

BRWA's Volunteer Water Quality Monitoring Program *Reflections on the Past and Excitement for the Future*

By Matt Hudson, Watershed Action Director

Meeting goals is a great excuse to celebrate and it's also a great time to ask, "So what's next?"

On Wednesday, June 29 from 6-8 pm, BRWA invites any and all interested folks to join us in the Martin Hanson Theater at the Northern Great Lakes Visitor Center for an evening of reflection on what we've learned in eight years of volunteer monitoring, and what's in store for BRWA's Water Quality Program (WQ Program).

The WQ Program is BRWA's flagship program. Starting back in 2002, the two main objectives were to get local citizens involved with their watershed by monitoring water quality, and to establish at least a four-year baseline of water quality in the Bad River watershed by collecting water chemistry data and biological assessment data using

macroinvertebrates.

Thanks to the dedication of 130 water quality volunteers throughout the past eight years, we've accomplished, and in many cases exceeded, our initial WQ Program objectives! We've collected at least four years of baseline water chemistry data at 15 sites and baseline macroinvertebrate data at 13 sites. We've also collected at least one *E. coli* sample from 36 sites.

So what does it all mean? We've been busy summarizing all the great data that's been collected, digesting what it means, and working with our many technical partners to identify how the WQ Program should move forward. On June 29 we'll explore what we've learned and unveil how the WQ

Program will continue to provide valuable information that will be used to make informed decisions that affect the health of our watershed. We hope to see you there! ♦



Dedicated volunteers have been the backbone of our WQ Program.

New laws related to Iron mining?

In the spring 2011 issue of *Watershed Waves*, BRWA outlined what is involved in the iron mining permit process. Since then, there has been a great deal of discussion about creating new laws to regulate iron mining in Wisconsin.

In early May, a bill was drafted that proposed significant changes to the process to obtain a mining permit, the ways that iron mines could operate and the ability of local communities to have a voice in the process. BRWA partnered with the Wisconsin League of Conservation Voters (LCV) to help interpret the draft legislation.

BRWA helped set up meetings between LCV staff and nearly 200 people over a three day period to discuss how the draft law could affect our community. Many people from the area contacted legislators with their comments and concerns about the draft legislation. As a result, law makers have decided to slow the law making process down so that the people affected (that's us!) can have some input. The contact from local people to law makers was instrumental in ensuring a more reasonable time frame for developing a new law.

As of the printing of this newsletter, there is no version of a mining bill in the legislature. Yet interest in passing new legislation about iron mining remains, and a new version of an iron mining bill is expected to be proposed shortly. BRWA will continue to keep people informed about any proposed legislation and about how we all can be involved. ♦



Jennifer Giegerich of the Wisconsin League of Conservation Voters describes changes that would accompany the draft mining law. Jennifer presented this information at a public meeting at the Northern Great Lakes Visitor Center on May 25.

Rivers Shape our Community

By Michele Wheeler, Executive Director

A couple weeks ago, Val and I were fortunate to attend the 12th National River Rally held in Charleston, South Carolina. River Rally is an annual conference hosted by the River



Network, a nationwide group that supports watershed association and river groups throughout the country.

It was a three-day gathering packed to the brim with intensive workshops and presentations geared to strengthen groups like ours. The conference brought together people working on different issues throughout the country—all of whom share a

positive opinion about the importance of clean water. We left for Rally thinking BRWA has an overwhelmingly full plate of work to do and came back with a ton of new ideas to add to it. In short, it was awesome.

On a Saturday morning, we listened to a presentation from a guy named Mickey Fearn, the Deputy Director of the National Park Service. Fearn is from Washington State, where he created and directed a summer youth program to connect kids to the natural world while promoting personal responsibility and healthy lifestyles. He gave a really thoughtful presentation about the tie between rivers and our communities. Part of his talk resonated with me when thinking about our community in the Bad River Watershed.

