IOWA'S WATER
Ambient Monitoring Program

Year Two Accomplishments

Activities that began with the first year of water monitoring gained momentum in the second year, as the program's funding nearly doubled. The months spent planning began to pay off as the program quickly implemented new aspects of monitoring, including a five-year study of Iowa's lakes and added to beach and groundwater monitoring.

Stream Monitoring

City Monitoring. Increased funding allowed for continued growth in stream monitoring. Sampling upstream and downstream of Iowa's urban areas was increased from twice a year to once a month, partly in response to interest generated by the first year's results. The additional monitoring around urban areas will provide a more complete picture of industrial contaminants in Iowa's streams.

Figure 1. *Des Moines is one of ten urban areas being monitored.*

Event Monitoring. While monthly samples provide data on a fixed basis, the probability that a rainfall or snowmelt runoff event will be sampled is fairly low. This information is vitally important for understanding the maximum concentrations and loads of contaminants moving in streams during these high-flow events. However, sampling at high flows is expensive and labor-intensive. As an initial step, seven sites located within each of Iowa's ecological and landform regions were monitored during high-flow events to predict "typical" behavior of these streams during heavy rainfall or snowmelt.

Volunteer Monitoring

The first year of Iowa's citizen monitoring program was an overwhelming success as demonstrated by the enthusiasm of volunteers and amount of data submitted to the IOWATER database. New in 2001 were Level 2 workshops and three modules. Participants are

certified as Level 2 citizen monitors upon completion of Level 2 training and at least one Level 2 module. During the 2001 season, more than 500 additional Level 1 volunteers were trained, while an additional 95 citizens became Level 2 certified.

Level 2 Workshops provide information on designing a monitoring program and methods for interpreting data. The **Standing Waters Module** modifies stream-monitoring techniques for use in lakes, ponds and wetlands. The **Benthic Macroinvertebrate Indexing Module** trains volunteers to identify in greater detail the types and numbers of aquatic insects for a better picture of stream health. The **Soil Monitoring Module** provides a link between what happens on the land surface to impacts in our streams and lakes.

Lakes

Figure 2. Big Spirit, Marble and Hottes lakes in Dickinson County.

Year two marked the beginning of a five-year study of 132 recreational lakes in Iowa. This project characterizes current water quality and watershed characteristics. Because water quality varies through time at a lake and between lakes, each is monitored for five years to yield a stable and reliable assessment of Iowa lakes and their watersheds. Each lake is sampled three times during the spring and summer for the duration of the study. Current monitoring of lakes is designed to create a database of analyses that will be comparable with previous lake water quality assessments.

Beach Monitoring

During the second year of beach monitoring, the number of state-owned beaches monitored by the Iowa Department of Natural Resources (IDNR) increased from 10 to 31. These beaches were monitored on a weekly basis for 18 weeks during the swimming season and tested for three indicator bacteria species: fecal coliform, enterococci and *E. coli*. To understand how variable bacteria levels are from day to day, four beaches were sampled daily from May 23 through July 6. Beaches monitored daily included Lake Ahquabi (Warren County), Big Creek (Polk County), Black Hawk Lake (Sac County) and Lake Macbride (Johnson County).

Groundwater

Since 1992, the IDNR, United States Geological Survey and University of Iowa Hygienic Laboratory have cooperated in a groundwater monitoring program consisting of 90 mu-

Figure 3. Biologist collecting and identifying macroinvertebrates (aquatic insects).

nicipal wells that were tested for nutrients and common herbicides. Funding shortfalls prevented the testing of all the wells each year, therefore wells were sampled on a rotational basis. In 2001, all 90 wells were sampled and tested for a wider range of contaminants that included volatile organic compounds and radionuclides (e.g., radium). In addition, water from each well was age-dated to determine the potential for surface contaminants to reach underlying groundwater resources. While the municipal wells provide valuable information on the quality of drinking water, they may pull water from multiple aquifers. In order to better understand the quality of water in specific groundwater layers, new wells must be drilled to isolate the groundwater for sampling. The first of these dedicated monitoring wells was drilled in Briggs Woods County Park near Webster City, Iowa. Through time, the development of these monitoring wells will fill gaps in our knowledge regarding Iowa's groundwater resources.

