Keeping it on the Land

Information for the soil erosion and sediment control community in the Great Lakes basin

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Shoreland erosion control in the new millennium....Much more than revetments and seawalls!

By Gene Clark, Lakeshore Engineer, and Al Kean, Chief Engineer, Minnesota Board of Water and Soil Resources

The challenges facing Great Lakes erosion control specialists and resource managers have never been greater. Accelerated shoreland development (shoreline and adjacent lands), the need for more sophisticated education, the emergence of new programs, and the increase of competition for technical and financial assistance have resulted in increasingly complex challenges.

Tourism and development are growing at a rapid rate along many Great Lakes shorelines. Development of the lakefront in many areas has accelerated shoreland erosion, typically by the removal of woody vegetation and the increase and concentration of runoff. Shoreline Best Management Practices (BMPs) have been developed and actively are promoted to address this situation. Construction and land management regulations are in place to a varying extent. Nevertheless, many miles of erodible shoreland are in need of stabilization to improve Great Lakes water quality and protect the associated shoreline resources.

Many government units along the Great Lakes are implementing shoreland education, as well as technical and financial assistance programs. While there have been many positive results to date, funding constraints and limited human resources force us to focus and better coordinate these programs and resources. As we move into the new millennium, we must address current limitations to achieve common objectives. Ever-improving technology and watershed-based approaches provide new opportunities for more sophisticated education, better coordination and improved technical assistance.

Specifically, new planning tools need to be developed and private/public partnerships formed in order to protect and manage resources by coordinating and prioritizing efforts. Unquestionably, the first priority is shoreland erosion and associated nonpoint impacts that are accelerated by human activities such as construction and resulting runoff, problems with septic systems, and vegetation management. At the same time, natural shoreline erosion must also be addressed because it can impact water supply and habitat. A two-pronged approach to these problems is therefore required. Erosion control projects that mitigate existing problems are necessary, as is education for shoreline BMP use aimed at preventing future problems.

In Minnesota, the Board of Water and Soil Resources (BWSR) has begun to address these issues with the support of grants from the U.S. Environmental Protection Agency (U.S. EPA) and the Great Lakes Basin Program administered by the Great Lakes Commission. In 1992, a U.S. EPA Section 319 grant provided seed money for the BWSR to create a lakeshore engineering position. This engineer provided technical and financial assistance to and through Soil and Water Conservation Districts (SWCDs). This successful venture convinced the state to make the position permanent in 1994.

Additional U.S. EPA and Great Lakes Basin Program grants have helped to develop a shoreline BMP manual, video, and workshops; prepare an erosion control vegetation fact sheet; provide design and construction inspection training for SWCD technicians; and implement a number of innovative shoreline stabilization demonstration projects.

A recent Great Lakes Basin Program grant will help the BWSR develop a Geographic Information

continued on page 4

Critically eroded Lake Superior bluff. Top: before construction; Bottom: after using rock- fill method to remediate. (Photos courtesy MN Board of Water and Soil Resources)

This publication is made possible by a grant from the U.S. Department of Agriculture—Natural Resources Conservation Service

Great Lakes Basin Program Partners

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Around the basin

District Updates

Illinois

Chicago is the only Illinois jurisdiction on Lake Michigan not involved in a soil and water conservation district. However, the regional USDA-NRCS technical staff are located in suburban Naperville, and the city seeks NRCS technical support on an individual project basis. For instance, over the last two years NRCS staff have been called upon to work with the city in remediating an outdoor rookery at the Lincoln Park Zoo. Given the level of support Chicago enjoys, there is speculation that the city may wish to become a district of its own.

