



# *Beyond the Farm-* Water Monitoring in the Buttrick Creek Watershed

**M**any growers wonder how much their crop production contributes to nitrate concentrations in the water. This interest increases as restrictions on nitrogen usage become implemented in the name of protecting water quality.

“Any reasonably informed person can tell you the data linking agricultural practices and water quality is difficult to obtain and as a result quite limited,” says Dr. Tracy Blackmer, director of research for the Iowa Soybean Association.

“This limitation has not prevented regulations from being imposed upon growers, some of which are not adequately backed by sound science,” Blackmer believes.

For three years, ISA has monitored water in West Buttrick Creek as it enters the creek from farm fields and again as it leaves the watershed. During these three years, high nitrate concentrations have been observed, but both the concentration and total amount of nitrate fluctuate within a year and between years. The biggest factor affecting the nitrogen loading in the creek water is the amount of rain. Understanding what to monitor, how to monitor it and when to monitor it takes a lot of expertise. Beyond that, it takes several years of data to really understand the dynamics of the watershed.

“The results of the analysis will establish a benchmark in water quality and will permit us to collect meaningful

information that gives us a solid foundation,” says Todd Sutphin, ISA watershed program coordinator.

“Once the benchmark is established, farmers in the watershed can modify management practices, based on their findings from on-farm nitrogen and/or manure management strip testing programs, and we’ll be able to determine whether those changes have an impact on surface water quality.”

## **How is sampling done for water quality monitoring?**

Water quality sampling in Buttrick Creek is done by both grab sampling (someone dipping a bottle in the creek), and automated samplers (a machine that automatically takes a sample from the creek). Stormwater samples are collected during rain events that are large enough to trigger the automated samplers.

Grab samples allow many observations without expensive equipment and allow measurement of the concentration of nitrate in the water sample. The major limitation is that grab samples don’t tell you how much nitrogen is entering the watershed. A high concentration of nitrate in a stream with very little water will add less total nitrogen than a stream with lower nitrates but a much higher flow. To rectify this, ISA’s automated samplers also measure the stream flow.

During the season there is both base flow and storm