First, Fearn listed the ways we use and think about rivers: for drinking water, for inspiration, and for solace. We use rivers as sewage treatment (even in our watershed, we know this is true), and for food (yep, this is in the same list with sewage treatment—ick). We use rivers for energy and for industry, for transportation. Rivers incorporate the treatment of the land from our upstream neighbors and we send our own treatment of the land to our neighbors downstream. We use rivers for fun! To fish, and paddle down, or just enjoy as a great place to be around. Our rivers have defined where we live, and in some ways, define how we are living.

In the same way that all the tributaries influence what the river looks like, we all contribute to what our community looks like. Fearn said it this way: “We are the tributaries adding to the great river of time and culture—the river of humanity.” I ask this question of all of us: What do we—each of us—add to our community?

As we as a watershed community consider the potential development of a mine in the headwaters of the Bad River, these words seemed especially relevant. There are as many opinions about mining in our community as there are people who live here. We have different ways of thinking about changes related to the potential mine, but we do have things in common. We all need to provide for our families, and we all need clean water. We cannot continue to live here without either of those two things. Let us all be the tributaries to the river of our humanity, by working together while respecting differences, but with each of us doing our part. Together we can make a difference in the future we see in the Bad River Watershed. ♦

About BRWA:

What we do

We are a community organization that works to involve all citizens in taking care of and enjoying their home watershed. We accomplish this by conducting educational programs and forums about how our watershed can be affected by the decisions we make. In addition, we assist citizens to gather information, identify problems and implement solutions to maintain the integrity of our watershed for future generations.

Our Vision Statement

The Bad River Watershed Association envisions a future in which change and development within the watershed grow from a stewardship ethic that seeks to minimize ecological damage, while maximizing ecological and community health.

Our Mission Statement

The mission of the Bad River Watershed Association is to promote a healthy relationship between the people and natural communities of the Bad River watershed by involving all citizens in assessing, maintaining and improving watershed integrity for future generations.

BRWA Team

Michele Wheeler
Executive Director/
Culvert Program Manager

Matt Hudson
Watershed Action Director

Valerie Olinik-Damstra
Citizen Involvement
Coordinator
& Volunteer Coordinator

Breanne Large
Sarah Romero
Culvert Program Interns



Board of Directors

Darienne McNamara
President
Jim Crandall
Treasurer
Pam Roberts
Secretary

At- large board members:

Jo Bailey
Dane Bonk
Kevin Brewster
Randy Lehr
Bob Rice
Jedd Ungrodt

Contact BRWA!

Phone: 715-682-2003

badriverwatershed.org

Potential Physical and Chemical Environmental Impacts of Mining the Ironwood Iron Formation in the Bad River Watershed

By Tom Fitz

Gogebic Taconic, LLC, (G-Tac) is studying a four-mile segment of the Ironwood Iron Formation east of Mellen, Wisconsin to assess the potential for developing an open-pit iron mine. A lot still needs to be studied to assess the feasibility of a mine and the potential environmental impacts. Every geologic setting is different, but based on studies of existing iron mines, it is known that mining can have physical, chemical, and resulting biological impacts.

Physical impacts are those that involve changes in the physical environment such as modification of Earth's surface, and changes in the flow of water—both surface water and groundwater. A mine would certainly have a physical impact at the site because removal of the ore rock and storage of the waste rock would reshape Earth's surface. These influences would be limited to the mine site and waste rock storage areas. However, changes in the flow of water can have impacts at the mine site and down gradient as well.

The quantity and flow of surface water could be impacted by changes in the topography of Earth's surface and resulting effects on the drainage of surface water. The proposed mine site is in the headwaters of Tyler Forks river, which flows into the Bad River at Copper Falls State Park. If a mine were developed, headwater streams of the Tyler Forks could receive either more or less water than they do today. The amount of change in stream flow, and the impact of that change, still needs to be assessed and addressed.

One potential impact that changes in land use and stream flow can have is by affecting the sediment carried by rivers. The amount of suspended sediment clouding the water (increased turbidity) could be affected because of changes in stream flow, and increased loose sediment available to the flowing water.