In other Illinois communities in the Lake Michigan drainage basin, 11 golf course managers have joined forces to work on a 25 percent reduction in pesticide use for this calendar year. The city of Highland Park has been monitoring its ravines that drain into the lake. Lake County has a central storm water management committee that works aggressively with the local Lake County Soil and Water Conservation District, municipalities, and developers to control erosion. The Education Committee of the Association of Illinois Soil and Water Conservation Districts, chaired by Virginia Hayter of the North Cook County SWCD, recently distributed approximately $13,500 in sustainable agriculture grants to SWCDs in Illinois. Contact: Virginia Hayter, NACD Great Lakes Committee, 847-882-9100, ext. 2618.

Minnesota

The state has developed a **Joint Powers Agreement** process enabling two or more state agencies and/or local units of government to create a board that can act on behalf of the signatory groups. The resulting board can exercise the powers held in common among the member agencies. There are several such arrangements in Minnesota, one of which is the Lake Superior Association of Conservation Districts which has as members all SWCDs in the Minnesota Lake Superior watershed. The Association has elected officers and meets six times a year to discuss common issues of concern. NACD Great Lakes Committee Chair Joe Newberg meets with this group several times a year to convey what the Committee has been doing and hear district concerns. The process is a great communications tool, and Newberg urges other districts to undertake similar coordination. Contact: Joe Newberg, Chair, NACD Great Lakes Committee, 612-948-4830.

Ohio

The **Action Agenda for Ohio Watersheds** is an initiative directed toward better coordination of multiple-agency efforts in soil erosion control. The strategy focuses on building partnerships among the various agencies involved in erosion management and is the first time the different agencies have worked together to secure funding. The Action Agenda partners are the Ohio Department of Natural Resources (ODNR), the Ohio Cooperative Extension Service, and the Ohio Environmental Protection Agency (OEPA). This effort will improve watersheds locally by hiring watershed specialists, engineers, and technicians. The state agencies will provide the technical help, the Extension Service will work on education efforts, and OEPA's will focus on enforcement and monitoring.

In 1996, as part of its Strategic Action Planning process, ODNR conducted an assessment of threats to coastal resources that revealed urbanization as the fastest growing source of degradation. Seven Soil and Water Conservation Districts in Northeast Ohio received funding for Urban Stream Specialist (USS) positions. The USS is charged with initiating and organizing projects; promoting activities that restore, improve and protect urban waterways; and creating self-sustaining local watershed groups and demonstration projects in urban areas.

In Medina County, the USS helped organize the Rocky River Watershed Technical Advisory Committee (TAC), which is the first convergence of agencies in the county, to improve the public's understanding of streams by motivating citizens to recognize their watershed and become more involved in it. The Lorain County USS is working with local groups, schools and organizations to promote watershed education, planning and other activities directed toward improved urban stream health. Contact: Maurine Orndorff, NACD Great Lakes Committee, 440-543-5780.

Wisconsin

In 1997, under the **Environmental Quality Incentives Program** (EQIP), the Duck/Apple/Ashwaubenon Creeks watershed area was selected as a priority project for USDA assistance. This project has been a collaborative effort between the Natural Resources Conservation Service, the Farm Service Agency, the Brown and Outagamie County Land Conservation departments, and the Oneida Nation of Wisconsin.

The local sponsors of this watershed area identified nutrient and sediment reduction from agricultural sources as the biggest natural resource concern. Other issues include streambank protection and the past loss of woodland and wildlife habitat. The Oneida Tribe of Indians, whose reservation lies within the boundaries of the watershed, use Duck Creek and its tributaries for hunting, fishing, and recreation, and are concerned about the declining water quality.

The goals of the EQIP project are to offer technical assistance and incentive payments to landowners, and to help reduce the amount of sediment and nutrients flowing into creeks. Crop residue, nutrient and pest management, cover crops, sediment control structures, buffers, grassed waterways, and wetland restorations are the primary conservation practices used in the watershed. Contact: Pat Leavenworth, Wisconsin State Conservationist, USDA-NRCS, 608-276-8732.

Correction: On page 2 of the last issue of *Keeping it on the Land*, we omitted the location of the Bad River Band of Lake Superior Tribe of Chippewa Indians' Bad River Integrated Resources Management Plan Dissemination Project (21) and the Forest Industry Safety and Training Alliance's Forest Road Building Workshop (22). The map has been corrected and may be viewed on line at www.glc.org.

