

# Tree revetment structures installed along banks of Grass River

By Fred Sittel

Just over six months after this demonstration project was first proposed for the Grass River, an unprecedented collaboration between Antrim County, area businesses, lake associations, conservation groups and individual volunteers resulted in the installation of seven tree revetment structures, also referred to as Large Woody Debris. These structures are designed to deflect the flow of water and to closely imitate naturally fallen trees. The goal is to determine if their strategic placement can reverse sediment buildup and restore the channel depth in areas where navigation has been impacted. They are also intended to improve the habitat available to fish and aquatic insects.

The need for managing sedimentation in Grass River was well documented by TLA studies beginning in 2010. The preliminary findings from these studies were presented by Professor Anthony Kendall of Michigan State University's Geology Department on January 30, 2013 at a meeting with representatives from local units of government hosted by the Elk River Chain of Lakes Watershed Protection Plan Implementation Team. More recently, Dr. Kendall presented updated findings at TLA's Annual Meeting held in August. Volunteers working on the sedimentation studies were pleased when, earlier in the spring, Antrim County Drain Commissioner, Mark Stone,





Aerial photo of four structures at Site #2.

proposed placing tree revetment structures along the banks of Grass River to determine if the technique can be used to control sediment build up without dredging. Antrim County and a number of co-sponsors were quick to provide funding for the project and a meeting to inform the public was held in late May at the Grass River Education Center. A permit application was also filed with the Michigan Department of Environmental Quality. Technical guidance and installation expertise was provided by stream restoration specialist, Ken Reed who has over 20 years experience building trout habitat for the U.S. Forest Service and MDNR in northern Michigan rivers.

The effort came together nicely on the first full weekend of Autumn during what can only be described as mid summer like weather. Contractor Ken Reed and an assistant strategically positioned and secured trees to the river bank while a dozen volunteers from organizations including Grass River Natural Area, Antrim County board of commissioners, TLA, Friends of Clam Lake, Short's Brewery, and the Antrim Conservation District, harvested and transported whole trees to the predesignated sites. Every tree was evaluated for suitability by representatives from GRNA with help from Antrim County Forester, Mike Merriwether. Most had either some type of threatening issue such as bark beetles or were found to be crowding other more desirable species. Primarily, they were tamarack, cedar and a few spruce. Trees were

See TREE STRUCTURES page 4

The Mission of the Three Lakes Association is to provide leadership to preserve, protect, and improve the environmental quality of the Elk River Chain of Lakes, especially Torch Lake, Clam Lake, and Lake Bellaire, for all generations.





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The TLA Quarterly is published by the Three Lakes Association Please direct comments or questions to Leslie Meyers, Executive Director

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## President's Message

Greetings to all,

Once again, we come to the turning point of the year. As we pause to reflect on the year just ending, we are aware of both joys and sorrows. Among our joys for the year 2013, are the four high school student interns who volunteered their time with TLA this summer, to learn more about the waters that shape our region. They are: Sabeth Dalbo and Annika Stoldt (Elk Rapids High School), Ashley Robbins (Mancelona High School), and Tineka Witt (Central Lake High School). These young women tackled four scientific areas of interest: 1) expanding our understanding of the dark colored plume that extends from Clam River into Torch Lake; 2) inventorying road-ends to study soil erosion and the effects of storm-water-runoff; 3) inventorying the macroinvertebrate population of Maury Creek as a measure of stream health; and 4) contributing to public education by staffing a water-science booth at the Antrim County Fair. A major undertaking was the building of a greenbelt demonstration project at Butch's Tackle and Marine. For more information on what the interns did this summer, visit our website <a href="https://www.3lakes.com">www.3lakes.com</a> and follow the links to the 2013 presentation.

