criteria, so this is a useful benchmark but has no legal weight.



E. coli

E. coli is a type of bacteria that is present in the digestive tracts of warm-blooded animals (humans included). Most strains are harmless, but high levels of *E. coli* in the water indicate that the water has been contaminated by human or animal manure, and could contain disease-causing organisms like *Giardia* or *Salmonella*.

Typical sources of *E. coli*: Manure from livestock, pet waste, and wildlife, municipal wastewater treatment, leaking septic systems

State water quality criteria for *E. coli* in recreational waters:

Geometric mean 126 MPN/100mL Single sample 235 MPN/100mL

This standard applies to streams that are designated for full contact recreation, like swimming and canoeing. Most probable number (MPN) is a laboratory method for counting bacteria colonies. Waters that consistently exceed 126 MPN or exceed 235 MPN in a single sample during the recreational season could pose a health risk to swimmers and children that might accidentally ingest the water. The Department of Natural Resources regularly monitors public beaches and posts advisories during periods where bacteria levels exceed the standard.



Contact Us!

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