Proper engineering controls used in a mining operation could decrease this affect by minimizing the availability of loose sediment available to rivers.

To extract iron-containing rock below the water table, groundwater would have to be pumped out of the way. How much water would be discharged versus used at the mine is unknown. Pumping would certainly draw down the water table in the area, so it needs to be determined how large the area of groundwater draw-down would be, how much the water table would be lowered, and what influence these changes would have on wells and surface water in the area.

Mining can also have environmental impacts from changes in the chemical composition of water from the area of a mine and waste rock piles. Of particular concern is the potential effect of the water interacting with minerals from the mine—dissolving metals that impact the quality of surface water.

The two dominant minerals in the Ironwood Formation, magnetite and quartz, are nearly insoluble and do not influence the chemistry of water they are in contact with. However, the detailed mineralogy still needs to be studied thoroughly, because bedrock geology is complex everywhere, and there is always the possibility of the presence of minerals that could impact water quality.

The rock on the north side of the Ironwood Formation, the Tyler Slate, is known to contain small amounts of the mineral pyrite (iron sulfide) which can influence the chemistry of water. Part of the Tyler Formation would have to be removed in order for the mine to access the ore of the Ironwood Formation, so there is potential for water in the area to have an increased concentration of metals from interaction with pyrite in waste rock piles. How much pyrite is present still needs to be

continued on page 6

Voices from the Watershed: Potato River Excursion

By Jan Penn, BRWA Member

I just got back from a great early spring hike to the Potato River Falls. Friend and fellow grandma Kay Poland and I took a walk with four of her grandkids—two from Kenosha and two from Ashland.

We went down to the river to greet golden, clear waters spraying as the mighty river forced itself into view among the honeycombed ice flows and jams. We ate peanut butter and jelly sandwiches on some of Kay's great homemade bread. Despite achy hips and knees, a few tumbles on icy paths, the grandmas eventually caught up with kids racing all directions, like calves let out of the barn after a long winter.

There were interludes of quiet to inspect the working of a Pileated woodpecker and some red wintergreen berries that the browsing critters missed. Whether the big prints were wolf or not really did not matter; it was just the knowing "maybe" that opened eyes wide.

So one more spring with a river still flowing out of the Penokees, and talk of more summer trips to Kimball, Tyler Forks and Upson Falls, maybe even a camping trip or two. And...one more opportunity for Grandma Kay to say "Do you think anyone else has been here?" ♦



Kay Poland enjoys Potato River Falls with granddaughters Jade and Melanie Peterson

Marengo River Watershed Actions in Practice: Farmers Modeling Conservation

By Valerie Damstra, Citizen Involvement Coordinator

It was on a sunny spring afternoon that over 30 citizens and local agency folks gathered together to enjoy some of the local farms in the Marengo River Watershed, and learn more about the important conservation efforts these farmers have put forth to protect the river and its tributaries.

"We really didn't know if it would work, but it sure did, and we're very happy with the results," said George Mika, a beef farmer in the Marengo River Watershed, speaking of one of several conservation practices he worked to install with the staff of the Ashland County Land and Water Conservation Department (LWCD).

The Ashland County LWCD partnered with BRWA to coordinate the farm tour on May 20 as a way to highlight projects implemented by the LWCD, and to celebrate what landowners have done to keep pollution from their land getting into the river.

Attendees were treated to a hay wagon ride driven by Gerry Richardson, local dairy farmer in the Marengo River Watershed and also an Ashland County LWCD committee member. Conservation practices were observed at the farms of George and Tim Mika, and Jim and David Nortunen. Various erosion control measures and managed rotational grazing were some of the conservation practices seen and described.

Attendees also had the chance to see a stream bank stabilization project on the Marengo River located at the property of Rob Jones. "The original design we came up with for this project was pretty expensive and we felt a bit overengineered," said Tom Fratt, Ashland County Conservationist. "We thought we would try a more natural approach using native plants and trees, which is less costly and made more sense. A few years later, it looks terrific and is working extremely well."