Among our sorrows for the year 2013, we must note the passing of two ardent environmental volunteers. Jack Norris (April 5, 1921 - April 3, 2013), dedicated the better part of his adult life to protecting and preserving the health of the waters of lakes Torch, Clam, and Bellaire. He was a member of TLA almost from its inception, serving in many capacities over the years, as Chair of Water Quality, Zone Director, Vice President, President, and Director Emeritus for Life. Ever willing to learn new things, and not feeling physically strong enough to attend in person, Jack attended his final TLA Board meeting via teleconferencing (using Google Hangout) on March 26. Mark Knight (August 17, 1961 - August 12, 2013), shared his retirement years with us as a willing volunteer in the water sampling program, and as a Zone Director for Forest Home Township. Mark was an ardent outdoorsman, and willingly volunteered his time for both TLA and Grass River Natural Area, in spite of the discomforts he endured and all the challenges associated with the progression of cancer. Both men, one having lived a very long life and the other taken much too early in life, leave us with an empty space in our hearts, a place of sadness that will accompany us always - even as we celebrate that they were with us for a time.

In closing, I'd like to share my personal Wish List for TLA in 2014.

- a full Board of Directors we still need one more Zone Director for Custer Township;
- 2) at least one eager high school internship candidate, from each one of our school districts;
- 3) enough willing adult volunteers to support the summer internship program as well as our other ongoing projects about a dozen new volunteers would be wonderful;
- 4) enough new members to guarantee the continuing life and growth of TLA, and to fill the gaps left when members die or move away;



# Lakeshore Restorations/Buffer Beltways/Landscapes - Birth & New Life



By Diane Crandall, Principal, Bloomin' Buddies

Our past few articles have provided background information on the benefits of Shoreline Restoration and/or Greenbelts (buffers) and how to design your installation. Now we are ready for the most exciting part of the whole project! Yes, we are at the preparation and implementation stage which will create the birth and new life at your home.

The first step is to prepare the area for planting. In my view and experience, preparation is critical for a beautiful and bountiful project. After all the time you have spent on research, design, creativity, and choices, in order for your desired vision to bloom before your eyes, the preparation of your site needs to be done with major care.

In order to make room for the new plants, the area for the new plantings must first be cleared. Clearing the area is a complex matter because of the combination of factors: the existing soil structure, existing plants or bushes, invasive species, weeds, and the

most important issue of what is going to be used to kill the grass. Soil structure can be a challenge since the firm, compacted form will require more time for killing the grass and removing or relocating other plants. I prefer to recycle any plants or bushes that are removed from the area and we will discuss this to see if you are open to that option. There are a few environmental choices that are recommended for killing existing grass, and this will be a matter of your personal choice and decision. Once the area is cleared, natural nutrients may be added, if decide to use a supplement. Depending on the options chosen for preparation, some sites may take at least one week before we can begin

If your site needs a biodegradable blanket (to prevent erosion or provide stabilization) this is laid over the area and staked into the ground before planting. A shoreline

See LAKESHORE page 4

# Lauren Elbert: 2005 TLA Summer Intern, now teaching underserved children

By Lauren Elbert

In the summer of 2005, I was a Three Lakes Association Summer Intern researching the impact of phosphorus entering the lakes as well as the lake's ability to purify the water by naturally removing most of this nutrient from its water. I remember collecting near-shore groundwater samples as part of this research. While I was only a junior in high school, I knew I wanted to expose myself to as many different internships and experiences as possible. I also worked on Bonnie Nothoff's campaign for Michigan's 105th District Representative that same summer, as well as working at Sonny's Market, and the Elk Rapids Harbor. Fast-forwarding almost 10 years, I've found myself in a very different, but equally rewarding place.

I graduated from Elk Rapids High School in 2006 and from the University of Michigan in 2010. I knew I wanted to find a career in which I would make a difference, but I wasn't sure how to go about it. Law school was in the back of my mind, but I just wasn't sure it was the right fit for me.

This brought me to Teach for America (TFA), an organization that recruits passionate, predominantly recent college graduates, to teach in low income, under-performing schools across our country. They work anywhere from the Texas-Mexico border to



Indian reservations in South Dakota. I was admitted and placed in Harlem, New York, and there, my journey in education reform began. Luckily for me, I was placed within Success Charter Network, a highly dedicated and results-driven charter school network in the city of New York.

