Citizen Stream-Monitoring Program

Stream Reader

Newsletter of the Minnesota Pollution Control Agency

Minnesota Pollution Control Agency

Summer 2002

Citizen Stream-Monitoring Program strengthened by local links

Watershed and county environmental staff are key links in the Citizen Stream-Monitoring Program (CSMP). On the front end, watershed and county staff members recruit new volunteers, help choose site locations, and answer questions as volunteers get started. At the end of each season, local coordinators often provide annual reports to volunteers that summarize data at the county or watershed level -- something the state CSMP coordinator is unable to do. Some groups have a year-end picnic or banquet to recognize and thank volunteers for all their hard work. Statewide, there are currently 16 active watershed groups and six counties in the CSMP network.

WATERSHED GROUP	COUNTY
Cannon River Watershed Partnership	Chisago
Chippewa River Watershed Project	Dodge
Chub Creek Watershed Project	Douglas
Crow River Organization of Water	Jackson
Duck Lake Clean Water Partnership	Pine
High Island Creek Clean Water Partnership	Wadena
Lac qui Parle/Yellowbank Rivers Clean Water Partnership	
Mille Lacs Lake Clean Water Partnership	
Mississippi River Revival	
Pomme de Terre River Watershed Project	
Redwood/Cottonwood Rivers Control Area	
South Branch Root River Clean Water Partnership	
Watonwan River Clean Water Partnership	
Wells Creek Watershed Partnership	
West Fork Des Moines River Clean Water Partnership	
Whitewater Watershed Project	

West Fork Des Moines Clean Water Partnership Coordinator Keli Daberkow presents 2001 Recognition Award to CSMP volunteer Paul Nelson of Jackson, Minnesota.

Spotlight on the West Fork Des Moines River

To get an idea of what a watershed group offers to the CSMP experience, let's take a closer look at the West Fork Des Moines River Clean Water Partnership (CWP). This is a three-year project to study water quality and sources of pollution in the watershed. Water samples are collected at 10 locations across the watershed every two weeks and when it rains, during the months of May to October. Samples are analyzed for nine water-quality parameters. The project aims to determine where water quality is most degraded, so improvement efforts can focus on these problem areas.

In addition to the sampling described above, the project initiated a CSMP network in 2001. During the 2001 season, 17 volunteers monitored 23 sites across the watershed. Kelli Daberkow serves as the CWP project coordinator and, in that capacity, provides support and coordination for CSMP volun-

Local links *continued on next page*

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teers in the watershed. Interested watershed residents were introduced to the CSMP at a meeting that was held before the monitoring season began. Kelli met individually with new volunteers who could not make the introductory meeting, and walked them through the CSMP. Throughout the season, Kelli was able to answer questions or address issues that came up. In February 2002, a recognition banquet was held for the CSMP volunteers, where Kelli presented a summary of the information they gathered. Each volunteer received a copy of a West Fork Des Moines River CSMP report, along with MPCA recognition awards (T-shirts, caps or clip folders). The CWP also presented volunteers with plaques displaying their names and a year plate for each season monitored.

Like other CSMP networks connected to watershed projects and counties across the state, the West Fork Des Moines River CWP provides a way for CSMP volunteers to work together in their watersheds, and to meet other citizens in their communities who care about rivers and streams. Volunteers receive ongoing support and feedback from project coordinators, and the statewide CSMP network is strengthened through its links to organized efforts at the local level.

CSMP Volunteers help MPCA test longer T-tube

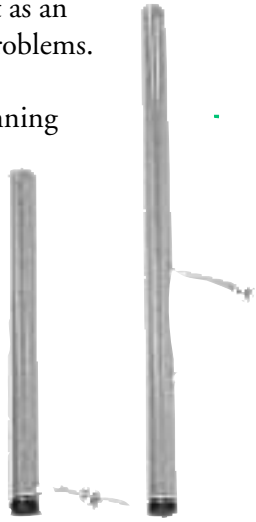
Getting tired of transparency readings greater than 60 centimeters? During 1999 and 2000, volunteer data showed many rivers in northern Minnesota exceeded that level of transparency on a regular basis (i.e., the Secchi symbol was still visible when the standard 60-cm tube was full).

During the 2000 monitoring season, every reading taken at 25 sites was greater than 60 cm. That's about 10 percent of all sites monitored. At least one reading was greater than 60 cm at 151 of the total 245 sites (62%). To try to deal with this problem, MPCA staff and four CSMP volunteers tested a 100-cm transparency tube during the summer of 2001 at 13 sites in the upper Mississippi River Basin. Test sites were on the Swan, Pine, Mississippi, Prairie, Straight, Long Prairie and Crow Wing rivers. We wanted to see how often transparency fell between 60 and 100 cm; if it's frequent enough, the longer tube could be a more useful tool for tracking water-clarity changes in the northern reaches of the state.