A final highlight of the tour was a cookout which featured hamburgers made with the grass-fed certified organically raised beef from Hidden-Vue Farm, managed by Jim and David Nortunen.

The County Land and Water Conservation Departments provide landowners with technical assistance and cost-sharing dollars for qualified projects. If you have land in Ashland County, and have a project idea you'd like to discuss further, please contact Tom Fratt at (715) 682-0042. For projects in Bayfield County, please contact Bayfield County Conservationist Ben Dufford at (715) 373-6167, and in Iron County please contact Iron County Conservationist Mary Jo Gingras at (715) 561-2234. ♦

MRWP Project Gets Recognition at International Conference on Great Lakes Research

Matt Hudson traveled to Duluth, Minn., in early June to give a presentation about the MRWP Project at the 54th Annual Conference on Great Lakes Research, hosted by the International Association for Great Lakes Research (IAGLR). Matt's presentation was titled "The Marengo River Watershed Partnership: A Local Community Making a Great Lake Superior." The presentation gave an overview of the project, how local citizen input played a key role, and how local watershed groups can be effective in helping meet Lake Superior's Ecosystem Goals and "Making a Great Lake Superior"



Ashland County farmer George Mika talks about conservation practices at the spring farm tour.



Gerry Richardson takes attendees for a spin in the hay wagon.



Chef and watershed resident Jon Berthel serves up locally raised Hidden Vue beef.

Stream Monitoring in the Penokees

By Matt Hudson, Watershed Action Director

Devils, Ballou, Javorsky, and Opergard Creeks are just some of the hidden gems that flow through the Penokees. Because of the remoteness of the area, chances are many of us have not experienced these and other streams that flow through the wetlands, ridges, and forests of the largely undeveloped Penokee Range. As a result, we really don't know a lot about them or how a large, open-pit iron mine would change them and potentially affect downstream waters including the Bad River, Kakagon Slough, and ultimately Lake Superior.

In the spring 2011 issue of *Watershed Waves*, I described some macroinvertebrate (aquatic bugs) monitoring that BRWA conducted with the help of a Northland College Centers class in fall 2010. Those data indicated "Excellent" water quality at nine stream sites in a wide area around the Penokee Range. Over the past few months, BRWA has been working with several partners, including the Town of Morse and Northland College, to plan and conduct monitoring closer to the site of G-TAC's exploratory drilling work.

The goal of all this monitoring is to gather baseline data so we can learn about the condition of these streams prior to the beginning of any mine operation. The more information we have, the better we'll be able to understand how a mine might affect surface and groundwater resources in the area. This is particularly important since many of the streams in the vicinity of the potential mine are designated as trout streams and Outstanding or Exceptional Resource Waters (O/ERW) by the State of Wisconsin. O/ERW waters are Wisconsin's highest quality waters that cannot be degraded from baseline conditions.

BRWA is working with the Town of Morse and will be following Wisconsin Department of Natural Resources protocols to collect some of this baseline information through summer and fall of 2011. We'll be focusing on collecting temperature and macroinvertebrate data from several stream sites near the exploratory drilling area.

Temperature is one of the most basic types of information that can be collected from a waterbody, but is one of the most important, particularly for trout streams. For instance, brook trout, Wisconsin's only native stream trout, are very sensitive to changes in temperature and require cold, well-oxygenated water to survive. We can get detailed information about water temperature in a stream by attaching sensors underwater (see picture for example) and leaving them in place to take measurements every hour throughout the summer months. This information will help us understand if these streams are fed by cold groundwater or warmer surface water and what types of aquatic communities are likely to live in them.

Macroinvertebrates have become a staple of BRWA's baseline monitoring because they tell us how clean and well-oxygenated the streams are. The macroinvertebrate monitoring BRWA typically does is called a "family-level biotic index" which gives us good overview information about water quality. By identifying the bugs down to species level, more detailed information is learned about water quality than with the family level index. We are fortunate to be working with Dr. Kurt

Schmude, an Aquatic Entomologist with UW-Superior, to analyze our macroinvertebrate samples and collect this more detailed information.