My first year working for TFA was, for lack of a better word, a doozy. My students were habitually throwing furniture around the room, I was mugged at the elementary school building, and I was very discouraged. I came home for the holidays claiming there was no way I could walk back into that school on 125th street. Instead, however, I contemplated during the holidays about how I could

See ELBERT page 7

### Tree Structures

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selected away from the river bank so removal would not have a visual impact from the water and had to be pulled a considerable distance using a gas powered winch. They were then floated to the opposite shore by volunteers in boats and in the water. The entire project was completed in less than four days with assistance from around 80 hours of volunteer labor.

An aerial photo provided by pilot Art Hoadley illustrates several characteristics of the Grass River channel and how these tree structures are intended to function. The photo shows four tree revetment structures located in the area designated as site number two. They are positioned on the inside of a bend in the river, across from the main channel and fastest current. The river bottom beneath the structures is dark colored indicating accumulated sediment made up mostly of organic matter. Volunteers quickly learned this dark colored area was very soft and difficult to traverse in waders. Aquatic vegetation including shoreline grasses can easily be uprooted from the soft bottom by boat wakes or by prop wash from boats that stray from the main channel to "straighten out" their line of travel up river. Over time, the river can become wider as the vegetation and river bank recede. This can be aggravated by higher water levels that result from the build up of heavier particles of sediment in the main channel. Toward the center of the river the photo shows the bottom becomes a distinctly lighter color. This is a zone where the current is fast enough to scour the bottom of organic matter leaving primarily sand. Volunteers were able to wade easily on this harder bottom area without sinking in. Trees in each structure are oriented with their tops away from the

river bank so their branches "sweep" current toward the main channel increasing it's speed and helping to move sediment along. Meanwhile, the structures act

as baffles slowing current near the river bank giving sediments a place to settle and protecting aquatic vegetation from waves and boat passage. Over time, vegetation may build up in the area between the structures restoring the river to historical width and further increasing current flow in the main channel. It is hoped currents will increase to seasonal velocities fast enough to scour and transport the heavier sediments from the main channel, maintaining river navigability.

To evaluate the effectiveness of this demonstration project, volunteers took to the water before installation to document existing conditions. TLA water quality chair, Becky Norris, sampled macro invertebrate insect populations. Aquatic insects are sensitive to the build up of fine sediments which cover over their habitat. The same areas will be re-sampled in future seasons to determine the health of the insect population. Led by Mark Stone, volunteers also established two local elevation benchmarks on shore near the project sites. They measured the elevation of the river bottom relative to those benchmarks at critical cross sections slightly downstream from where the structures would be installed. The elevation profiles will be re-measured after the structures have been in place for a while to see if the distribution of sediment changes and if the river channel actually becomes deeper. There



has been a lot of rain in Antrim County this Fall and lakes of the



chain are near or above record levels. With larger amounts of water moving through the system, it is hoped that faster current flow in Grass River will magnify the positive impact these natural wood structures have. If results are encouraging, the placement of structures at other problem areas along the chain of lakes may become a reality. Hopefully, efforts such as this can eliminate or at least delay the need for dredging. Thanks to the foresight of Mark Stone and help from numerous donors and volunteers, the Grass River demonstration project became a reality in less than one year and at reasonable cost and these natural wood structures are in place, working every day to help river current move sediment.

In addition to installing tree revetment structures at strategic locations along the banks of Grass River, TLA's is also continuing to work with the Antrim Conservation District, Shanty Creek Resorts, Vacation Properties, Grass River Natural Area, and Friends of Clam Lake to explore viable options for reducing the amount of new sediment entering the River during major storm events.

### Lakeshore

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restoration site will require the blanket to be tucked under biodegradable coir logs before plants are placed and set into the shore.

Now we are off to the final stretch of adding new life, protection and beauty. The plants or bushes are installed in their desired area and zones. To ward off weeds, protect the plants, and hold moisture, I recommend mulch as the topper of your project.

The magic ingredient to help the plants with their future hard work is: water...water...

water. For a couple of weeks, water your site at least two times a day, to ensure the roots have established themselves. Take a seat, sip on a refreshment, watch with anticipation and enjoy the future show!

Smile everyone, as winter is officially here but spring is right around the corner!

North restoration buffer

## Chain of Lakes and East Bay Water Trail

By Megan Olds

The Grand Traverse Regional Land Conservancy has received a grant from the Michigan Department of Environmental Quality's Office of the Great Lakes, Coastal Management Program, as well as a generous matching gift from a local donor, and will be creating and marketing a new non-motorized water trail through the Chain of Lakes and along the coast of East Grand Traverse Bay.

