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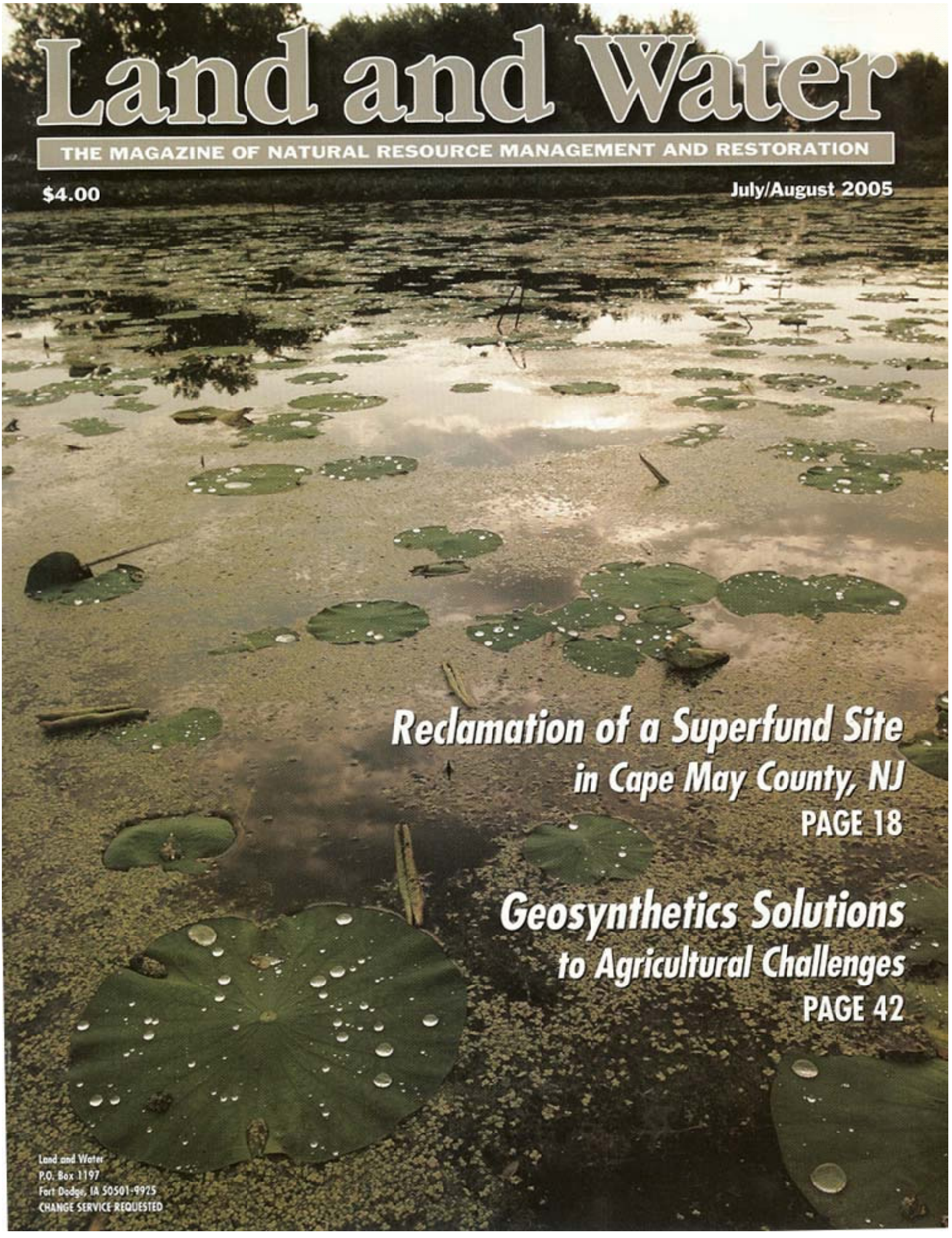

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The Watershed Institute Applies New Technologies To Improve Stream Assessment Efficiency

FROM a creek in the Flint Hills of Eastern Kansas, Phil Balch of The Watershed Institute struggles to find a spot with good cell phone reception to talk about one of the Institute's latest projects – assisting the improvement of urban fishing opportunities in the Kansas City metro area.

