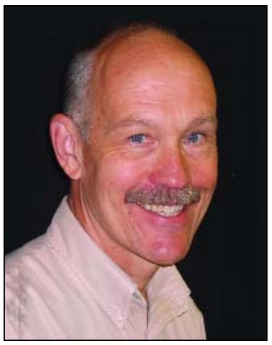
by Hank Ernst

Kansans sample streams – part of worldwide monitoring

World Water Monitoring Day is designed to draw Kansans out of their homes and businesses to acquaint them with their community's streams and lakes," says Amanda Reed, coordinator of the state's World Water Monitoring Day program, and Water Quality Educator with the Watershed Management Section of the Kansas Department of Health and Environment (KDHE). "The goal is to make Kansans more aware of their water resources and various water quality indicators. The tests are basic and are intended to be instructional."

A yearly event since 2002, World Water Monitoring Day was held this year on Tuesday, September 18 and official monitoring continued through October 18, 2007.



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Kansans, as evidenced by participation in the 2006 event, are interested in learning about the streams, rivers and lakes in their communities. Some 2,200 Kansans drew and tested water samples from 493 registered sample sites. Since the project started, some 80,000 people in 50 countries have participated. The 2006 list of Kansas participants includes water professionals, watershed groups, school classes, industrial representatives, and recreational and environmental groups.

All 2006 monitoring information, including site location, test results, and general information may be found at www.worldwatermonitoringday.org

Water monitoring is familiar territory for Hillsdale Water Quality Project. "Our water quality testing for general public educational purposes dates to the founding of the project in 1993 and we expanded our student programs in 1999," says Gale Garber, Director. "We've been involved in World Wide Monitoring Day since it began, working independently or through area teachers."

Eighth grade teachers at Wheatridge Middle School and Pioneer Ridge Middle School in Gardner-Edgerton USD 231 have incorporated water quality into their science and English curriculums. The district is in the Hillsdale Lake watershed.

Science teacher Greg Smith says, "We're offering a life-long

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World Water Monitoring Day activities at the Edgerton Lake in Edgerton in 2004 included a visit by James Gulliford, then the Environmental Protection Agency Region 7 administrator. Gulliford now serves as assistant administrator for the Office of Prevention, Pesticides and Toxic substances. Students from the Wheatridge Middle School in the Gardner-Edgerton School District (USD 231) check samples during the event coordinated by the Hillsdale Water Quality Project. (Photo courtesy of Gale Garber, Hillsdale Water Quality Project)

learning opportunity for the kids. Their earlier schooling focused on concrete thinking. We're working on more abstract concepts, getting them to think analytically and connect learning with their environment." In addition to classroom and field instruction, seventh and eighth grade students may join the extracurricular Stream Team Club. Members of the club serve as classroom student-coaches for less experienced classmates.

Students learn about and are tested on the federal Clean Water Act, micro and macro invertebrates, and how to conduct monitoring tests. More than 265 students in 2006 conducted testing over three days at 13 sites in Hillsdale's Big Bull watershed.

Their work doesn't end when the testing is done. Each group writes a report of their findings and discusses options for improvements. They also write business letters to the officials detailing their findings as part of their English assignment.

"We don't edit their letters," says Smith. "Their comments can be idealistic, but they also reflect how well they know the land (their community)." Students recognize continuing water quality protection work and recommend additional needed actions.

Smith and his fellow teachers find time for the courses while still meeting the demands of No Child Left Behind and state testing. The community and the Gardner-Edgerton Board of Education have been supportive of the teachers and students. Biggest challenge: "We can borrow test kits; parents and water professionals volunteer their time. The challenge is finding the money to pay for the bus service to and from the monitoring sites," says Smith.

The water monitoring groups aren't always formal. Kenny Titus, Labette County Sanitation Officer, invited a group of youngsters who were part of a family reunion camping at Big Hill Lake to sample the lake's water. He also sampled 25 other sites either individually or with a group.

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"Last year was the first time I took part in the World Water Monitoring Day," says Titus. "The event offers a great educational opportunity to inform kids of the importance of water conservation and pollution control. It helps build kids' interest in those subjects."

World Water Monitoring Day is coordinated by the Water Environment Federation and the International Water Association. The Water Environment Federation is a not-for-profit technical and educational organization with 32,000 individual members and 80 affiliated Member Associations representing an additional 50,000 water quality professionals throughout the world. The International Water Association is a global network of water professionals connecting research and practice on all facets of the water cycle.

Sponsors include the U.S. Geological Survey, the EPA, Smithfield and CDM. Partners in the project include USDA, Girl Scouts of America, Earth force and the U.S. Army Corps of Engineers.

Making sense of water measurements

Water quality indicators include: dissolved oxygen, pH, turbidity, temperature, and macroinvertebrates. The Water Environment Federation, sponsor of World Water Monitoring Day, defines the indicators.

Dissolved oxygen (DO): Dissolved oxygen is a measurement of how many molecules of oxygen are in the water. Since oxygen is important to fish and other aquatic life (just as it is for people!), higher DO readings support more diverse species and a healthier ecosystem. Lack of DO often results in an absence of living things in the water.

pH (acidity): Measures how acidic or basic a liquid is. It is measured on a scale from 0-14, where 0 is most acidic, 14 is most basic, and a value of 7 is neutral. Natural waters with conditions favorable for supporting life usually have a pH reading between 6.5 and 8.5.

Turbidity (clarity): Impacts the water's clarity. Debris, sand, silt, and other materials can make the water less clear. Greater presence of those factors result in the water being more turbid. Turbidity can impact the aquatic ecosystem by affecting photosynthesis, respiration, and reproduction of aquatic life.

Temperature: Measures the warmth or coldness of the water. This indicator is important because it affects dissolved oxygen, photosynthesis, and the food supply. Waters that are too hot or too cold can have severe effects on fish and other aquatic life.

Macroinvertebrates: Counting the "bugs" that are found in aquatic environments provides a living indicator of the health of the water. Macroinvertebrates have different levels of tolerance for pollutants and other factors that impact the health of the water. By observing the benthic population and classifying more or less tolerant species, a general observation about the quality of the water can be made. These findings can often be compared to the chemical/physical indicators to determine overall health of the water at the sampling site.

Free test kits are available

The Kansas Department of Health and Environment (KDHE) provided a free water test kit to those that agree to test 15 sites during World Water Monitoring month. Each kit contains the materials needed to test up to 50 sites. Participants collected water samples from September 18 to October 18, 2007. Data may be reported through December 18, 2007.

The four basic tests that are conducted by participants in World Water Monitoring Day measure dissolved oxygen, pH (to determine the relative acidity or alkalinity), turbidity/clarity, and temperature. More experienced monitors may also conduct macroinvertebrate (aquatic insects) counts, determine the rate of stream flow and measure nitrogen and phosphorus levels. The tests are for information only and are unsuitable as a basis for any regulatory action.

If you missed out this year, plan now for 2008. For information that will help you decide to take part next year, contact Amanda Reed at (785) 296-7165 or e-mail her at akreed@kdhe.state.ks.us.

A kit may also be bought through the LaMotte Company for $13 plus shipping and handling. Details and ordering information are on the World Water Monitoring Day web site. www.worldwatermonitoringday.org

A student at Wheatridge Middle School lowers a Secchi disk into the water at the Edgerton Lake to measure the turbidity, or murkiness, of the water. Suspended solids in the water cause the turbidity. The greater the depth at which the secchi disk is visible, the less turbid the water. (Photo courtesy of Gale Garber, Hillsdale Water Quality Project)