

# Black Earth Creek Monitoring Plan (October 2023-September 2028)

## USGS Monitoring Plan Proposal

Water quantity and quality monitoring on upper Black Earth Creek and Brewery Creek near the Village of Cross Plains is scheduled to be discontinued on September 30, 2023. This is due to the completion of the phosphorus and sediment monitoring project for the wastewater treatment plant WPDES permit renewal. Data available online from these monitoring stations has become an important tool for the public, local municipalities, and local and state agencies to keep informed about this resource. At the request of several interested parties, we have outlined a few different options as part of a research proposal to continue monitoring in the watershed at the previously established gauging locations at current levels with the option of additional monitoring downstream and an expanded project scope.

This project will utilize the existing monitoring stations around the Village of Cross Plains, providing discharge and water quality data to the USGS National Water Dashboard (<https://dashboard.waterdata.usgs.gov>) and USGS WaterAlert (<https://accounts.waterdata.usgs.gov/wateralert/>) for municipalities and the public, throughout the watershed, to use in planning and implementing flood resilience and emergency management during periods of extreme weather. Water quality and quantity data will be used to track and pinpoint potential damage to the fishery caused by runoff during large storm events. In addition, long term datasets available at these locations will be used to characterize the effects of increased urbanization on water quality and flow regime of Brewery Creek, Black Earth Creek, and the Black Earth Creek Watershed as a whole. In an effort to set a baseline and help track stream health, geomorphic assessments may be conducted at several stream reaches, and use of the Stream Quantification Tool (SQT) developed by Dane County for this purpose will be assessed. All these efforts will help inform and track land management decisions in the watershed.

### Option 1 (3 monitoring stations)

Based on recent conversations, the first option would be to keep the three stations near Cross Plains running at the current level of data collection. This includes continuous discharge, continuous water quality, storm-based sampling for phosphorus and ammonia, and nutrient loading computations for the sites. Long term trends will be analyzed to determine changes in water quality and quantity over time as well as the effects increased urbanization are having on the Brewery Creek and the upper Black Earth Creek watersheds.

Annual Costs: (Oct 2023 – Sept 2028)

Cooperators \$57,000 (operation per year)

Lab \$4,700 (96 samples max, TP and Ammonia, 3 sites, Dane Iowa lab)

**Total Cooperator \$61,700**

USGS Match \$19,000 (12.5% match operation 12.5% match research)

## **Option 2 (4 monitoring stations)**

In addition to Option 1, water quality and storm flow sampling for nutrients would be added to the discharge monitoring station at Black Earth. This would utilize the previous continuous water quality records collected at this site as well as the long-term discharge record to characterize trends in water quality and quantity. Nutrient sampling and loads calculations would be used to help determine potential non-point pollution caused by runoff during storm events. Trends in water quality and flow regime due to urbanization at a larger watershed scale can also be characterized.

### Costs:

Year 1 (Oct 2023 – Sept 2024) Installation and Operation

**Cooperator**     \$67,000 (operation/installation for 1<sup>st</sup> year)

**Equipment**     \$10,000 (upgrade/installation of one site)

Lab                 \$6,200 (96 samples max, TP and ammonia, 4 sites, Dane Iowa Lab)

**Total Cooperator**     **\$81,200**

USGS Match             \$25,600 (12.5% match operation/install 12.5% match research)

Year 2-5 (Oct 2024 – Sept 2028)

**Cooperator**     \$66,000 (operation per year)

Lab                 \$6,200 (96 samples max, TP and ammonia, 4 sites, Dane Iowa Lab)

**Total Cooperator**     **\$71,200**

USGS Match             \$22,000 (12.5% match operation 12.5% match research)

*(Additional options omitted for brevity)*