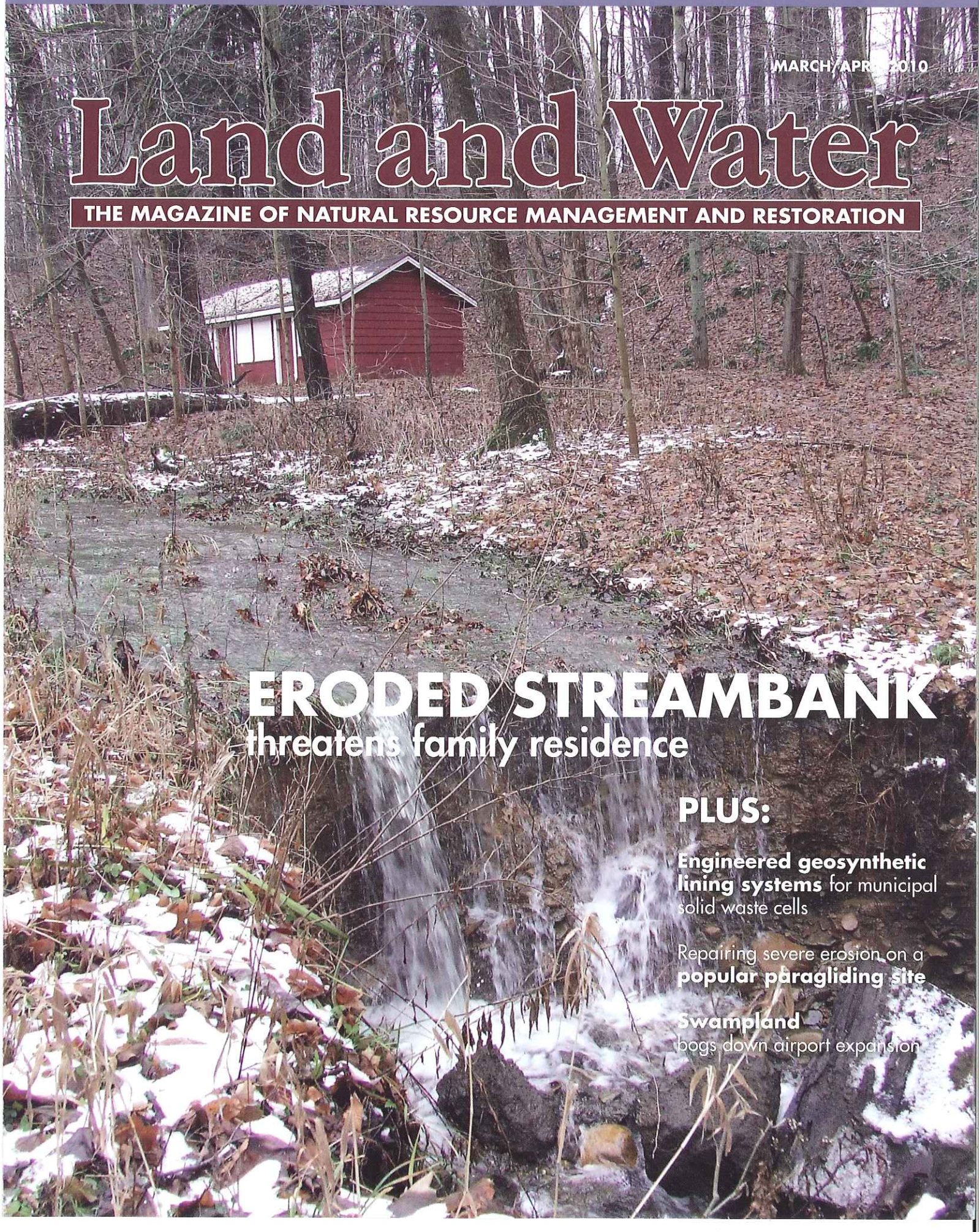
MARCH/APRIL 2010

Land and Water

THE MAGAZINE OF NATURAL RESOURCE MANAGEMENT AND RESTORATION



ERODED STREAMBANK
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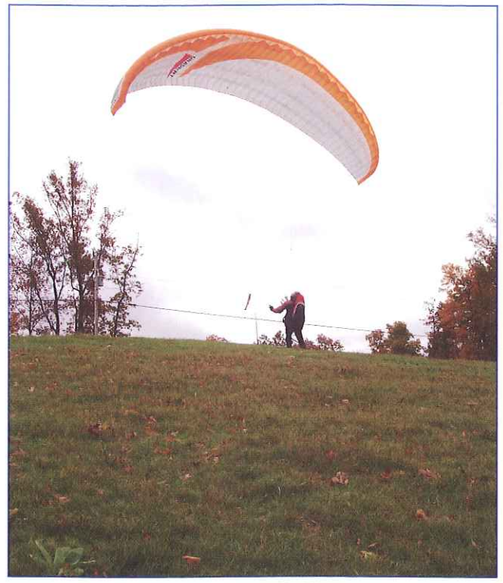
Paragliders in Tennessee create the perfect launch pad for flight with erosion control matrix

If Chattanooga, Tennessee, is known as "Home of the Lookouts," then mountainous Walden's Ridge is almost certainly the pride of the small Chattanooga suburb of Signal Mountain. Part of a 74-mile long mountain ridge at one of the highest points in the Cumberland Plateau, Walden's Ridge descends more than 1,000 feet from the plateau to the Tennessee Valley and is a haven for thrill-seeking paragliders from all over the world. With its northern facing slope, Walden's Ridge has been claimed as one of the Southeast's best locations for paragliding.



Walden's Ridge is a haven for thrill-seeking paragliders from all over the world.

In recent years, a popular paragliding launch site on the ridge has suffered severe natural erosion from wind and rain, accelerated by foot traffic and activity. The uppermost part of the launch site, which includes a gentle grade for pilots to pick up speed, and several steep slope grades that had gradually eroded to near vertical, raised concerns about safety and functionality among local paragliding enthusiasts. The lower sections of the eroded launch area included steep, rocky terrain that made preventing soil depletion difficult. The unique site was in need of an erosion control solution that would protect its extreme slopes and uneven surfaces but would not require exposure to the dangerous mountainside.

Gerry Fritz, a member of the Southern Para Pilots, a club of recreational paragliders from five southern states, took the lead on improving the Walden's Ridge launch site. He tried his own methods of establishing substantial vegetation by using store-bought fertilizer and Bermuda grass seed, and also transplanting patches of Bermuda grass from nearby areas. But the same natural elements that were eroding the site in the first place were causing the seed and fertilizer he applied to the vertical faces to fall or be eroded away.