State Updates

Michigan

The proper disposal of unused and unwanted pesticides is the goal of the **Clean Sweep** program in Michigan. **The Michigan Groundwater Stewardship Program,** in cooperation with county and local units of government, has established 12 permanent Clean Sweep sites located throughout the state.

Individual Michigan residents may dispose of unwanted pesticides at no charge by taking them to a Clean Sweep site where they will be collected, packaged for shipping, and disposed of properly. Please contact the site coordinator at the location nearest you:

- John Gruchot, Berrien County Dept. of Planning, 616-983-7111, ext. 8617
- Dave DeVet, Delta Solid Waste Management Authority, 906-786-9056
- Randall Smith, Grand Traverse County, 616-922-4576
- Michele Stemler, Ionia County Resource Recovery Project, 616-527-5357
- Dawn George, Isabella County Recycling Program, 517-773-9631
- Tom Dewhirst, Kalamazoo County Human Services Dept., 616-383-8741
- Sara Lesky, Lapeer County Health Department, 810-667-0452
- Elwin Coll, Macomb County Health Department, 810-469-5253
- Darwin J. Baas, County of Ottawa Health Department, 616-393-5645
- Ned Birkey, MSU/Monroe County Drain Commission, 734-243-7113
- Rick Aho, Marquette County Solid Waste, 906-249-4108
- or Jim Bredin, Office of the Great Lakes, Michigan Department of Environmental Quality, bredinj@state.mi.us.

Minnesota

Minnesota has asked the National Oceanic and Atmospheric Administration to approve **Minnesota's Lake Superior Coastal Program** (MLSCP) under the Coastal Zone Management Act. If approved, the MLSCP would be eligible to receive federal administrative grants. Governor Ventura has designated the Minnesota Department of Natural Resources as the agency to receive and administer grants under the Coastal Zone Management Act.

The Minnesota Interagency Living Snowfence Task Force has published *Catching the Snow with Living Snowfences*, a 133-page workbook that provides practitioners with technical guidance to design effective living snowfences. *Catching the Snow* contains photographs, living snowfence layouts, narratives, and a newly updated CD-ROM containing plant selections. The workbook can be used anywhere blowing and drifting snow causes problems. The Federal Emergency Management Agency funded the project through the Hazardous Mitigation Grant Program. Contact the University of Minnesota Extension Distribution Center at 800-876-8636; order@extension.umn.edu

Minnesota State Rep. Willard Munger of Duluth recently received the 1999 Outstanding Wetlands Program Development Award from the Environmental Law Institute. As chair of the Environment and Natural Resources Committee in the Minnesota House of Representatives, Munger authored the Minnesota Wetland Conservation Act of 1991 (WCA), which regulates wetland filling and draining. Currently WCA is being administered by more than 400 local units of government in Minnesota. Contact: Ron Shelito, Minnesota Board of Water and Soil Resources, ron.shelito@bwsr.state.mn.us.

New York

New York state voters endorsed a $1.75 billion **Clean Water/Clean Air Bond Act** in 1996. This bond has provided a funding mechanism for municipalities and Soil and Water Conservation Districts to address water quality impairments that have been identified in the state's Priority Waterbodies List.

Two projects, receiving matching Bond Act funds of $561,400 for sediment control, will remediate excessive roadside ditch erosion in two lake watersheds of central New York. Local watershed planning groups already have evaluated potential pollution sources while formulating multifaceted water quality management plans. In the plans, highway reaches were pinpointed as contributing substantial sediment loading rates because of the lakes' locations in steep, glaciated valleys. Stormwater runoff flows to drainage channels lead to exceedingly high erosion rates in comparison to other land uses. The projects will stabilize 24 miles of roadside and provide educational outreach programs to highway superintendents. Contact: Doug Gillette, New York Department of Environmental Conservation, dsgillet@gw.dec.state.ny.us.

