



## News From the Rock Creek Watershed

Mitchell Soil & Water Conservation District

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We are all a part of a watershed and we share a collective responsibility to take care of and promote the wellbeing of our land, water, and communities. The decisions and actions of each individual landowner, farmer, and citizen have snowballing influence (positive or negative) on the wellbeing of the larger community. In 2014, farmers, landowners, and stakeholders of the

Rock Creek Watershed came together to start the Rock Creek Watershed Project, rallying around their shared dedication to promoting water quality, improving soil health, providing wildlife habitat, and ensuring the long-term viability of agriculture in the watershed. The Rock Creek Watershed Project is all about encouraging, helping, and empowering the stewards of the Rock Creek Watershed in their efforts to improve and protect their water, farms, land, families, and community. It certainly hasn't been a normal year for the project and the watershed (we've missed being about to gather in person), but that hasn't stopped plenty of exciting thing exciting things from happening out in the fields of the Rock Creek Watershed.

### **New Denitrifying Bioreactors and Saturated Buffers Installed in the Watershed!**

This past fall, eight denitrifying bioreactors and saturated buffers were installed throughout the Rock Creek Watershed. Denitrifying bioreactors and saturated buffers are edge of field structures that are designed to remove nitrate from agricultural tile drainage water, thus helping to reduce nitrate concentrations in the creek. Iowa's Nutrient Reduction Strategy calls for a 41% reduction of nitrates in our surface waters. On average, saturated buffers and bioreactors remove 40-60% of the nitrates in the water that they treat.

These structures are essentially giant filtration systems for tile lines that work by enhancing the natural and biological process of denitrification, which is the conversion of nitrate ( $\text{NO}_3$ ) in the water to a gas, nitrous oxide ( $\text{N}_2\text{O}$ ), by microbes and bacteria. These structures are highly engineered though they may not look like much



*A double bioreactor being installed on Mark and Eric Jellum's farm. The area will be seeded with a diverse prairie mix in the spring, providing habitat for wildlife and beneficial insects.*

*Photo taken by the Iowa Soybean Association*

because they are almost entirely underground. Saturated buffers are positioned in buffer strips of perennial vegetation that run alongside waterways. Tile line runs through the buffer strips and distributes the water laterally through the area, allowing the perennial vegetation and microbes in the soil to absorb the water and nutrients. Denitrifying bioreactors have more flexibility in placement, and are large trenches filled with a carbonaceous material (usually woodchips) through which agricultural drainage tile is routed. The woodchips and the resident microbes filter and denitrify the water passing through.

Most of these eight exciting new structures had been waiting several seasons for the right construction weather to be able to be installed, so there were a lot of happy people when the stars finally aligned this past fall. There has now been a total of seventeen edge of field practices installed in the watershed in recent years. I don't know of any watershed with a higher concentration of these practices than Rock Creek!

### Signs up through the Watershed

You may have noticed that a few signs popped through the watershed showing off how farmers are promoting soil health and water quality on their land with practices like cover crops and no till. Please reach out if you have a practice or piece of land that you think is worth showing off to those passing by and maybe we can connect you with a sign!



*Justin Sprung next to the newly installed sign showing off the bioreactor on the Sprung family farm. You can see the sign when driving along on Balsam Ave*

### Meet Some of the Local Flora:



**Butterfly Milkweed:** Butterfly Milkweed is one of eighteen different species of milkweed native to Iowa. You can see its bright orange flowers blooming in prairie habitats from June to August. Milkweed is the host plant for the larvae of the Monarch butterfly, it is the only type of plant that the larvae can eat. The Eastern Monarch population has declined 80% in the last two decades. According to the Iowa Monarch Conservation Consortium, in order to protect and ensure the future of the monarchs, Iowa needs to establish 188 million more milkweed stems in the next twenty years.



