



WITHIN THE WATERSHED

Since 1999, ACWA has worked within the Raccoon River watershed to improve water quality for its residents and those living downstream. This has been the primary goal of the organization since its inception. ACWA began monitoring nitrate levels in the Raccoon and Des Moines rivers and later added monitoring of edge-of-field structures, such as bioreactors, on private farms. Over time, members have reached out to stakeholders within the watershed to collaborate with ACWA to help achieve its mission.

Today, ACWA is working with numerous organizations, municipalities, farmers and landowners with the common goal of reducing nutrients in the rivers that more than a half-million people depend on as their drinking water source. In addition to water quality, water quantity is a concern for downstream residents. ACWA is also addressing flood mitigation by changing how farmers work the land within the watershed.

UPSTREAM-DOWNSTREAM PARTNERSHIPS

With 150 miles of waterways in the Des Moines metro, urban residents are becoming reacquainted with the rivers that run through the area. The rivers are the literal connection between rural Iowa and these urban locales. But sometimes the connection stops there.

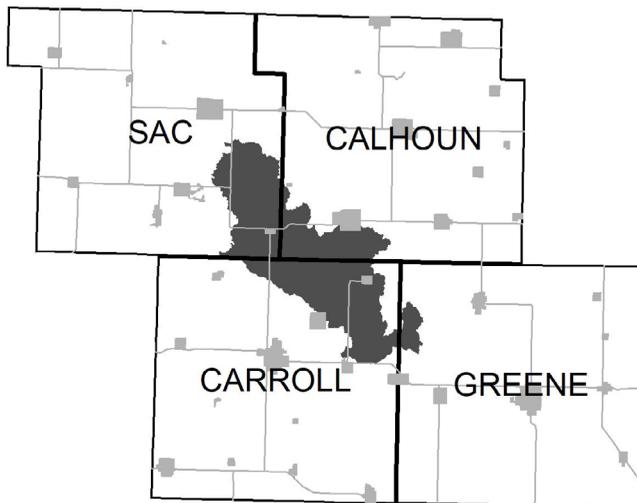
Those who farm the land are concerned about soil health, which directly affects their income. The health of the water leaving their farmland may not be considered. Downstream, urban residents rely on this water for personal use and recreation. Municipalities also must address the amount of water flowing through their communities, therefore flood and stormwater management are key areas of concern.

ACWA is the connection for water quality improvement between their agricultural clients and urban areas downstream. To move beyond conversations and into action, ACWA is ensuring key entities are included such as the Greater Des Moines Partnership, Capital Crossroads, Polk Soil and Water Conservation District, watershed coordinators, city officials along with ag retailers, farmers and landowners.

ACWA members are initiating and implementing projects in key watersheds to install nutrient reduction practices on private farmland such as bioreactors, wetlands, reservoirs, streambank and saturated buffers, along with in-field practices such as cover crops. All of these practices reduce nutrients in the water supply and some also help to reduce flooding for the benefit of those downstream.



NORTH RACCOON FARM TO RIVER PARTNERSHIP PROJECT



Above: Iowa Deputy Secretary of Agriculture Julie Kenney announced the Farm to River Partnership Project at a kick-off event in May 2018. The ceremony was held at the bioreactor site on the Mark Schleisman farm near Lake City. Schleisman installed the bioreactor and a saturated buffer as part of the earlier Elk Run watershed project. He continues to improve his farm by adding cover crops and a drainage water recycling system is in the planning stages.

The North Raccoon Farm to River Partnership project is a Water Quality Initiative (WQI) through the Iowa Department of Agriculture and Land Stewardship (IDALS) that supports the Iowa Nutrient Reduction Strategy goals. This three-year project, totaling \$2.6 million, began in the spring of 2018 and is unique with its substantial goals and management approach.

The project strives to help farmers and landowners implement in-field and edge-of-field practices that reduce nitrogen and phosphorus loading in Iowa waters. The project coordinator is embedded within three ag retailers in the project area: Landus Cooperative, NEW Cooperative, and Nutrien Ag Solutions, as well as the Iowa Soybean Association (ISA). The coordinator is devoted solely to helping farmers and landowners implement conservation practices on their farms for environmental improvement, allowing the retail agronomists to focus on farmer production and profitability. They will work in tandem with farmer clients. ACWA is leading the project, in partnership with ISA, in five sub-watersheds of the North Raccoon River watershed. According to IDALS, this project could potentially be used as a successful model to adopt across the state to scale up nutrient reduction practices to reach the Nutrient Reduction Strategy goals.