Ohio

The Ohio legislature has allocated $2 million annually to support the state's share of a 26 county **Enhanced Conservation Reserve Program for Lake Erie**. The new funds will allow the state to piggyback federal Conservation Reserve Program payments to entice riparian landowners to enroll streamside acreage for either 20 or 30 years. The program has a goal of protecting 6,000 miles of streams, ditches, and rivers.

This summer, the Ohio Department of Natural Resources (ODNR) will be collecting stream reference reach data in northwestern and northeastern Ohio. The data will be used to develop engineering specifications for stream restoration required by 401/404 reviews and other programs. ODNR has developed such data for southeastern Ohio for use in coal mining permits.

Contact: Jerry Wager, Pollution Abatement and Land Treatment, Division of Soil and Water Conservation, ODNR, jerry.wager@dnr.state.oh.us.

Federal/Regional Updates

U.S. Department of Agriculture, Natural Resources Conservation Service

At the Great Lakes Commission 1999 Semiannual Meeting in Montreal, May 17-19, 1999, the Natural Resources Conservation Service (NRCS) presented a series of eight Great Lakes agricultural activities fact sheets. The fact sheets cover the nonpoint source pollution control activities which NRCS provides as technical and financial assistance to landowners, organizations, and units of government.

Some of the highlights include an updated **Illinois Urban Manual** covering

continued on page 5

Net Resources

The World Wide Web is fast becoming one of the most valuable communication and information exchange tools available. As more organizations and associations develop web pages, the Web provides instant access to meeting announcements and reports, new documents, organization positions and policy statements. The following sites should prove helpful to you.

U.S. Environmental Protection Agency, Office of Water: Nonpoint Source Pollution Control Program site: *www.epa.gov/OWOW/NPS*

This site is packed with valuable information about U.S. EPA's nonpoint source (NPS) programs, including lists of programs, publications and databases related to the Clean Water Act Section 319 program, the Coastal NPS Pollution Control Program and NPS Education and Outreach. There is also good general NPS information, contact data, a nonpoint source list serve, as well as links to EPA's *Nonpoint Source News—Notes*.

Soil and Water Conservation Society: *www.swcs.org*

SWCS is a nonprofit, multidisciplinary organization for natural resource management professionals. The SWCS site offers conference information, a news section, and links to Society publications such as the *Journal of Soil and Water Conservation*, *Conservation Voices,* and *Conservogram*. There are also links to related sites.

National Association of Conservation Districts: *www.nacdnet.org*

The mission of the National Association of Conservation Districts is "to be an advocate for and to empower the nation's conservation districts to facilitate the harmonious use of our natural resources."

This multifaceted site offers information ranging from NACD's annual legislative conference to education and public affairs information, including the Backyard Conservation Program directed toward urban dwellers. The site includes meeting and event information, NACD publications and links to individual conservation districts as well as other related sites.

American Farmland Trust: *www.farmland.org*

The Trust promotes environmentally friendly farming practices and works to prevent the loss of productive land. Its policy and legislative positions can be viewed at this site, as can a range of tools available for the protection of farmland. In cooperation with the USDA-NRCS and the National Agricultural Library, AFT has developed the farmland protection information center which has two public service components: a technical assistance service and an electronic library. Technical assistance staff provide information about farmland protection programs, policies, and activities to anyone interested in these issues. Technical Assistance is available from: Herrick Mill, One Short Street, Northampton, MA 01060, (413) 586-4593; fax (413) 586-9332.

Farmland Information Library: *www.farmlandinfo.org*

This American Farmland Trust library site offers access to research reports from the Center for Agriculture and the Environment, case studies, current literature, law, additional Internet and electronic research tools, and farming practices news.

American Forests' Urban Forest Center: *www.americanforests.org*

This site has a Citizen Forestry Support System that offers networking and resources information covering the spectrum of issues facing citizen groups, urban forestry councils, and tree boards. Available information ranges from basic concerns about tree care to the skills needed to run a responsive and responsible organization.

