APPLICATIONS

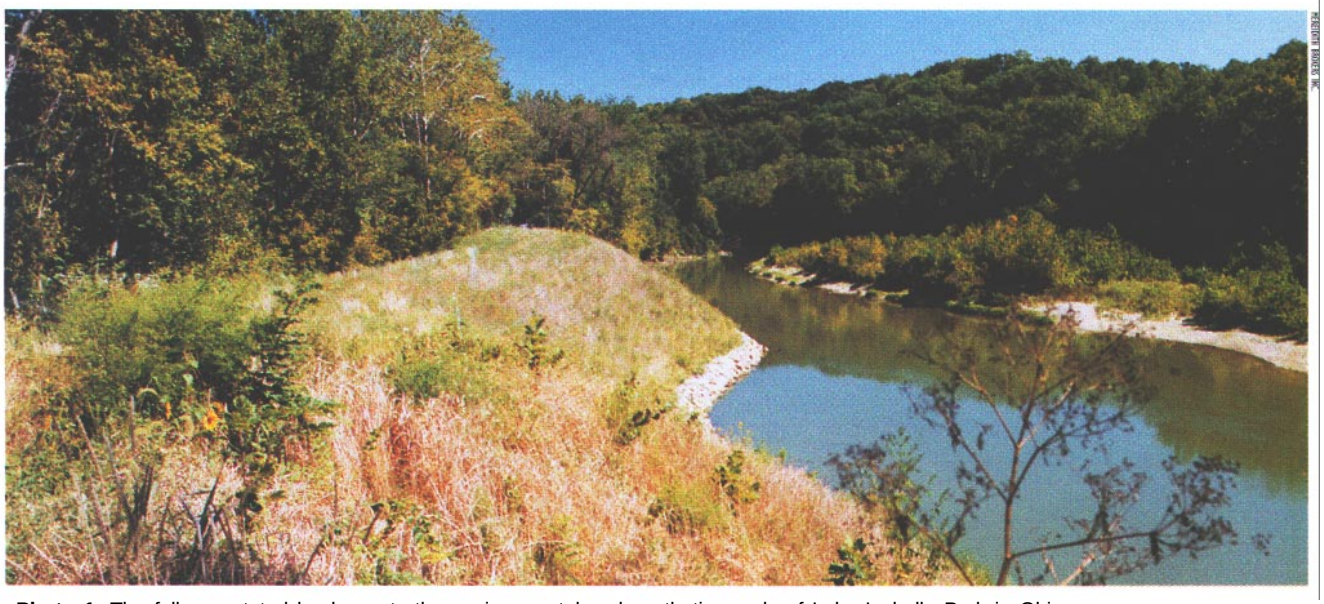

Photo 1. The fully vegetated bank meets the environmental and aesthetic needs of Lake Isabella Park in Ohio.

Shoreline-stabilization project wins Outstanding Achievement Award

By Dawn Skelly

PRESTO PRODUCTS CO., APPLETON, WIS., RECEIVED AN Outstanding Achievement Award in the geosynthetics category of IFAI's International Achievement Awards for the Little Miami River/Lake Isabella shoreline-stabilization project in Ohio. The project was a collaborative effort between Presto Products Co., designers at Bozeman, Mont.-based Inter-Fluve Inc., Sunesis Construction Co. of Camp Dennison, Ohio, Ohio's Hamilton County Parks Department, and environmental groups. The team designed and constructed a unique, bioengineered composite bank that protects a wild river and its habitat, as well as the safety of recreational enthusiasts at the county park.

The Hamilton County Parks Department in Cincinnati was losing a 30-ft high, 850-ft long segment of river bank at Lake Isabella Park to the erosive forces of Little Miami River. Strong water currents and frequent water-level changes had caused the bank's slope to degrade so that it was nearly vertical in most areas.

The bank separates Lake Isabella, a man-made lake in the park, and the Little Miami River, which was designated as a Wild and Scenic River by state and federal governments. The steep bank posed a safety risk to people who used the park, and its continued erosion posed an environmental risk to the river, which contains many species of fish and mollusks that are sensitive to sedimentation and habitat alteration.