"The primary interest in the first phase of this project is to determine the baseline condition of the stream and to make recommendations about how we can make improvements to fishery habitat to create a better recreational urban fishery," says Balch.

The first phase is a thorough assessment of the resource, likely to be performed sometime this summer. The Watershed Institute will look at riffles, pools, overhead cover, large woody debris, and turbidity (water clarity), and then document the condition of the resource with GPS points, digital photos and field notes.

"The only problem we run into with assessment work is getting a good GPS reading in heavy cover, which tends to block satellite signals," says Balch. "Sometimes we have to wait until fall or winter to have an open canopy and get the GPS location information we need."

As in most areas of the country, freshwater resources in the heartland are under assault from common pressures associated with development. According to Balch, sedimentation and eutrophication are a big problem in Kansas lakes possibly due to unstable stream systems.

"The bulk of sediment seems to be coming from eroding streambanks", says Balch, "which goes back to changes in land use, downstream channelization and urban development."

Recently-formed, The Watershed Institute is a not-for-profit corporation based out of Topeka and Overland Park, Kansas that provides innovative and environmentally friendly solutions for natural resource problems. With hundreds of streams targeted for assessment and restoration by local, state and federal government agencies, the Institute's multidisciplinary staff of stream specialists, aquatic biologists, and geomorphologists has been in high demand in the heartland states of Missouri, Kansas, and Nebraska.

While it mainly contracts with municipalities, state and federal government agencies and watershed groups, the Institute works closely with the Kansas Alliance for Wetlands and Streams (KAWS) and the statewide Watershed Restoration and Protection Strategy (WRAPS) program. The watershed-level WRAPS program provides the plan components and recommendations to protect healthy, naturally functioning wetland and riparian systems and restore Kansas' priority wetland and riparian resources that have experienced degradation.

One of the ways the Watershed Institute is able to complete so much field work in so little time is by leveraging the latest technologies to assist their work. One of their newest tools is RiverWorks Rapid Assessment System (RRAS). RRAS, developed by THI RiverWorks, Inc. of Livingston, Mont., is a complete system that combines a waterproof, rugged, handheld computer, digital camera and GPS receiver with software to collect, analyze, and report stream data. Applications include watershed studies, stream assessment, streambank stabilization planning and design, restoration or mitigation planning, conservation activities, permitting, and post-treatment monitoring.

Installed on the handheld is a software program that, with a tap of a stylus, guides the user through an industry-accepted, rapid stream assessment process. The field unit is an "observation tool" that ties together the GPS, digital camera and note-taking capabilities so that digital photos can be "stamped" with date, time, location and description data. The system gives The Watershed Institute's technicians in-field calculations and data verification, eliminating the problem of erroneous results or missed data opportunities.

In the case of the urban fishery assessment, after field work is completed, the data will be downloaded from the handheld to the system's desktop computer software, which instantly transfers data, and automates much of the needed analysis and reporting.

"We see an opportunity for this to be very useful to baseline assessments and general assessments in these watershed-scale approaches such as WRAPS," says Balch, "We've also promoted the use of this new technology to urban municipalities in the Kansas metro area."

Balch said most urban city and county governments have had some type of stream assessment performed through the years, but each assessment report has been generated using a different approach.

"There is no uniformity – no way to compare results from year to year or between locations," he said. "That's where I see technology like this being the most helpful. If whoever the government entity contracts to perform the actual assessment work is using this same tool, the client will be looking at the same features, so stream information can be compared over time."

Since four of the five Institute principals are former government employees, the Institute has insight into working with governmental entities, while still allowing for independent and unbiased assessment and design recommendations based on science rather than any political agenda.

Before adopting the new technology, Balch said his team had to carry a separate laser range finder, GPS unit and digital camera, which become unwieldy in the field, and nearly impossible to manage in a small boat.

The handheld and the desktop software make post-processing and reporting of field data much faster as well.

Balch says the sheer scope of work to be done to protect and restore freshwater resources nationwide will require The Watershed Institute and others to look for tools and technologies that will help accomplish these tasks faster, with repeatable and scientifically-valid results. **L&W**

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