Great Lakes Information Network (GLIN): *www.great-lakes.net*

This site is searchable by topic and provides links to relevant state, provincial, federal, and regional agency sites as well as educational institutions, nongovernmental organizations, and other sites of interest. This includes the **Great Lakes Commission** site, ***www.glc.org***, which has several soil erosion and sediment control related pages including the Great Lakes Basin Program page.

Shoreland Erosion Control

continued from page 1

System (GIS) database with layers for North Shore erosion hazard potential and fishery habitat sensitivity.

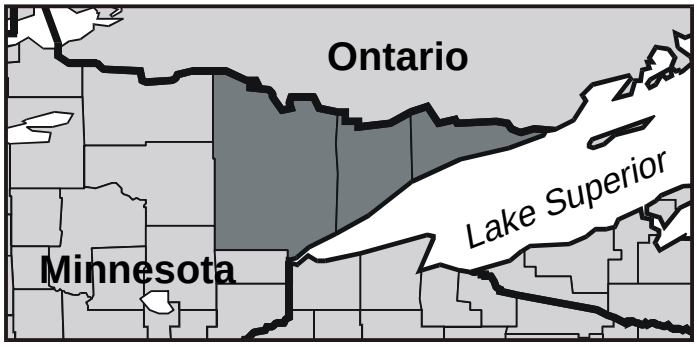
Partnerships, coordination, prioritization, and expertise are the key ingredients for addressing the complex challenges facing Great Lakes erosion control specialists. Even with unlimited time and resources, armoring the entire lakeshore is neither appropriate nor desirable. With the limitations soil erosion specialists face, narrowing the focus to the most critically eroded areas becomes even more important. We must continue to work and learn together to ensure that our efforts and knowledge evolve appropriately for the good of the Great Lakes.

Gabion basket wall protecting an eroding shoreline. Top: before construction; Bottom: after installation. (Photos courtesy MN Board of Water and Soil Resources)

Featured projects - Great Lakes Basin Program for Soil Erosion and Sediment Control

Lake Superior Low Cost Shoreline Erosion Control

Grantee: MN Board of Water and Soil Resources
Duration: August 1997 through July 1998
Type: Demonstration Project



Conventional soil erosion projects are very expensive for the Lake Superior shoreline due to long open stretches subject to strong wind and the lake's severe wave climate. Most cannot be funded solely by the landowners, nor do state cost-share funds cover many large-scale projects. If low-cost alternatives can be demonstrated as acceptable options under certain conditions, state cost-share funds will go further and more shoreline can be protected.

Pinned Rock Wall Method -- Before.

Recently, a large-scale erosion control project was completed at Sucker Bay, MN. From that site, an estimated 3,000 tons of sediment eroded annually from four shoreline areas. Remediation of these areas costs an average of $250 to $300 per linear foot. Forty more such projects have been identified by the Lake Superior Association of Soil and Water Conservation Districts, at least 15 of which have been classified as potential low-cost shore protection project sites. Low-cost sites are defined as those with eroding shorelines substantially above lake level or with partial protection already in place. Potential low cost solutions include greater and more efficient use of vegetation, use of pinned rock rather than poured concrete, and use of rock-filled gabions in lower wave impact areas.

Five sites were selected for low-cost demonstration projects to address specific problems. Techniques used included selected dump and fill rip-rap to protect a very steep erosion pocket; large rectangular pinned rock in place of a concreted wall; gabions to protect an eroding shoreline area; a modular wall system to protect a sandy beach back shore area; and a pinned outer row of rip-rap in a revetment in order to build over a bedrock outcrop.

The projects will save an estimated 526 tons of sediment from entering Lake Superior annually. This is expected to be an ongoing saving. At the same time, as these techniques are adopted elsewhere along the lakeshore, further soil savings are expected to occur. If successful over the long term, fish habitat and ambient lake water quality are expected to improve through the reduction of direct sedimentation into Lake Superior.

