January 2007 Water Fact Sheet 2007-9

IOWA'S WATER
Ambient Monitoring Program

Highlights 2006

River cleanup events, such as Project AWARE, *have spurred a "Cleanup Culture" across Iowa. During one week in* 2006, *Project* AWARE *volunteers removed* 24 *tons of trash from the Iowa and English rivers.*

The purpose of the Iowa Department of Natural Resources' (IDNR) Water Monitoring Program is to build a statewide water monitoring network to assess status and trends in Iowa's water quality and to provide this information back to decision-makers, scientists, and the public. In the seven years since the program's inception, data produced by the program have been used in a variety of ways, including the bi-annual assessment of the State's waters as required by the Clean Water Act sections 305b and 303d, targeting watersheds for water quality assistance grants (EPA 319, Iowa Department of Agriculture and Land Stewardship Watershed Protection Funds, and Watershed Improvement Review Board grants), a classification and prioritization plan for lake restoration activities, a legislatively mandated statewide nutrient budget, development of state water quality standards, including nutrient criteria for lakes and rivers, development of numerous Total Maximum Daily Load assessments, and many other projects. As a result of these activities, demand for data has grown dramatically. Staff in the program continually seek ways to reduce costs where possible and increase efficiencies in the program, while compiling information on streams, lakes, rivers, and wetlands that have previously not been monitored. This fact sheet provides a few highlights from the water monitoring program during 2006.

Project AWARE

The success of water quality improvements in the state of Iowa hinges upon the willingness of citizens and volunteers to become actively engaged in protecting and restoring our water resources. Events such as Project AWARE (A Watershed Awareness and River Expedition) help build awareness of and community involvement in caring for our natural resources through stream clean-up efforts and water quality monitoring. During the fourth annual Project AWARE, nearly 200 volunteers floated in canoes along the Iowa and English river corridors removing a record amount of trash. Highlights of this week-

Green floating scum layers on Iowa lakes are often associated with cyanobacterial blooms.

long event included removal of 224 cubic yards of trash including 23,767 pounds of metal, 23 pounds of household hazardous waste, 194 tires, and more than 1,700 pounds of glass. While trash removal has an immediate and tangible result, the participants of Project AWARE were also involved in water quality testing as a way to understand the less visible contaminants in our water resources.

Cyanobacteria

One of the areas of emerging concern for high quality recreation in the State of Iowa is the presence of summer blooms of cyanobacteria or "blue-green algae" on our lakes, reservoirs, and even slow-moving streams. While these blooms are not a new phenomenon, current research has begun to document the presence of toxins produced by certain species and strains of cyanobacteria in recreational waters of the United States. These toxins can affect the liver, nervous system, and skin of humans, livestock, and wildlife therefore, the IDNR began limited testing for algal toxins in selected Iowa lakes (2003-2005) as part of the Iowa State University Lakes Study. Results generally showed low levels of algal toxins, however these samples were taken at the deepest point in the lake, usually away from shoreline areas. Because prevailing winds often move algal scums and mats to near-shore areas, the IDNR initiated weekly algal toxin sampling at the 37 state-owned beaches during the summer of 2006.

The relationship between algal toxins and health impacts is not clearly understood, as few epidemiology studies have been conducted that would link algal toxin exposure to health effects in animals or humans. Therefore few states have developed guidelines to suggest what a "safe" level of algal toxins is for casual swimmer contact. The State of Iowa does not currently have a water quality standard for cyanobacteria toxin levels (measured as micrograms of microcystin per liter of water) so the primary purpose of the monitoring is to provide baseline information on toxin levels and to enhance our understanding of what triggers cyanobacteria blooms. On occasion, when algal toxin levels have exceeded recommended guidelines by the World Health Organization (WHO), the IDNR has issued advisories recommending that swimmers avoid contact with the water. In 2006, 23 samples exceeding the WHO standard resulted in advisories on seven beaches. These high samples were noted at the seven different beaches between July 31st and October 23rd. Citizens can reduce their risk from algal toxins by staying out of water with floating algal mats and keeping children and pets from these areas.