#### What is a Water Trail?

A water trail is a designated route along a river, lake, canal or bay specifically designed for people using small, non-motorized boats like kayaks, canoes, single sailboats or rowboats. The trails, sometimes called "blueways", are the aquatic equivalent to a hiking trail or greenway. Water trails typically feature well-developed access and launch points, are near significant historical, environmental or cultural points of interest, and often include nearby amenities such as restaurants, hotels and campgrounds.

Water trails are showing up along waterways across the country, providing residents and visitors with increased access to the water. They enable recreation and ultimately increase the visibility of and knowledge about local bodies of water, while promoting stewardship and conservation within the community.

#### What Are the Benefits of Water Trails?

The human, health and community benefits associated with water trails have been studied and well documented. Water trails help encourage healthy lifestyles and active living by providing access to different paddling activities. Water trails can help foster a strong sense of community and place, providing an opportunity for social interaction and access to community amenities such as parks and downtown areas. Water trail users are also very active in helping to preserve and protect local waterways.

Water trails can also have a significant impact on the local economy. Water trails can help attract and support tourism and new business opportunities. According to a report from Michigan Sea Grant, the Outdoor Industry Foundation estimated that in 2006 the annual economic impact of paddlers in the Midwest totaled \$1.78 billion in trip-related spending and \$433 million in gear-related spending. In addition, tax revenue from these activities totaled \$396 million and 35,000 jobs were supported. - See more at: <a href="http://www.gtrlc.org/preserves/trails/water\_trail/">http://www.gtrlc.org/preserves/trails/water\_trail/</a>.

#### **Planning the Water Trail**

Many significant shore lands have already been protected as parks and natural areas along East Grand Traverse Bay and within the Chain of Lakes, thanks to the leadership of landowners, neighbors, community groups, visionary local leaders, local units of government, donors, and State agencies. The development of the water trail will effectively "double" people's experience of lands that have already been protected with the intention of providing public access to nature in the form of recreational paddling, birdwatching, scenic viewing, and relaxation and enjoyment of the water. GTRLC's development of the water trail follows the lead of other conservancies, "friends" groups, and parks and recreation organizations around the state and nation.

GTRLC will be working with a long list of public and private sector partners to develop the new water trail. Several local units of government from Ellsworth to Acme, along with Chambers of Commerce in Ellsworth, Bellaire, Elk Rapids, and Traverse City, Shorts Brewery (who hosts an annual paddling event from Bellaire to Elk Rapids), and the Traverse Area Paddling Club, have signed on in support of the effort and will be involved in trail planning.

Work to date has included the collection of data regarding potential access points as well as information provided by local paddlers regarding the levels of difficulty, good points to put in and get out, and points of interest along potential water trail routes. GTRLC is still looking for volunteers to help "crowdsource" the data. You can learn more or fill out Access and Water Trail Route information



This draft map is for planning purposes only. The red dots on the map are potential access points that are being reviewed by local government officials and volunteer paddlers. These data were collected by interns based on available data from local plans. The data are incomplete. Not all of the dots on this map will be marketed as access points for the water trail. And more access points may be added as governmental entities and volunteers provide more data. To get involved, provide data, or learn more, please visit GTRLC's website at http://www.gtrlc.org/preserves/trails/water\_trail/.

online via the Conservancy's website at <a href="http://www.gtrlc.org/preserves/trails/water-trail/">http://www.gtrlc.org/preserves/trails/water-trail/</a>.