At a July 1998 Sea Grant workshop, inquiries about the projects and requests for further information indicated a basin-wide interest in the project. As a result, cost and erosion benefits are expected to accrue to other Great Lakes shorelines.

Contact: Gene Clark, MN BWSR, 218-723-4752.

Pinned Rock Wall Method -- After.
(Photos courtesy MN Board of Water and Soil Resources)

Federal/Regional Updates

continued from page 3

conservation BMPs. A wetland restoration project was developed at the Indiana Dunes National Lakeshore in Gary, IN. Michigan has protected 304,000 acres of farmland with conservation cover crops through the **Conservation Reserve Program.** Minnesota has worked on four new watershed projects implementing planning, targeting through GIS data, stream bank restoration and tree planting. New York has developed programs on lakeshore erosion control including workshops, brochures, bio-engineering planting and intensive grazing management demonstrations. Ohio will continue its **Lake Erie Buffer Initiative** to establish stream corridor buffers leading to Lake Erie. Pennsylvania has provided hundreds of landowners with assistance on conservation measures and are developing **Whole Farm Plans** to demonstrate an economical environmental approach to farming. Wisconsin is active in several Priority Watersheds to reduce soil erosion and sedimentation, feedlot runoff, and wind erosion. Contact: Roger Nanney, NRCS/U.S. EPA-GLNPO, 312-353-7979.

Ravine Erosion Control

Grantee: City of Highland Park, Illinois
Duration: May 1993 through April 1995
Type: Demonstration

The city of Highland Park is a north Chicago suburb located on the shore of Lake Michigan. It is built on an extensive ravine system extending 11.7 miles with a drainage area of 3.5 square miles.

Over the last 50 years, vegetative cover important to ravine stabilization has been removed, resulting in increased stream flow especially during storm events. The escalated stormwater flow has seriously destabilized the channel banks, reduced the ravines' natural armoring, and increased erosion and sediment transport in the process. This has impacted negatively on Lake Michigan's water quality and disrupted the ravine ecosystem.

The Great Lakes Basin Program supported a demonstration grant to illustrate how vegetative stabilization, supported by structural armoring, can effectively reduce soil erosion and sediment/nutrient transport in an actively eroding ravine which receives substantial concentrated stormwater runoff.

The project focused on two highly erodible ravine sites with the intent of augmenting or re-establishing natural stream bed and stream bank armor. One site was 550 feet on the Lake Bluff ravine, which drains directly into Lake Michigan. The other site was 900 feet on the Highland Park ravine.

On the Lake Bluff ravine, project personnel graded out stream bed irregularities and laid down geotextile in slumped areas. They covered the geotextile with quarried limestone cobbles and boulders in the streambeds and concrete rubble in the slumps. The slumps were then covered with soil and hydro-seeded with temporary annual grass to enable natural vegetation to be re-established.

On the Highland Park ravine, project personnel used several methods. They built gabion baskets out of galvanized steel mesh, filled them with 3 to 6-inch quarried limestone and installed 3-foot thick, 9 and 12-foot units along the most actively eroded toes of the ravine slopes. They also installed 9-inch Reno Mattresses. These were built like gabion baskets and installed over geotextile on the base of the ravine bed. The toe of the slope was reinforced with A-Jacks, which are structures shaped like a 6-arm toy jack, and then willow cuttings were planted between the jacks. Finally geo-web, a plastic textile which holds cobblestones in place, was used in areas of actively eroding clay.

Top: typical eroding ravine. Middle: restored Lake Bluff ravine. Bottom: Lake Bluff ravine after four years. (Photos courtesy Shabica and Associates)

The effectiveness of ravine stabilization was measured by sampling sediment transport, measuring stream bed downcutting, and conducting a visual survey. The various techniques showed different rates of success. Least successful were the A-Jacks and willow plantings because there was too much erosion and not enough sunlight to enable the willows to grow.. The restored stream bed armor in Lake Bluff exceeded expectations. Project personnel concluded that installing a continuous layer of streambed armor most closely mimics nature, is the least expensive solution, and is less obtrusive than other methods.