PROJECT GOALS

Bioreactors: goal of 15 installed

Funding = 100% paid

In 2018, one bioreactor was installed, several are in the design phase and should be in place by the end of 2019. Several more are in the planning phase for installation in 2020.

Bioreactors are edge-of-field structures that reduce nitrogen in tile drained water. Installed near an outlet, drainage water is redirected into an excavated trench filled with woodchips where nitrate-N is removed by denitrification, a natural process. Bacteria use carbon in the wood chips as an energy source to convert nitrate-N to nitrogen gas, which escapes harmlessly into the atmosphere. On average, bioreactors reduce nitrogen leaving the tile lines by 43 percent.





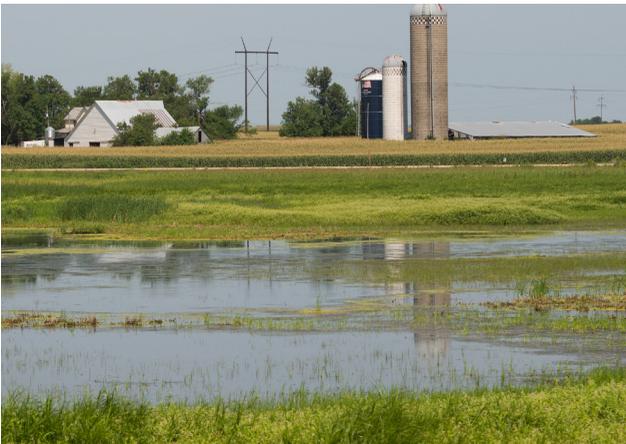
**Saturated buffers: goal of 15 installed
Funding = 100% paid**

A saturated buffer is a practice where a water level control structure is installed at a tile outlet and redirects drainage water through a buried distribution line into the soil of a streamside buffer. The distribution lines are installed parallel to the stream so the drainage water can seep through the soil toward the stream. The nitrate-N in the drainage water is converted to nitrogen gas by the bacteria that use organic matter in the buffer soil as their energy source. Saturated buffers can reduce nitrogen loss from the drainage system by an average of 50 percent.

**Cover crops: goal of 11,500 acres
Funding = \$25/acre**

In 2018, farmers committed 1,000 acres to grow cover crops on farms for the first time.

Cover crops are grown between the harvest of cash crops and planting of following year's crop. These plants cover the soil, reduce weeds, increase soil organic matter, reduce nitrogen loss through plant uptake and reduce phosphorus loss through reduced erosion. Cover crops can reduce nitrogen and phosphorus losses by 30 percent, keeping valuable soil and nutrients in the field.



**Targeted wetlands: goal of 2 installed
Funding = Construction 100% paid, +
CRP payments for 10-15 years**

A treatment wetland is constructed in a drainage way, where upstream tile drainage water can be captured. Treatment wetlands reduce downstream nitrogen loads through a combination of denitrification, plant uptake and other processes. In addition to removing nitrogen by an average of 50 percent, wetlands help to mitigate flooding and create habitat for wildlife.

Other opportunities

Tile water monitoring is being conducted at no expense to farmers. Whole farm conservation assessments also are available, which can identify resources for practices beyond the project's goals. In-field nutrient management analysis can also be completed. Through soil, tile water and plant tissue analyses, farmers will have additional data to make informed nutrient management decisions.

NATIONAL FISH AND WILDLIFE FOUNDATION GRANT

Increasing the number of conservation farming practices on the land will improve soil health and water quality for growing crops. Building awareness and knowledge of these practices by farmers and landowners is key to their implementation.

A project is underway through a collaboration between AWCA, Iowa Soybean Association (ISA), Iowa Agriculture Water Alliance (IAWA) and Farm Journal's Trust In Food™ division. Funded through a grant from the National Fish and Wildlife Foundation (NFWF), the group is working to scale up conservation practice implementation. The three-year project is focused in the Headwaters of the North Raccoon, Buttrick and Hardin Creek watersheds, and the five watersheds in the North Raccoon Farm to River Partnership.

Phase I of the project includes a multi-media campaign focused with messages tailored on the benefits of conservation farming practices. In the second phase, project partners will help watershed coordinators and technical service providers connect with farmers and landowners to implement practices for improved water quality and soil health. They will focus on those who have responded to the messaging campaign. The project could set an example of how to scale up practice implementation to reach the Iowa Nutrient Reduction Strategy goals.

