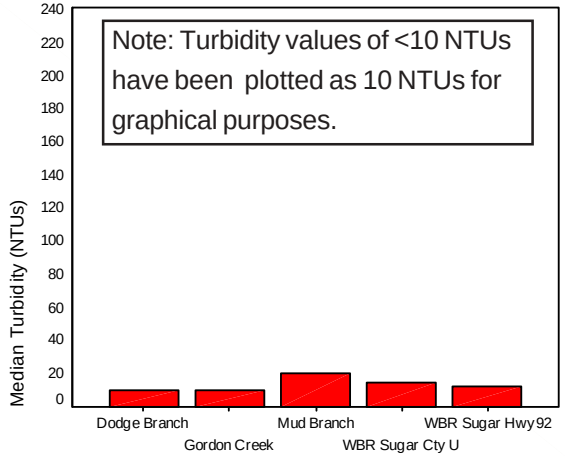
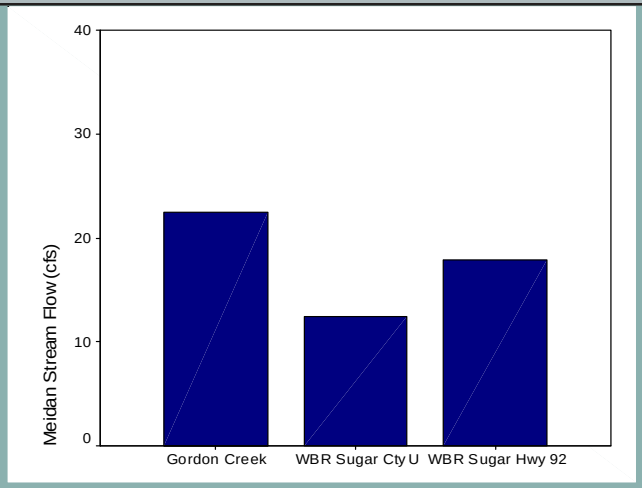
Turbidity

In the chart below, data show n are median turbidity values at each site for 2001-2003 sampling. Turbidity was measured monthly at the WBr Sugar River sites (only during 2001-2002) and more spoadically at other sites. Sites are plottedon the horizontal axis and turbidity (NTUs) is on the vertical axis. Overall, median values indicate good water quality for aquatic life. However, a closer look at turbidity over time indicates a few areas of potential concern.

In the summers and autumns of 2001and 2002 at the WBr Sugar River (Cty U) site, turbidity was between 12 and 65 NTUs. However, during winter months (Oct.-Feb.) it was consistently <10 NTUs. Similar findings were seen at the WBr Sugar River (Hwy 92) site, with turbidity ranging from 11-35 NTUs in spring and summer months (March-September). Clarity was improved during winter months. Turbidity at Mud Branch also showed a similar relationship (ranging from 10-30 NTUs) on 3 monitoring visits between Nov. 2002 and March 2003), with best clarity in mid-December. For all 3 sites, this relationship makes sense since the winter freeze should eliminate erosion to the stream and help increase water clarity.





Stream Flow

Median stream flow (cfs) values are shown in the graph. Flows were determined when it was not raining. Flow is a measure of the volume of water in a stream at a given time. From these data, we can see the effect of Primrose Branch on flow as is enters the West Branch of the Sugar River between the County U and Hwy 92 sites; and the flow for Gordon Creek can be used to support data analyses.

Gordon Creek was monitored May-November of 2002. Turbidity was always <10 NTUs. This indicates Gordon Creek had goodwater clarity, with no negative effects on aquatic life. Similarly, of 6 monitoring visits to Dodge Branch, turbidty was <10 NTUs 5 times, and only slightly higher (12 NTUs) on the other occasion, indicating good water quality.

For sites with higher turbidity scores, the concern is that fish begin to show signs of stress when turbidity is between 10 and 100 NTUs for a number of hours. When turbidity exceeds 100 NTUs for hours or days fish can experience increased respiration, cover abandonment, or reduced feeding. A next step might be to investigate sources of turbidity and ways to mitigate these sources at the WBr Sugar and Mud Branch sites . Additional monitoring to assess how long turbidity values stay elevated following a storm event is also an important next step.

Citizen Stream Monitoring Data Summary

Sugar-Pecatonica River Basin

2001-2003

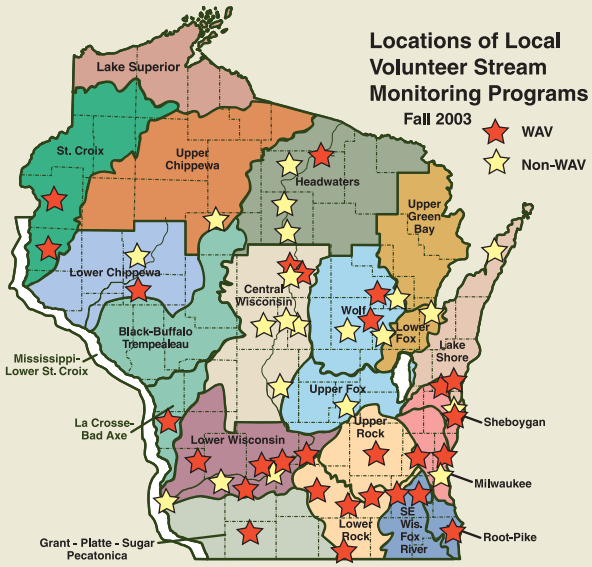
Compiled as part of the Univeristy of Wisconsin-Extension's and the Wisconsin Department of Natural Resources' Water Action Volunteers' Stream Monitoring Program