Contact: Charles Shabica, Shabica and Associates, 847-446-1436, charles@shabica.com; or Perry Walcott, Deputy Director of Public Works, Highland Park, 847-926-1145.

Editor's Note:

Dr. Shabica responds to Jerry Wager's concerns about streambank armoring (*Keeping it on the Land*, May 1999). Shabica comments, "Ravine streams are typically intermittent, have a higher gradient than other streams, have been stable for thousands of years, and are naturally armored with glacial cobbles. Streambanks composed of glacial till rise steeply away from the stream and there is no possibility of meandering, nor are there associated flood plains. Therefore, there is no balance between erosion and deposition. When natural stream armor is lost in this situation, streambanks and beds are eroded and carried directly into the lake. By filling the cut with new stream bed armor, the stream "grade" profile is re-established. Furthermore, raising armor along the edges of the ravine provides protection for increased stream flow caused by recent urban sprawl."

Reducing Sedimentation on the Boardman River Through Greater Public Involvement

Grantee: Grand Traverse Conservation District, Michigan

Duration: June 1996 through September 1997

Type: Information and Education; Demonstration

Boardman River Watershed on Grand Traverse Bay, Michigan

The 1991 *Boardman River Watershed Report* identified over 600 eroded sites along the Boardman River and its tributaries, 85 percent of which were the result of human activity. The sediment entering the river from these sites has significantly degraded the productivity of this state-designated "Blue Ribbon" trout stream and has negatively impacted the recreational opportunities offered by the river.

Volunteers work at an eroded site.

Goals for this project included correcting these erosion problems, securing long term protection of soil and water resources, and improving riparian landowner and user group stewardship. Greater public involvement helped meet these goals by: (1) providing hands-on opportunities for students, riparian landowners, and user groups to rehabilitate eroded stream bank sites within the watershed; and (2) conducting an interactive river ecology workshop for the general public where they could improve their understanding of river system dynamics and how individual actions can affect a river.

Over 75 volunteers, including landowners, Trout Unlimited members and other interested citizens, restored 14 sites with riprap, top soil, a fish habitat structure and a whole-tree revetment. On the North Branch of the river, 15 students from the Au Sable Institute restored a site using whole-tree revetments and top soil. Twenty-three eighth graders from Kingsley School participated in Earth Day activities associated with the project.

Project personnel held two workshops in an effort to heighten public knowledge and awareness concerning river ecology. These workshops addressed issues including laws affecting rivers, the importance of aquatic insects, and the principles of river ecology and geomorphic processes. One workshop involved 450 students attending the second annual Student River Congress conducted by the Grand Traverse Bay Watershed Initiative. A model stream, constructed through this grant, was used to demonstrate river processes and simulate restoration techniques. The second workshop, a day-long event held on the banks of the Boardman River, involved 1,500 people learning about river ecology.

It is estimated that 115 tons of soil per year and an associated 193 pounds per year of nitrogen and 97 pounds per year of phosphorus were prevented from entering the Boardman River as a result of the streambank restoration projects. As well, a total of 756 linear feet of stream bank were treated, 6,460 square feet of vegetative stabilization was added, and 96 linear feet of fish lunker structures were installed.

Additionally, the project reached almost 2,000 people through the Boardman River ecology workshops.

Evaluation of the success of the Boardman River Restoration and Protection Project continues and this information is shared with other resource management groups around the state. Results have been reported in the District newsletter and in the new Boardman River Project newsletter *Boardman Currents*. The final results were presented at the Michigan Association of Conservation Districts 1997 annual convention.

Contact: Steve Largent, Director, Boardman River Restoration and Protection Project, 231-941-0960.