In the tests all but a handful of the readings taken were greater than 100 cm. Even on the Prairie River, which is heavily stained by bog water, transparency was always greater than 100 cm. Greg and Mary Johnson, CSMP volunteers on the Pine River, reported three out of 32 readings between 95 and 100 cm. MPCA staff found transparency below 100 cm in only a few instances, on the Straight River near Park Rapids, Crow Wing at Pillager, Mississippi at Aitkin, and the St. Louis River.

When transparency was less than 60 cm, readings were taken with both the 60-and 100-cm tubes. It's interesting to note the longer tube consistently yielded higher transparency readings in these comparisons. This could be because the longer tube may allow more light in through the sides, leading to higher transparency. The jury is still out, but these results suggest even a 100-cm tube may not be long enough to detect changes in water clarity in northern Minnesota streams. When water runs very clear on a regular basis, it's probably safe to say there's no problem with water clarity.

The CSMP is a valuable resource that greatly enhances our understanding of the water quality of Minnesota's 92,000 miles of streams. When transparency does fluctuate, data collected by volunteers act as an early-warning system for water-quality problems. It will be critical to determine if different monitoring tools are needed for clear-running streams. We are continuing this study by having additional volunteers and MPCA staff members take readings with both a 60 and 100-cm tube during the 2002 season. Special thanks to CSMP volunteers Pamalla Boyce, Tammy Moren, and Greg and Mary Johnson for participating in the study. Stay tuned for future findings.



A Picture is Worth a Thousand Words

Photographs provide an excellent visual and historical record of change over time. These photos were taken at two CSMP sites in the Minnesota River Basin during 2001. Photos on the left show the high water levels that were common across the state during spring thaw and runoff.

Photos on the right show the same sites in mid- to late June when the rivers ran at "base flow," and received mainly ground-water inputs. We encourage you to track changes in your stream by taking photographs of your site under various conditions throughout the monitoring season.

Perch Creek, CSMP 332

April 4, 2001
Spring runoff

Transparency = 20 cm
Rain event = No
Appearance = 4 (Tea-colored)
Recreational suitability = 5 (Nearly impossible)
Stream stage estimate = High

Perch Creek, CSMP 332

June 28, 2001
Base flow

Transparency = 34 cm
Rain event = No
Appearance = 2 (Milky)
Recreational suitability = 3 (slightly impaired)
Stream stage estimate = Normal

St. James Creek, CSMP 326

April 14, 2001
Spring runoff

Transparency = 22 cm
Rain event = Yes
Appearance = 4 (Tea-colored)
Recreational suitability = 4 (Substantially reduced)
Stream stage estimate = High

St. James Creek, CSMP 326

June 16, 2001
Base Flow

Transparency = 24 cm
Rain event = Yes
Appearance = 4 (Tea-colored)
Recreational suitability = 4
Stream stage estimate = High

TUBE TEASERS

This issue's topic: taking a transparency reading

On a recent water-monitoring trip, two CSMP volunteers disagreed on how to take a transparency reading. One noted the depth in centimeters when he could just start to see the symbol, and again when he could clearly see the screw in the middle of the symbol. He then recorded the average of the two depths on his data sheet. The other volunteer drained the tube until the screw was clearly visible and recorded this single reading.

This disagreement prompted the following review of how to take a transparency reading. With close to 400 CSMP volunteers across Minnesota, it's important to be as consistent as possible in our monitoring methods. Consistency lets us compare transparency readings from different sites. Here's a quick reminder of the correct way to take a transparency reading:

1. Collect your water sample in a clean bucket/bottle (not the transparency tube) at mid-stream and depth.

- If you collect your sample by wading or from the streambank, **always sample safely**. Don't wade into fast-moving water or areas of unknown depth. If you cannot sample safely, make visual observations only (appearance, etc.). If a sample from mid-stream depth is not possible, avoid stagnant water and sample as far from the shoreline as is safe.

  Try not to stir up the bottom.

  - Face upstream as you fill your bucket.
  - Avoid collecting sediment from stream bottom or materials from water surface.

- If you sample from a bridge or culvert, collect the sample by lowering a bucket with a rope down to the stream.

2. Take your tube readings in open conditions (not shady). Avoid direct sunlight, by turning your back to the sun if necessary; and don't wear sunglasses while taking a reading. These can change your reading.

3. Making sure the valve on the bottom of the tube is closed, pour the water from your bucket into the tube until the symbol on the bottom is no longer visible.

4. Looking down into your tube, open the valve at the bottom and slowly release water until you can just begin to make out the symbol on the bottom. Note this depth in centimeters, found on the scale on the side of the tube.

5. Release a bit more water until the symbol is clearly visible (can see the screw in the middle of symbol on the bottom). Note depth.

6. Record the average of the two depths noted in steps 4 and 5 on your data sheet to the nearest centimeter (average = depth in step 4 + depth in step 5 divided by 2). If the symbol is still visible when your tube is full, indicate this on the data sheet by recording "> **60 cm**." (> = greater than)

"The song of the river ends not at her banks, but in the hearts of those who have loved her."