Water Action Volunteers

WISCONSIN DEPT. OF NATURAL RESOURCES

UW Extension

For more information about the monitoring and data described in this brochure contact the WAV coordinator at 608-265-3887 or Nohr Network of Monitors' coordinators:
Peggy Compton (608-342-1633) or Dave Fritz (608-943-8454) or visit the WAV website at:
http://clean-water.uwex.edu/wav



Extent of Volunteer Stream Monitoring in Wisconsin

Across Wisconsin citizens are monitoring water quality in wadable streams using Water Action Volunteers' (WAV) methods. As of November 2003, over 250 monitoring sites were registered in the statewide database. The map above shows locations of local stream monitoring programs.

WAV program volunteers monitor in 26 counties, and have collected data on nearly 2000 days.

The volunteers are led by local program coordinators who organize training and educational events, enter data to the statewide database, and interact regularly with local volunteers.

In the Sugar-Pecatnoica Basin of southwestern WI, Peggy Compton and Dave Fritz head up the Nohr Network of Monitors. The single star in the basin represents many volunteers' stream monitoring sites.

Sugar-Pecatonica Basin Sites

In the Sugar-Pecatonica Basin, 4 streams & 5 sites were monitored between 2000 and 2003.

1. Dodge Branch, upstream Blotz Road bridge
2. Gordon Creek at Sandy Rock Road
3. Mud Branch, upstream Highway G bridge
4. West Branch Sugar River, west of County U
5. West Branch Sugar River west of Highway 92

Biotic Index

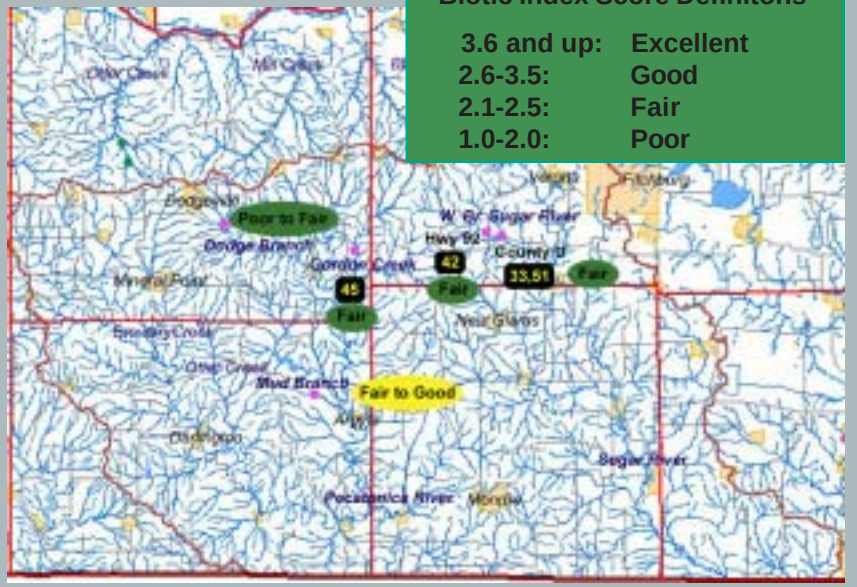
Biotic Index scores are based on macro-invertebrates' tolerance to varied oxygen levels in the water. The scores range from 1 to 3.6 or greater; A stream is assigned a water quality health rating based on its score. Ratings range from poor to excellent (see box at right).

The map to the right shows sites that were monitored in the Sugar-Pecatonica Basin. The sites are marked with pink dots. B.I. water quality ratings are marked in green or yellow ovals.

Over the four year sampling period, scores ranged from 2.0 (Dodge Branch Oct '01) to 2.7 (Mud Branch Nov. '02); Most B.I. scores indicated fair water quality conditions.

Biotic Index Score Definitons

3.6 and up:	Excellent
2.6-3.5:	Good
2.1-2.5:	Fair
1.0-2.0:	Poor



Habitat Assessment

Habitat scores are marked on the map in black boxes. Scores can range from 13 to 52. At these sites the range was 33 to 51, both recorded at the W. Branch Sugar River (Cty U). The higher score was determined one year (Oct. 2002) after the low score (Oct. 2001). Scores at other basin sites were in the low to mid 40s.

Since watershed specific characteristics can affect the score, it's best to compare scores year to year within a watershed. The significant change in habitat score at the Cty U site was due to a joint DNR-Dane Co. stream restoration project (funded by a Targeted Runoff Mgt grant). Alterations to the stream bank made it less steep and it was seeded to help eliminate erosion. To further improve the habitat, the low flow channel was recreated with rock, pools were created, and lunker structures were added, providing both attachment sites for macroinvertebrates and cover for fish. This example is an excellent representation of what monitoring can show when carried out both before and after a project.