In addition to this work, three Northland College May-term classes have collected basic water chemistry, basic hydrologic and water flow information, and more family-level macroinvertebrate samples at many of the same stream sites BRWA is working in this year. It is a busy year of monitoring in the Penokees! ♦



Town of Morse officials Jeff Ehrhardt and Bud Peters meet with Matt Hudson (at right) to install a temperature sensor.



Temperature sensor (HOBO TidbiT v2) and protective housing that BRWA has deployed at several stream sites near the potential iron mine site east of Mellen.

Some of the Penokee Range streams that are proposed for sampling by BRWA and other partners during 2011: from left—Opergaard Creek, Javorsky Creek, and Tyler Forks River.



Welcome Back Culvert Program Interns!

BRWA is pleased to welcome back Breanne Large and Sarah Romero, two great ladies who did an excellent job last summer as interns for the Culvert Program. This summer Breanne and Sarah's work will focus on stream habitat monitoring at culvert sites, before and after construction.

Breanne came to Wisconsin from Florida eleven years ago and is now a long time resident in Highbridge at her family farm, Sederholm Game Farm. She graduated from Mellen High School and shortly after, graduated from Northland College with a Bachelor's Degree in Veterinary Sciences. After working with the culvert program last year as a BRWA intern, she is back this year as the summer crew leader. Breanne loves summer days, horseback riding, hiking, being near the water and traveling to try new delicious foods.

Sarah, a recent Northland College graduate, is working with BRWA as a culvert monitoring intern for her second summer. Sarah is originally from San Pedro Sula, Honduras and she came to Ashland, Wisconsin to pursue an environmental science degree at Northland College. Sarah enjoys gardening, hiking, cooking delicious food, and exploring the many beaches of Lake Superior. Sarah is looking forward to spending another summer working with the BRWA crew. ♦



BRWA spent a few days in the field training with the US Fish and Wildlife Service to learn stream habitat monitoring techniques. Pictured here are BRWA staff members left to right- Matt Hudson and Valerie Damstra (back row), and Sarah Romero, Breanne Large, and Michele Wheeler (front row).

Impacts of Mining *(continued from page 4)*

determined, and if there is much pyrite, what could be done to prevent it from impacting water quality.

At this point in the process there still needs to be scientific studies to assess the basic physical and chemical setting of the site. The potential impacts on the flow of groundwater and surface water, and the chemistry and turbidity of the water flowing from the area, are among the many important questions that need to be addressed in the initial studies.

Reasonably accurate answers to these questions can be obtained through the right scientific studies of the rocks, the groundwater, the surface water, and the biological communities that live in those environments. These topics need to be well understood in order to assess the feasibility of a mine, the potential environmental impacts, and what measures would be used to minimize environmental impacts if a mine is developed. ♦

—Tom Fitz is associate professor of geoscience at Northland College

Support the work of BRWA

Anybody who supports our mission can become a member of the Bad River Watershed Association. Consider enhancing your membership by making a financial donation to help support our work.

- \$100 Your name _____
- \$ 50 Address: _____
- \$ 25 _____
- \$ ____ Phone and/or email: _____

Clip this form and send with your tax-deductible check to: Bad River Watershed Association, P.O. Box 875, Ashland, WI 54806. Thank you!

Thank You!