As a result of the river's environmental designation, the team was unable to use traditional revetment materials, such as concrete, timber or large riprap. Vegetative revetments alone lacked the strength to endure the river's hydraulic forces. Consequently, team members had to find alternative methods and materials to complete the project. They conceived an integrated earth-retention system that combined synthetic and natural erosion-control systems to meet aesthetic and environmental requirements.

A variety of materials were used, including a stone foundation, a perforated Geoweb cellular-confinement system, natural coir fabric-encapsulated soil lifts, geogrids, and comprehensive seeding and vegetation **(Figure 1).**

The installation steps were as follows:

1. Stones, 2.5 ft in diameter, were carefully chosen and washed before being placed in the river. Natural-looking stone, instead of concrete, was used for aesthetic and environmental reasons. Ten vertical feet of stone were placed at the toe of the slope, leaving 3 ft of stone visible above the water at low flow.

2. The slope itself was completely excavated and filter gravel was installed over its entirety. A 3-ft-thick layer of common fill was placed on top of the gravel.

IFAI Outstanding Achievement Award

- **Project Owner: Hamilton County Parks Department, Ohio**
- **Project Designer: Lisa Fotherby, Ph.D, P.E., (hydraulic engineer) and Pat Redmond, P.E. (geotechnical engineer), Inter-Fluve Inc., Bozeman, Mont.**
- **Project Manager: Dale Miller**
- **Date installed: October I997**
- **Fabric Tradename: Geoweb Cellular Confinement System**
- **Fabric Manufacturer: Presto Products Co., Appleton, Wis.**
- **Installation: Sunesis Construction Co., Camp Dennison, Ohio**

3. A perforated, high-density polyethylene (HDPE) cellular-confinement system was installed in 14 stair-step layers on top of the common fill, to a height of 10 ft (Figure 1). The geocell sections were expanded, and 4-ft rooted-willow cuttings were installed horizontally between cell layers in pre-cut holes. The willows were grown in a durable burlap sock tilled with soil. The cells were then infilled with a specially prepared mixture of aggregates and top soil, seeded with native grasses and wrapped and covered in coconut-coir fabric.

The wall structure of the cells came perforated with small diameter holes that provide the root system with the ability to grow through the perforations, thereby creating a lock-up with the cell wall. This allows the internal components–soil and vegetation–to interlock, thus providing stability. The sections were stacked on top of the other and set back slightly to produce the desired slope grade (1.5:l--2:1). A geogrid was placed between each layer from the front of the slope back to the filter gravel, to guard against deep-seated slope failures.

4. Next, fabric-encapsulated soil lifts (1½ ft high) were installed to a height of 10 ft above the cellular-confinement system **(Photo 2).** The lifts were wrapped with a dual layer of woven- and nonwoven-coir fabrics and filled with topsoil. The inner layer–a nonwoven-coconut fiber within polypropylene netting–prevented piping of soil through the heavier outer layer, which was a strong woven fabric. The lifts then were seeded and planted with rooted cuttings. Willow cuttings were placed between every lift.

5. Finally, the uppermost sections were graded and covered with 4 in. of topsoil and woven-coir fabric. This less aggressive approach was used because erosive forces were less at these levels. The sections then were seeded and planted with shrubs.

The end result was a bioengineered, 850 lineal-ft bank up to 30 ft high. The integration of synthetic and natural materials addressed all project concerns, from structural stability to aesthetics and environmental issues. The bioengineered wall was named a model demonstration project by the Ohio Department of Natural Resources for other municipalities who encounter similar erosion-control challenges.

Today, the bank is fully vegetated and resisting the erosive forces of the Little Miami River **(Photo 1).** The $1.2-million project provides the required stabilization and meets the environmental objectives of park officials and environmental groups.

1998 International Achievement Awards

IT WAS ANOTHER RECORD-BREAKING YEAR for the International Achievement Awards, sponsored by the Industrial Fabrics Association International (IFAI) to recognize outstanding and innovative projects that incorporate technical fabrics. In its 51st year, the competition attracted 373 entries (50 more than last year), including eight geosynthetics entries. International involvement in the Achievement Awards also was at an all-time high in 1998, with 15 countries participating.