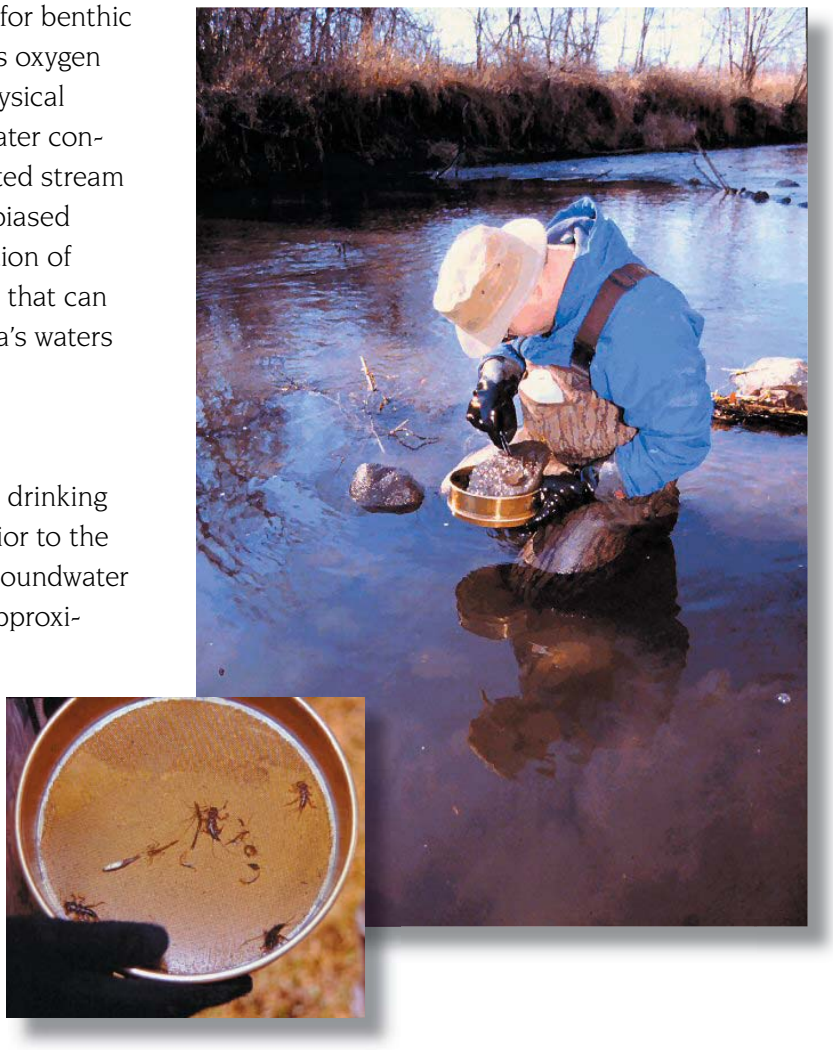
REMAP

The goal of the 1972 Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Often, this goal is stated as providing waters that are "swimmable," "fishable," and "drinkable." Determination of swimmable and drinkable waters is generally accomplished through the comparison of water quality samples with levels that protect human health (i.e., water quality standards). However, the ability to assess whether waters are "fishable" or protective of biotic integrity is more problematic because of the various factors that can influence fish or aquatic life (disease, habitat alterations, invasive species, natural swings in populations, etc.). Additionally, techniques to sample streams for biological integrity are labor intensive and require the data to be calibrated or tuned to the expectation of the stream. In other words, biological monitoring needs to compare"apples to apples." Iowa's coldwater systems must be calibrated to fit the expectations of high quality coldwater streams rather than, for example, comparing a northwest prairie stream with a northeast coldwater stream.

Over the past ten years, the IDNR built a database of biological expectations for streams by regions, but had never taken the next step and attempted a widespread assessment of ecological condition of Iowa's streams. In 2002, the IDNR began a program to assess the ecological status of Iowa's rivers and streams using funding and technical assistance from the Environmental Protection Agency's Regional Environmental Monitoring and Assessment Program (EPA REMAP). Iowa's REMAP program (2002-2006) focused on randomly selected perennial stream sites and included sampling for benthic macroinvertebrates, fish, continuous oxygen and temperature measurements, physical habitat, fish tissue, sediment and water contaminants. By using randomly selected stream sites, the state now has the first unbiased assessment of the ecological condition of streams and a baseline of condition that can be used to compare changes in Iowa's waters in years to come.

Groundwater

Roughly 78% of Iowans receive their drinking water from groundwater sources. Prior to the year 2000, ambient monitoring of groundwater was limited to annual sampling of approximately 45-90 municipal wells depending on the year. Given



REMAP, a 5-year survey of streams statewide, provides much needed data to assess the health of fish and aquatic insect populations.

Approximately 78% of Iowans rely on groundwater for their drinking water.

the spatial variability in aquifer characteristics, the ability to assess changes in groundwater quality was hampered by the lack of information. As part of the new ambient monitoring program that began in 2000, the number of municipal wells sampled annually was increased to 150. Sixty of these municipal wells were randomly selected from a different aquifer system each year in order to provide a more robust assessment of the major aquifer systems in the state. During 2006, the Pleistocene aquifer was the focus of the intensive sampling effort. Also, 2006 marked the completion of the first cycle of monitoring the major aquifers more intensively through random selection. Data from the enhanced groundwater monitoring will be included in the bi-annual 305b report and will be the first in-depth assessment of the status of Iowa's groundwater for the Clean Water Act report.

The IDNR also worked in collaboration with several other agencies including the Center for Health Effects of Environmental Contamination, The University of Iowa Hygienic Laboratory, United States Geological Survey, and county sanitarians to conduct a population-weighted, random sampling of private wells. This effort was patterned after the SWRL (State-wide Rural Well-Water Survey) study of the 1980s and focused on the quality of drinking water in rural areas. The sampling conducted during 2006 was the first year of a proposed five-year effort to repeat the sampling completed during the original SWRL. Comparison of samples taken twenty years after the first survey will provide information on changes in groundwater quality for citizens using private wells.

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Iowa Watershed Monitoring and Assessment Program Web Site – wqm.igsb.uiowa.edu

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