"I spent a lot of time and money trying to improve the site with new grass," said Fritz. "I was able to get some patches of growth on top of the site where the ground was flat, but no matter what I tried I wasn't able to grow grass on the slopes."

Specification

For guidance, Fritz turned to Joe Stephens, the Tennessee representative for Jen Hill Construction Materials. The distributor assesses site challenges and provides erosion control products and solutions. After visiting the site and discussing options with Fritz, Stephens recommended the use of North American Green's HydraCX^{2TM} Extreme Slope Matrix^{TM}.

"We needed a hydraulically applied product that would allow us to safely reach the steep slopes, and that was strong and resilient enough to stand up against the challenging weather conditions at 1,000-foot altitudes," said Stephens.

Another challenge also lay ahead. It was September 2009, and the cold winter months were fast approaching. Fall rains and the first frost of the year would likely hit the mountain in a matter of weeks.

"One of the reasons I recommended this mulch was that I was confident it would establish germination quickly enough to provide strong roots and create a solid foundation through the winter," said Stephens.

Installation

The launch site was cleared of trees and other debris. The trees on the slope were cut down to stumps and the trees on the flat surface were chopped and uprooted. The installation, originally scheduled for September 10, was preceded by nine days of heavy rainfall and had to be delayed until clear weather arrived.

After 21 days of consistent rainfall, from September 1 to September 22, the ground on Walden's Ridge had soaked up 10.5 inches of water. Still, the three-man crew forged ahead and two days later the installation was ready to begin.

According to Chris Miller, owner of Erosion Control Specialists, the company hired to provide erosion protection for the site, installers worked against the clock to get the hydromulch sprayed in time to establish germination before frost and rain threatened its success.