**Rattlesnake Master:** Rattlesnake Master is a very distinct-looking plant that can be seen blooming in prairies and roadside ditches from mid-July to mid-August. You may not be able to guess by looking at it, but the rattlesnake master is actually a member of the carrot family, if you break a leaf the smell should be one that is familiar to most gardeners. It serves as a food source for many different native insects and its presence helps boost the insect diversity of a habitat.

## Cost Share is Available!

The Rock Creek Watershed Project is currently offering financial cost share for farmers and landowners in the watershed on a variety of best management practices.

Check out some of the practices that we have cost share for:

### Cover Crops

Cover crops are a great tool that can help reduce soil erosion, suppress weeds, keep your nutrients in your field, and improve soil health. Cost share is prioritized for those who are newer to using cover crops, though depending on demand, there may be funds available to those with more experience with the practice as well



*Cereal Rye cover crops in no till corn*

### Strip/No Till

Reducing tillage can reduce soil erosion and when used alongside other best management practices it can help improve soil health. Looking to try no till for the first time? Using no till when you have soybeans following corn, is a great, low-risk way to start

### Waterways

Have you noticed erosion or a gully forming in your field? Putting in a grassed waterway will keep your soil in place and help convey surface water off your land without taking your soil with it

### Wetland or Oxbow Restoration

Wetlands and Oxbows provide important wildlife and aquatic habitat. They also help improve local water quality



*Newly restored oxbow in Mitchell County*

### Streambank or Grade Stabilization

Are you seeing a streambank or some other spot that has a lot of acute erosion? We can help stabilize the area and stop the erosion

Please reach out if you are interested in putting any of these practices to work on your land or operation! Interested in something you don't see here? There are many additional options available through a combination of local, state and federal programs so please contact us to learn more. If you have a project or something that you are interested in trying out, we may have something or someone available to help you out! ***Cost share probably won't be around forever so please take advantage of it while it is here!***

## 2020 Water Sampling Results:

Staff has been sampling our Mitchell County rivers and creeks for Nitrate + Nitrite, Total Phosphorus as P, and E. Coli bacteria since 2008. This past year, we sampled twenty-three sites monthly, from April to October. Water quality is determined by the interaction of lot of different factors, some human-driven and some natural. Our land use and management decisions in themselves have a *huge* impact on water quality and they can promote either resiliency or vulnerability for when those less controllable factors hit, like when a huge rainfall event threatens to pull soil and pollutants from yards, streets, and fields. By looking at water quality data over time, we can identify any rising reasons to be concerned or encouraged. We have five sample sites located on Rock Creek. There has now been, at least, eight years of routine water quality data collected from each of these Rock Creek. We have identified both some positive trends and some troubling ones.

We are very happy to see that nitrate levels in Rock Creek have been slowly trending downwards across our years of sampling. Nitrate pollution can be reduced by installing wetlands, using cover crops, and using smart nutrient application and management. We are especially pleased to be seeing this trend because it is happening despite increasing annual average precipitation (which often is associated with increased nitrate concentrations in surface water). We believe that this downwards trend is a testament to the efforts of the watershed's famers and landowners in adopting cover crops and other tools and strategies that keep their nutrients in their fields. However, it's not all good news. There is currently a rising trend in both E. Coli and Phosphorus concentrations in the creek. E. Coli has been trending upwards significantly, largely driven by spikes that are associated with precipitation events. E. coli are a fecal bacterium associated with warm blooded animals and their levels in water are often influenced by the management of cattle and manure. We have also seen a slow and steady increase in phosphate at most of the Rock Creek sample sites. Phosphate is usually transported while attached to soil particles or other organic materials, so phosphate levels in water bodies is often associated with soil erosion. Reducing tillage and using buffers of perennial vegetation along the creek reduces phosphate pollution.

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Please reach out to me if you are interested in cost share, have a story to share, or if you have any idea or concern that you'd like to discuss. Under current COVID protocol the office is closed to the public, but we can talk over the phone, via email, schedule a virtual call, or arrange a field visit. I love being able to meet with people and hear about what they have going on their land or operation!



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