Data Management

A critical part of any data gathering effort is the management and accessibility of the data. To be useful now and in the future, methods used for sample collection and analysis must be documented. Furthermore, the data should be stored in a format that is compatible with other state and federal agencies to enable data sharing. To accomplish these goals, Iowa's Ambient Water Monitoring Program uses a U.S. Environmental Protection Agency database called STORET (STOrage and RETrieval) to manage its information. Unlike previous versions of STORET, the new STORET is housed and managed locally by the IDNR. This local control allows IDNR staff to offer public access directly to the data through the Internet. In 2001, Iowa became the first state in the Midwest to implement STORET successfully and was the first state in the nation to provide direct access for the public and professionals through the Web.
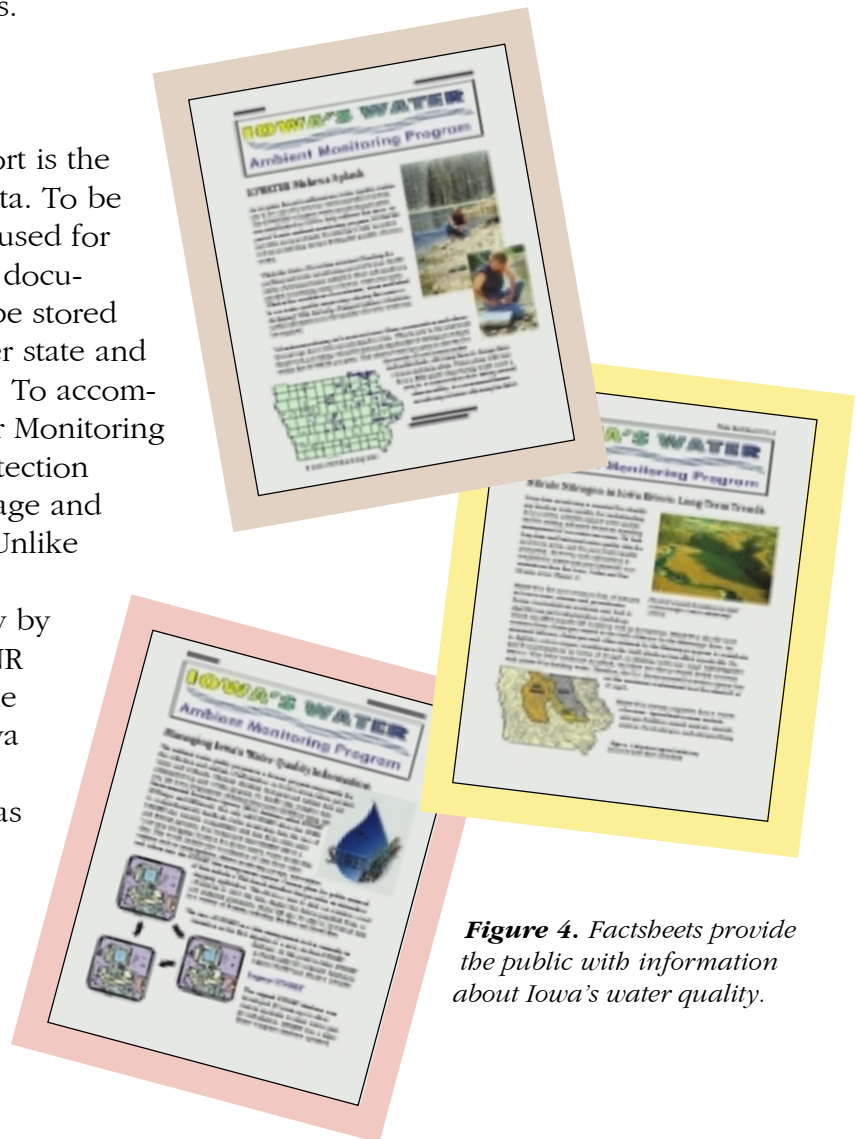

Figure 4. Factsheets provide the public with information about Iowa's water quality.

Figure 5. *Drilling a groundwater well at Briggs Woods County Park, Hamilton County.*

Public Information

One of the guiding principles for the water monitoring program is that the information generated should be easily accessible to the public, as well as professionals and decision-makers. To help accomplish this goal, the First Annual Water Monitoring Conference was held on March 29, 2001, in Ames, Iowa. The conference highlighted results from the new monitoring program and provided a historical picture of Iowa's water quality. This conference is designed for all citizens, not just scientists or professionals. Roughly half of the people who attended the first conference were volunteer monitors. In the future, this conference will travel around the state to bring the information to the public. For those not able to attend the conference, Iowa's Ambient Water Monitoring Program published a series of eleven fact sheets to explain the program and provide information on Iowa's water resources.

Water Monitoring Program Web Site – www.igsb.uiowa.edu/water

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