GTRLC is seeking the official endorsement of public access points for includion in the water trail from the units of government who own the launch sites. Helena Township recently passed a resolution of support for the inclusion of several access points along the route. Township officials also asked that several sites be removed from the draft map GTRLC prepared due to concerns they had about lack of parking access and/or erosion issues on relatively steep slopes. GTRLC will be seeking this level of feedback from all of the units of government who own potential access points along the

### TCE Plume:

## Elevating Community Engagement through ACUTE

By Dean Branson and Gary Knapp

The western lobe of the trichloroethylene (TCE) groundwater plume is migrating at a rate of about 350 feet per year directly toward the Cedar River Well Field. This well field provides about half the water for the Mancelona municipal public water system. There is a clear sense of concern and urgency within the community, the Department of Environmental Quality (DEQ) and the Mancelona Area Water and Sewer Authority about the potential for traces of TCE to start contaminating this public water system. Part of this concern is based on EPA's recent upgrading of the classification of TCE as a human carcinogen. The State of Michigan also desires to save some money by proactively replacing the well field at an estimated cost of \$2.4 to 3 million rather than paying a

premium to replace the well field once the drinking water is actually contaminated. The State has invested more than \$17 million in this municipal public water system over the last 15 years; an investment they want to protect.

The northern lobe of this TCE plume has been seeping into the Cedar River since 2007, but since TCE rapidly dissipates from water into air, no downstream concentrations have been detected. Overall this plume is about 6  $\frac{1}{2}$  miles long and about  $\frac{1}{2}$  miles wide, and corresponds to an estimated 13 trillion gallons of groundwater, which makes it one of the largest TCE groundwater plumes in the world.

TLA along with property owner associations in the Shanty Creek-Schuss Mountain-Cedar River Village areas, Antrim County, and Shanty Creek Resort officials worked with the Michigan House & Senate DEQ Appropriation Committees in 2011 to obtain \$300,000 to pay for a preliminary engineering study to explore options for replacing the Cedar River Well Field. Interim findings from this study indicated that a new well field on the east side of Mancelona was the best option.

The process for appropriating \$2.4 to 3 million to replace the Cedar River Well Field began on December 13th, when TLA again took the lead in convening these same stakeholders plus DEQ, Department of Natural Resources, State Public Health, and County, and township officials under the auspices of ACUTE. ACUTE (Antrim County United Through Ecology) is an informal group of stakeholder organizations interested in developing consensus solutions to this threat within our watershed in a non-adversarial manner. In light of the State's very limited budget and the competition for a specific amount of DEQ's appropriated annual budget, this appropriations process is not expected to be easy. This group will continue to rely on Representative Greg MacMaster to help navigate the appropriations process.

The ACUTE group's next steps are to prepare a compelling case for appropriating \$2.4 to 3 million in the State's FY2015 Budget. Since the State expects to finalize their FY2015 Budget by July 2014, most of the effective advocating for funds to replace the Cedar River Well Field, as described in the preliminary engineering report, needs

Anticipated Plume Changes Over Time
Rate of movement: Approx. 350'/year since 2008

Future CRWF Service Area
1425 benefits + Shanty Creek (WATARS)

Current CRWF Well Service Area
679 benefits

Cladar Polysia Late

Light Carden Filters Walls

to be accomplished in the first few months of 2014. The following aspects of a compelling case for appropriating the funds were based on the consensus outcomes from the December 13th meeting:

This TCE plume is expected to reach DEQ's sentinel well in front of the Cedar River Well Field by the spring of 2017, and the location of the Cedar River Well Field by January 2019, based on DEQ's comprehensive monitoring and modeling information.

Since there is general awareness of the TCE plume by prospective property owners, but a lack of a specific action plan to address the problem, especially including the necessary funds to pay for a new well field on the east side of Mancelona, the group agreed on an earlier target date of fall 2016 to have a new, fully functional well field system in place to help manage the economic and public health impacts of the plume.

Proactively constructing the new well field would be expected to save the State up to 20% of the total construction costs or about \$500,000. An additional \$200,000 could be saved by appropriating the full amount of the funds in FY2015, compared to separate appropriations for each phase.

If the funds are appropriated, actual construction would be broken into three phases; first water storage & booster pumps at the Cedar River Well site, then new water mains from Mancelona to the water storage, and then new water supply wells east of Mancelona.

Funding of this specific action plan would be expected to help manage the public perception issue. An ACUTE work group is preparing an economic analysis to forecast the impact if the funds are, and are not, appropriated.