CSMP NEWS Splashes

Bar codes are here. You may have noticed a bar code on the top of your 2002 CSMP Stream Data Sheet. The bar codes will help track which volunteers submit data each year, and for which sites. This should save a lot of time as the program grows in size. For the system to work, it will be important for volunteers who monitor more than one site to use the correct data sheet for each of their sites. Check the description under "Stream Name" on your data sheet to figure out which sheet corresponds to each of your sites. Questions? Call Laurie Sovell at 800-657-3864.

We need your rain data sheets. The rain data you collect is crucial to understanding what's going on in your local stream. Each time it rains, please remember to record the rainfall amount on your rain-gauge data sheet and then empty your rain gauge. Please submit your rain data sheet, along with your stream data, at the end of the monitoring season. Thanks!

...And don't forget to monitor your stream when it rains. Rainfall amounts tell us a lot about our streams, but only if we monitor streams right after it rains. Together with transparency and water level (stage), rainfall amounts help us track how streams respond to runoff. Make it a point to try and monitor at least two rainfall events this season. The information provided by your data will be greatly enhanced.

Red river CSMP numbers soar. The Red River Basin River Watch program and Bois de Sioux Watershed District have enrolled as official CSMP participants. The River Watch Program includes 24 schools that conduct stream monitoring on a regular basis. The Watershed District coordinates adult volunteers who monitor streams in the Bois de Sioux River watershed. The addition of these groups will add an estimated 50 sites to the northwestern part of the state. This monitoring will greatly improve CSMP coverage across the state, and allow for better comparisons of data among the Red River basin and other parts of the state.

October 18, 2002 is National Water Monitoring Day. America's Clean Water Foundation (ACWF) is coordinating a series of events throughout October 2002 to commemorate the 30th Anniversary of the Clean Water Act. These events are designed to promote public involvement, provide education and outreach, support technical exchange, and document the status of water quality since the passage of the 1972 Clean Water Act. For more information check out the ACWF website at **www.yearofcleanwater.org**.

CSMP photo contest. We need photographs of CSMP volunteers in action. We're especially interested in shots of volunteers wearing CSMP T-shirts and hats while monitoring. Contest participants must be enrolled in the CSMP. Everyone who submits a photo will receive an award, and the top three entries will receive a special prize. Send photos with your name, stream name and date they were taken to MPCA, 1230 S. Victory Dr., Mankato, MN 56001.

Congratulations to Tammy Moren. Congratulations to Tammy Moren, CSMP volunteer featured in the November 2001 issue of National Geographic's World Magazine. Tammy was chosen as the magazine's fourth "Aqua Hero" for her monitoring of the Pine River near Backus, Minnesota. Aqua Heroes is a part of "Geography Action! Rivers 2001," an educational outreach program of the National Geographic Society in partnership with The Coca-Cola Company and The Conservation Fund. Way to go Tammy!

National Geographic WORLD photographer with Tammy Moren sampling Pine River, Cass County, June 2001.

CLMP "Plus:" Enhancing the Citizen Lake-Monitoring Program

This past year, a pilot project was conducted to expand the current Citizen Lake-Monitoring Program to include collecting samples for water-chemistry analysis. Volunteers in the CLMP currently use a Secchi disk to measure the clarity of Minnesota's lakes. Ten lakes in Sherburne and Chisago counties were selected for the pilot project. Volunteers on the selected lakes were asked to collect water-chemistry samples and take temperature profiles twice a month, along with their weekly Secchi transparency readings. This pilot is called CLMP "Plus."

The samples were analyzed for chlorophyll-a and total phosphorus. These are factors in lake "eutrophication," the aging process by which lakes become fertilized with nutrients. Natural eutrophication will very gradually change the character of a lake. Cultural eutrophication is the accelerated aging of a lake as a result of human activities. Mary Darragh Schmitz, Chisago County water planner, and Mark Basiletti, Sherburne County Soil and Water Conservation District water planner, coordinated the sampling in their respective counties. This pilot project was a success due to the hard work of the water planners and the CLMP volunteers.

Most of the lakes sampled in Chisago County were within or near the range of expected values for their region, with the exception of one lake that was previously impacted by the outflow from a wastewater treatment facility. Data for Sherburne County lakes also fell well within or near the typical range of values for their region. Comparing volunteer data with MPCA-collected data found no significant differences. For the Chisago County CLMP Plus lakes, only one sample of 45 was contaminated by sampling error (was not usable). Of the 43 samples from Sherburne County, no contaminated samples were found.

The results from the CLMP Plus pilot show that properly trained volunteers can collect consistent and reliable data for use in lake water-quality assessments. Volunteers are an important resource that can and should be used to gather additional information. A detailed report for each lake in the pilot is available on request. For more information or a copy of the reports, contact CLMP Coordinator Jennifer Klang at 800-657-3864.

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