Though the ground was saturated, Miller was confident that the conditions were suitable for successfully applying the mulch without adverse effects. "Many other types of wood-based mulch require drier soils to get 100 percent coverage, due to the increased water-to-mulch ratio. When the soil is already saturated it can cause slumping of the wood mulch due to the increased amount of water in the slurry," explained Miller. "But this mulch requires less water and the application was more forgiving on saturated soil than other products I've used."

After 21 days of consistent rainfall, the crew forged ahead and began installation only 2 days later.

Applied using a one-step method on approximately one acre of Walden's Ridge – the mulch, seed and fertilizer are mixed together and applied in one step – the mulch was applied at 3000-pounds-per-acre and was mixed at a water-to-mulch ratio of 100 gallons per 50-pound bag. First mixed with fescue and ryegrass seed, the mixture was applied on the highly trafficked areas of the launch site. As a cost-saving measure, another batch of hydromulch was mixed with crown vetch seed, which produces an ivy-like vine, and applied only to the steepest portions of the site out of the way of foot traffic preventing a possible tripping hazard that could mean life or death for a paraglider. The mulch was mixed using a Finn 330 and applied with both a gun and a hose to cover the large area and ensure distance.

Applied using a one-step method, the mulch was applied at 3,000 lbs. per acre.

The one-step application provided significant cost savings. "In a two-step application, the first tank trip will apply the seed and soil amendments, and the second follows behind to apply the mulch," explained Miller. "HydraCX^2 hydromulch allowed us to combine the product and seed in a single application." The one-step application process allows for reduced number of trips, lower labor costs and less tank refills.

How It Works

Developed by Mulch & Seed Innovations, LLC, Centre, AL, along with Cotton Incorporated, it is a high-performance hydraulic erosion control product made with mechanically processed straw fibers, reclaimed cotton plant material, and proprietary performance-enhancing tackifiers that form a protective layer to hold seed and soil in place.

The beneficial nitrogen, phosphorus and potassium nutrients found in the mulch are crucial for plant growth when made available to the soil, and because it is absorbent, it has a beneficial water holding capacity which assists with germination and encourages the establishment of vegetation. The cotton plant material was also instrumental in retaining moisture in the seedbed for germination and growth, and provided enough porosity for grass seedlings to push through with little barrier.

The mulch offers a low water-to-mulch ratio requiring a maximum of only 100 gallons of water per 50 pounds of mulch, which is important when considering the costs of water, and the time, labor and fuel consumption for trips to and from the water source.

Results

Two days after the hydromulch application, the Walden's Ridge launch site experienced its first post-application performance test when nearly two inches of rain fell on the site in a single day. Following the rain event, the site was inspected to ensure erosion control efforts had not been jeopardized.

"As we anticipated, the mulch did not experience any failures, even on soil that was still saturated from the previous two-week rain event," said Miller.

A visit to Walden's Ridge 21 days after the application revealed that vegetation was quickly and healthfully growing to its full potential. Within the few weeks that followed, complete grass growth was established creating a permanent vegetated design to withstand the erosive forces from weather and aggressive activity by members of the Southern Para Pilots Club.

Complete grass growth was established able to withstand the erosive forces from weather and aggressive activity by paragliders.

In addition to the new grass growth, the patchy areas of growth that had developed after Fritz' initial attempt had also benefitted. "It really seems that the nutrients in the mulch provided a boost to the little bit of Bermuda grass growth that was already on the site," said Miller. "The Bermuda grass perked up and looks healthier than before."

Even for someone who jumps off 1,000-foot cliffs in his spare time and floats through the clouds for fun, the newly vegetated launch site induced a new sense of accomplishment for Fritz. "I knew what the mulch was supposed to do, but to see it actually transform the site was truly astonishing," he beamed. "It looks like that grass has been there for years!" **L&W**

by Tom Wedegaertner

Project Location:
Lat: 35.22114
Long: -85.40261

For more information contact Tom Wedegaertner, director of cottonseed research and marketing for Cotton Incorporated. He can be reached at 919.678.2369 or by e-mail at twedegaertner@cottoninc.com.

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