

# Water Action Volunteers

Monitoring Site Quick Facts	
SWIMS Station ID	10038318
WBIC	257400
County	Waupaca
Watershed	Waupaca River
Watershed Area	291 sq miles
Stream Miles in Watershed	231 miles
Downstream Waterbody	Wolf River



2016 Monitoring Results	
Minimum TP Value	0.0278 mg/L
Maximum TP Value	0.0635 mg/L
Median TP Value	0.0346 mg/L
No. Samples > 0.075 mg/L	0

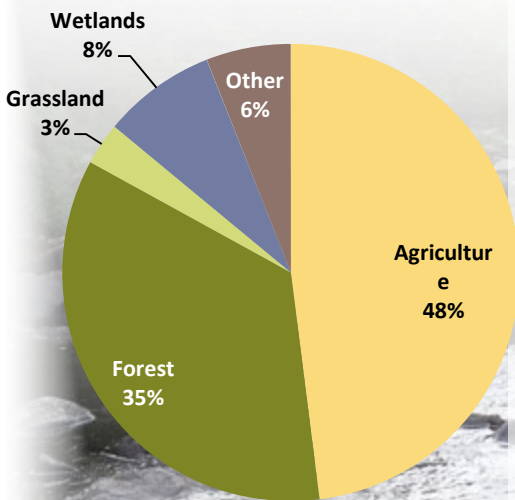
## 2016 Total Phosphorus Monitoring Program

### Waupaca River - Cobbtown Rd.

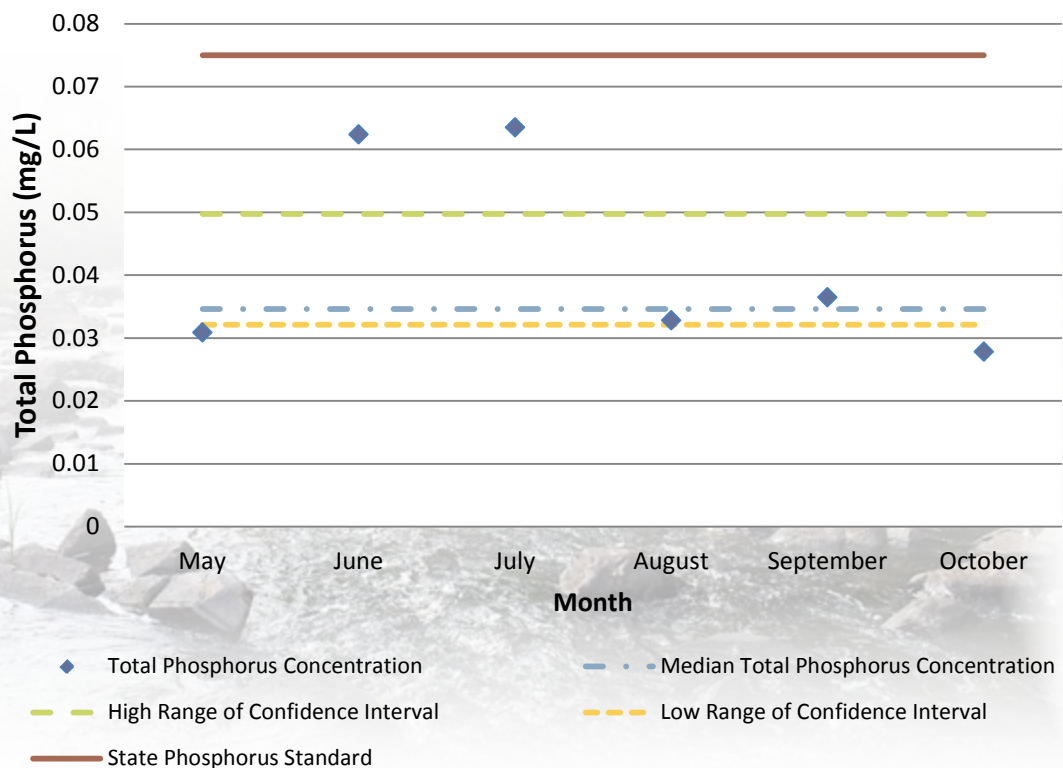
Bob Van Epps



### Approximate Watershed Land Use



### Total Phosphorus Concentration per Month



# Why Phosphorus?

Phosphorus is an essential nutrient responsible for plant growth, but it is also the most visible, widespread water pollutant in Wisconsin lakes. Small increases in phosphorus levels can bring about substantial increases in aquatic plant and algae growth, which in turn can reduce the recreational use and biodiversity. When the excess plants die and are decomposed, oxygen levels in the water drop dramatically which can lead to fish kills. Additionally, one of the most common impairments in Wisconsin's streams is excess sediment that covers stream bottoms. Since phosphorus moves attached to sediments, it is intimately connected with this source of pollution in our streams. Phosphorus originates naturally from rocks, but its major sources in streams and lakes today are usually associated with human activities: soil erosion, human and animal wastes, septic systems, and runoff from farmland or lawns. Phosphorus-containing contaminants from urban streets and parking lots such as food waste, detergents, and paper products are also potential sources of phosphorus pollution from the surrounding landscape. The impact that phosphorus can have in streams is less apparent than in lakes due to the overall movement of water, but in areas with low velocity, where sediment can settle and deposit along the bottom substrate, algae blooms can result.

## Project Description

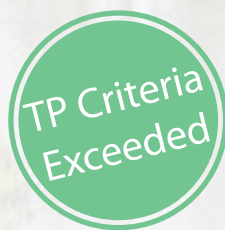
This project will evaluate water quality improvements made in the Waupaca/Tomorrow River Watershed from Best Management Practices installed in the watershed from 1996 through 2002 as part of the Waupaca River Priority Watershed Project. Water Action Volunteers' volunteers were selected to monitor total phosphorus levels at ten of the sites included in this project. Many of these sites are also monitored for nitrogen and nitrates by the volunteers.



Photo credits to Matt Berg, David Seligman, Linda Warren, Adrian Konell

## Volunteer Monitoring Protocol

To assess in-stream phosphorus levels, WAV volunteers collected water samples that were analyzed for total phosphorus (TP) at the State Lab of Hygiene during the growing season (May through October). Following Wisconsin Department of Natural Resources (WDNR) methods, six phosphorus water samples were collected at each monitoring site - one per month for each of the six months during the growing season. The water samples were collected approximately 30 days apart and no samples were collected within 15 days of one another.



A stream site is considered "Criteria Exceeded" if: 1) the lower 90% confidence limit of the sample median exceeds the state TP criterion of 0.075 mg/L or 0.1 mg/L or 2) there is corroborating WDNR biological data to support an adverse response in the fish or macroinvertebrate communities. If there is insufficient data for either of these requirements, more data will need to be collected in subsequent years before a decision can be made. A site is designated as "Watch Waters" if the median total phosphorus concentration falls within the confidence limit and a site is considered to have "Met Criteria" if the upper limit of the confidence interval does not exceed the criterion.



## PROJECT PARTNERS