Thanks to our Donors and New Members: Carolyn Sneed, Tana Turonie, Eleanor Bussey, Deborah Dryer, Teresa A. Gunderson, Bruce Lindgren, Jeremy Oswald, Pasture Perfect Poultry, Ellie Williams, Dan & Krista Bloomquist, Kevin Brewster, Dorine Damm, Diane Daulton, Jack & Anne Helgeson, Valena Hofman, Gary Johnson, Lagerroos McNurlin Family, Larson-Spangberg Family, Teri & Carter McNamara, Elias Meeker Family, Mary Rehwald, Bob & Reba Rice, Suzanne Sanders, Jarod Stone-Dahl, Josh & Charmaine Swan, Aaron & Kate Swanson, Art Techlow, Cathy Techtmann, Jedd & Heidi Ungrodt, Dave Zepzyck, Ned Zuelsdorff, Steve & Margaret Baumgardner, Dick Berge, Oakley Chartier Family, Alyssa Core, Mike Fitzgibbon, Dennis Gisvold, Ulli Kastens, Ciembronowicz-McNamara Family, Clair Morud and Sheila Mitchell, Tom Piikkila, Karen Saarinen, Jeff Mussleman, Biagio Nigrelli.

Thanks to our Water Quality Volunteers: Tom Podlesny, Bobbi Rongstad, Jack Wichita, Roland Wolff, Tracey Ledder, Bill Mattes, Andrea Haugo, Darienne McNamara, Joan Elias, Mike Klump, Mike Stobbe, Ulli Kastens, MaryJo Gingras, Heather Palmquist, Colleen Matula, Kent Goeckermann, Jerry Setzke, Dr. Henry Gradillas, Ed Kolodziejski. *Welcome new macroinvertebrate volunteers Peter and Eileen Freiburger!*

Thanks to our Recent Funders: River Alliance of Wisconsin, Freshwater Future, US Fish and Wildlife Service Coastal Program and Great lakes Basin Fish Habitat Partnership, Duluth Superior Area Community Foundation, Johnson Family Foundation, Plum Creek Foundation, US Forest Service, Town of Morse, Town of Lincoln.

Special thanks to: April Stone-Dahl, Isabella Stone-Dahl, Bob Rice, Sarah Romero for assembling BRWA information packets; Jon Berthel for being our cook for the Marengo River Watershed Farm Tour; Lauren Grevich and Tyler Martin of the US Fish and Wildlife Service for helping with culvert trainings; Jason Maloney of the Northern Great Lakes Visitor Center and Ruth Oppedahl of UW-Extension for assistance at the public meeting with the Wisconsin League of Conservation Voters.

Congrats Jack!

Congratulations to Jack Wichita, this year's recipient of the Karen Danielsen Outstanding Stewardship Award. Jack is a past board president of BRWA, and has been a water quality volunteer for over eight years, monitoring water chemistry, macroinvertebrates, and *E. coli*.

We thank Jack for his extreme dedication in taking care of the waters of the Bad River Watershed. Jack received his award at BRWA's "Spring for the Water" event held on March 26, 2011.



Jack Wichita with his wife Mary on a false morel hunt.

Donations for Spring for the Water Auction

Carved for the Cook, Dick Berge, Penokee Mtn Foods, Faye L Liberty Fiber Arts, Firelight Meadows, Sweet Sailing, Hudson Helgeson Family, Spirit Creek Farm, Chequamegon Food Cooperative, 6th Street Market, Jo Bailey, Ashland County Market, Seeds of Well Being, #2 Septic Service, Dane & Paula Bonk, Bay Area Mulch, Hotel Chequamegon, Woodspirit, Stone's Throw Pottery, Hudson Helgeson Family, Lost Creek Adventures, Jon Wheeler, Rolland Kiel, Charmaine Swan Yoga LLC, Patty Anderson, Sweet Pea Soaps, Andi Repko Reflexology, Hermit Creek Farm, Jack & Mary Wichita, Mimi Crandall, Krista Bloomquist, Chequamegon Fat Tire Festival, Valena Hofman, Bill Heart, Erickson Weber Family, J.C. Moon, Jill Roberts, Bob Rice, The Egg Toss, Michaela Wickman Photography, Maggie's

Donations for Spring for the Water food

Bodin's Fisheries, Krista Bloomquist, Pasture Perfect Poultry, Hidden Vue Farm, Spirit Creek Farm, Maple Hill Farm