In addition to developing a community-based rationale for appropriating the \$2.4 to 3 million to replace the Cedars River Well Field, this group will also take a fresh look at options for remediating the residual TCE in the groundwater as this plume continues to migrate toward Shanty Creek, Cold Creek, and Lake Bellaire. This fresh look may involve academic experts and technologies not previously investigated. Part of the administrative assistance associated with convening this ACUTE group of stakeholder organizations is being provided by a small grant to TLA from Freshwater Future.

#### Water Trail

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water trail. GTRLC will also be reaching out to public safety officials to get their feedback on the proposed water trail routes.

By next summer, the goal is to have a final map showing the access points and identifying a variety of trail routes, including their level of difficulty. A logo and marketing plan for the trail will also be developed. As part of the planning effort, the route will also be audited to determine where future improvements might be warranted. These water trail improvements might include better parking areas, Universally Accessible kayak and canoe sites, enhanced restroom facilities at existing parks, wayfinding signage, and places to clean watercraft to discourage the spread of invasive species. This information will be shared with local

units of government and other project partners for their consideration.

As a conservation organization, GTRLC is deeply committed to the perpetual stewardship of protected lands and waterways. We are excited about the opportunity to integrate information about water quality protection and land stewardship into the planning and marketing effort for the water trail. Thanks to our donors and partners' support for our land and water management and restoration programs, as well as state and federal grants and the partnership efforts of the Northwest Michigan Invasive Species Network, we continue to prioritize the removal of invasive species such as Phragmites which impact the health of our waterways. We hope to develop and install some modest signage at a few access points along the route that provides information about ways that recreational

users can support and sustain on-going efforts to preserve and manage lands and shorelines to maintain high water quality. This includes sharing information about the on-going efforts and leadership of lake associations and their important water quality monitoring and protection work.

To learn more about the water trail or how you can support its development, please contact Megan Olds at <a href="molds@gtrlc.">molds@gtrlc.</a> org or 231-929-7911.

For more information about GTRLC's land stewardship activities, including efforts to eradicate and manage the spread of invasive species in the region, contact Abby Gartland, GTRLC's Director of Nature Preserves at <a href="mailto:agartland@gtrlc.org">agartland@gtrlc.org</a> or <a href="mailto:231-929-7911">231-929-7911</a>.

### Elbert

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possibly get my students under control, and, more importantly, to achieve the results I wanted and they deserved.

I didn't know how to reach them. As a girl from Torch Lake, Michigan, how could I relate to children living in broken homes in public housing in the middle of Harlem? It was a process of trial and error. I realized that they needed exactly what I had been given my entire life: love, support, and a belief that they would achieve and go to college.

Fast forward two years and my class was now one of the highest performing classes in Harlem. My school, within district 5 (infamous as the lowest performing district in the state) was now ranked in the top 20 schools in the state. My once chair-throwing six year olds were now writing biographies about famous civil rights activists and able to articulate their desire to go to college and change the life trajectories of their families.

As my TFA commitment ended, I knew law school was no longer where my passion resided. I moved to Chicago to continue working in a low-income, underserved charter school on the west side. I want to ensure that these children could succeed at the same levels as their more affluent peers. Our society continues to make excuses for why these children cannot succeed. Of course, their place in society doesn't help them – single-family homes, public housing, uneducated parents, and limited English are just a few of their stumbling blocks. However, my experience has shown me that these children want to succeed, and are capable of success, in the same way that every child in America is. They just need someone to believe in them.

## - Membership counts!

		D to D	Are you interested in volunteering in any of the following areas?
BASIC \$50 U DONOR \$100 U STEWARD \$.  Michigan Riparian Magazine Subscription add \$10	BENEFACTOR \$1,000	LIFE \$2,000 L	<ul><li>☐ Water Quality</li><li>☐ HS Intern Program</li><li>☐ Water Safety</li><li>☐ Education</li></ul>
TOTAL AMOUNT ENCLOSED: \$			☐ Invasive Species ☐ Membership
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## 2014 TLA Calendar

March 19. . . . . . . Local Officials Watershed Workshop

May 1 - 3 . . . . . . . . MLSA Annual Conference

June 17 (Tentative) . . . Joint Education Program

August 7 - 9 . . . . . . Antrim County Fair

August 12 (Tentative). . . Joint Education Event

August 21 . . . . . . . TLA Annual Meeting