A restored site, one year later. (Photos courtesy Grand Traverse SWCD)

Middle school children at work on a tributary.

Of interest...

If you have an addition to this section, please contact Jennifer Read at 734-665-9135, jread@glc.org.

WORKSHOPS AND CONFERENCES

August

1-4 ***NACD North Central Regional Meeting*** (Cedar Rapids, Iowa). Contact: Robert Raschke, 303-988-1810, bob-raschke @nacdnet.org.

8-11 ***Walk on the Wild Side, Soil and Water Conservation Society Annual Conference*** (Biloxi, Mississippi). An opportunity for integrated learning and sharing across key natural resource topic areas. Contact: SWCS, 7515 NE Ankeny Road, Ankeny, Iowa 50021, 515-289-2331.

22-24 ***NACD Leadership Conference*** (Portland, Maine). Contact: Robert Raschke 303-988-1810, bob-raschke@ nacdnet.org.

31 to Sept. 3 ***Building Cities of Green 1999 National Urban Forest Conference*** (Seattle, Washington). Contact: Cheryl Kollin at American Foreststst 202-955-4500, ext. 221, ckollin@amfor.org.

September

13-15 ***Celebrating Interstate & International Cooperation in Water Resources Management*** (Pittsburgh, Pennsylvania). Great Lakes Commission Annual Meeting and special session with the Interstate Council on Water Policy. Contact: Mike Donahue at the Great Lakes Commission 734-665-9135, mdonahue@glc.org.

24-26 ***International Joint Commission 1999 Great Lakes Water Quality Forum*** (Milwaukee, Wisconsin). Contact: Jennifer Day, IJC Great Lakes Regional Office, 519-257-6733, dayj@windsor.ijc.org; www.ijc.org/milwaukee.

28-29 ***RC&D: Coexisitng in the 21st Century*** 1999 Mid-Atlantic RC&D Association Annual Conference. Contact: Penn Soil RC&D, 814-226-8160, ext. 102 or 119.

29-30 ***NACD Great Lakes Committee Meeting*** (Erie, Pennsylvania) Contact: Tom Crane,Great Lakes Commission, 734-665-9135, tcrane@glc.org, or Joe Newberg, NACD Great Lakes Committee Chair, 612-948-4830

October

12-15 ***National Small Farm Conference*** (St. Louis, Missouri). Contact: Denyse Sturges, dsturges@niu.edu.

29-30 ***Sharing the Heartland: Practical Tools for Conserving Farmland and Natural Resources*** (Bloomington, Minnesota). Contact: J.A. MacSwain, 1825 Curve Road Blvd., Rm. 101, Stillwater, MN 55082-6029, 612-835-7800.

On the Bookshelf: *Keeping it on the Land...And out of the Water!* Summary Proceedings of the Toledo Conference, September 1998. Contact: Pat Gable at the Great Lakes Commission 734-665-9135, pegable@glc.org, or look for it on line at www.glc.org

A REMINDER: *Keeping it on the Land* is posted on the Great Lakes Commission website (www.glc.org). If you no longer require a paper copy of the newsletter, please send an e-mail to jread@glc.org.

The Great Lakes Basin Program for Soil Erosion and Sediment Control is a federal/state/local partnership for improving Great Lakes water quality. The program promotes erosion control and sound land-use practices through education/information sharing, innovative demonstration grants, technical assistance initiatives and coalition building. Program partners include the Great Lakes Commission, U.S. Environmental Protection Agency-Region 5, and the U.S. Department of Agriculture-Natural Resources Conservation Service.

Representatives of the eight Great Lakes states, federal agencies and regional organizations with a mandate in soil erosion and sediment control oversee the program. One of its biggest successes is a competitive annual grants program funded through USDA-NRCS. The program has supported projects in all of the Great Lakes states. Project results are featured regularly in this newsletter.

For more information, including grant application procedures, contact the Great Lakes Commission, 734-665-9135; http://www.glc.org

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