Judging for the 1998 International Achievement Awards was done by a committee of experts from the fields of industrial fabrics, architecture, education and related areas. Entries were considered in terms of their complexity, design, workmanship, uniqueness and function.

Entries for the 1999 International Achievement Awards will be accepted from now through July 1, 1999, for projects completed between July 1, 1998, and June 30, 1999. For a "Call for Entries" brochure or to obtain more information on the competition, contact Grace Fischer, awards and certification manager, IFAI, 1801 County Rd. B W., Roseville, MN 55113-4061 ; 651/222-2508, 800/225-4324, fax 651/631-9334, e-mail awards@ifai.com.

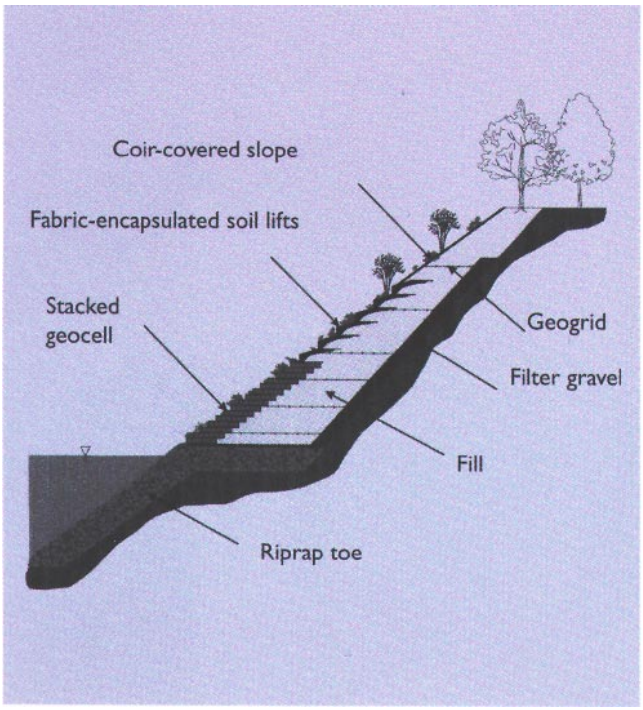

Figure 1. The river-bank stabilization project used a variety of synthetic and natural materials, including more than 100 plant species.

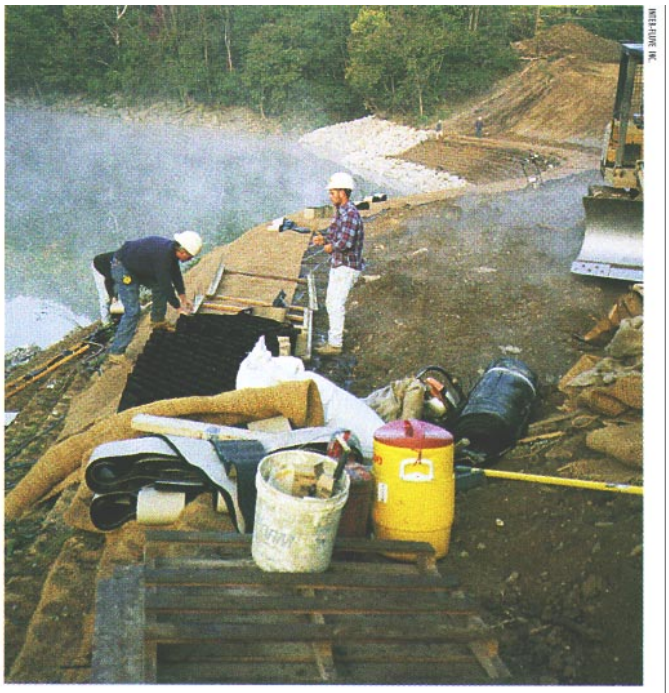

Photo 2. Steps were constructed with a cellular-confinement system wrapped with seeded coir. Geogrids provide stability to each layer.