PRESIDENT’S MESSAGE

The President’s Page is in transition this month. We are losing Paula Richardson as her term as President expires and we do not have a President-Elect yet in place. Hopefully all will be resolved at the WGWA Board Meeting scheduled for December 6th. That meeting is also doubling as a Holiday Party and all members are invited to attend at the Thunder Bay Grill (6pm) as long as each pays for their own dinner.

The Newsletter Team and Board Members wish to take this opportunity to thank Paula for her inspired run as President of the organization. We have grown in educational outreach by leaps and bounds and each event showed a polish that only Paula could provide. Paula will be moving out of State soon so take the opportunity to attend the WGWA Holiday Party on December 6th to wish her well and maybe pick her brain a bit.

Thank you, Paula!

WGWA Holiday Party & Board Meeting
December 6th, 2012
6pm
Thunder Bay Grill
N14 W24130 Tower Place
Waukesha, Wisconsin
Cost: Dinner at your own expense

Get Yourself Published!
We are looking for articles for future editions of the WGWA newsletter. Articles should be 1 to 8 pages in length and can include photographs and graphics. Articles should be generally technical in nature focusing on groundwater or environmental topics, but not commercial or political.

To submit an article for publication, contact:
Lee Trotta, Editor lctrotta53072@yahoo.com

IN THIS NEWSLETTER
• Joint WI AIPG & WGWA Fall Event Photos
• Wisconsin Hydrogeologist John R. Jansen Receives Award for Outstanding Contributions to the National Groundwater Association
• Cornucopia of Farm Information Just a Click Away
• The Scoop on Frac Sand

TREASURER’S REPORT
• Not available at press time

BOARD MEETING MINUTES
• Review Board Meeting Minutes for August 14, 2012, Here
• Board Meeting Minutes are archived on the WGWA Website Here

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MSC PROJECT—DEVIL’S LAKE STATE PARK, 2012 SEASON FINALE
Photos by Christine Lilek (Wisconsin DNR)

This year’s fall field trip was a joint venture with WGWA and the Wisconsin Chapter of AIPG. The Ice Age Trail Alliance reports that approximately 275 participants assisted the Mobile Skills Crew, contributing more than 3,800 hours during the weekend of October 18—21st at Devil’s Lake State Park. Christine Lilek (representing the Wisconsin Chapter of AIPG) captured snapshots of the work weekend as volunteers improved over 6 miles of trails with new signage, removal of invasive species, construction of new drainage dips, and rerouting of trails to avoid chronically wet areas.

Tim Malzhan—Director of Field Operations for Ice Age Trail Alliance

Invasive Species Eradication Crew

INTERESTING ARTICLES AND OTHER TIDBITS ON THE WEB

• Are you allowed creativity in your science work? Count yourself lucky, according to the following study. Read more here...

• Someone is messing with our hydrologic cycle! Arctic sea ice has been measured at a new low in the linked study. Read more here...

• What kind of creature has teeth that would make a T. rex whimper? Find out here...

• Finally some solid evidence for water flow on Mars! Read on to examine the cross section yourself.

UPCOMING WEBINARS

• ITRC’s Green and Sustainable Remediation Webinar (November 27, 2012—Register here)

• ITRC’s Project Risk Management for Site Remediation (December 11, 2012—Register here)

• ITRC’s Biofuels: Release Prevention, Environmental Behavior, and Remediation (December 13, 2012—Register here)

• Municipal Water Resource Management Webinar Series 2012 includes three upcoming sessions. Register here for Waste to Fuel (November 15), Illicit Discharge, Detection and Elimination (November 26), and Dam Removal and Maintenance—A Tale of Three Dams (December 13).
Wisconsin hydrogeologist John R. Jansen receives award for outstanding contributions to the National Ground Water Association
PRESS RELEASE dated September 27, 2012, from NGWA

(WESTERVILLE, OH — September 27, 2012) John R. Jansen, Ph.D., PG, PGP, of Cardno ENTRIX in West Bend, Wisconsin, has received the Keith E. Anderson Award from the National Ground Water Association.

The award is presented for outstanding contributions to NGWA. It will be presented in December at the NGWA Groundwater Expo and Annual Meeting in Las Vegas.

Jansen is a 33-year veteran of the groundwater industry. His contributions to NGWA include participation in numerous committees and work groups, as well as serving on the board of the scientists and engineers division from 2004-2007.

Dr. William M. Alley, former chief of the Office of Groundwater for the U.S. Geological Survey, said Jansen has made “exceptional contributions to NGWA.”

“I met Dr. Jansen through NGWA and his enthusiasm greatly influenced my involvement with the organization,” Alley said. “He was instrumental in establishing the annual NGWA Groundwater Summit at the forefront of where groundwater science and practice meet. I always make it a point to attend his talks at NGWA.”

In support of Jansen’s nomination, hydrogeologist Ted L. Powell, PG, of Aquifer Science and Technology in Waukesha, Wisconsin, said Jansen excels in making the complex simple and effectively communicating it.

“John’s greatest asset is his ability to analyze a problem or project, break it down into its simplest form, and devise the means and methods to practically and effectively come to a cost-effective solution,” said Powell.

“John also is one of the few water professionals I have worked with who is able to effectively communicate to people across the full spectrum of society — from the brightest scientists in the private sector and academia, to his peers and other consultants, engineers, drillers, clients, and to the common person,” Powell said.

NGWA, a nonprofit organization composed of U.S. and international groundwater professionals — contractors, equipment manufacturers, suppliers, scientists, and engineers — is dedicated to advancing groundwater knowledge. NGWA’s vision is to be the leading groundwater association that advocates the responsible development, management, and use of water.
I’ve only recently discovered Google Earth, but I’ve learned that it’s more than just a technological step up from Google Maps, which I’ve used many times to find my destination for my next farm interview.

In the words of Noel Anderson, a soil scientist who has developed a webinar for farmers using Google Earth technology, it’s the toilet paper tube view of the world that gets people in trouble and that this neat new technology can help alleviate.

“When you can hold multiple ideas or images in your mind at once, you can connect the relationship between one and the next. No one should be making a decision in agriculture or on their farms without realizing how it affects or relates to other issues,” he said.

Noel is a guy who reminds you how great it is to talk to someone who really cares about what they are doing. With years of experience working with soils as a scientist for the Indiana Department of Natural Resources, he’s grown to be passionate about cloud-based global information systems using Google Earth.

I don’t get to have as many two-hour phone conversations with my sources at AgriNews as I would like. Often people are too busy, out of town or just plain old don’t want to rock the boat when it comes to talking about today’s agricultural topics, which, like most subjects, can become controversial pretty easily.

Noel’s webinar enables people interested in configuring Google Earth for their farms to see how data compiled through the U.S. Geological Survey and the U.S. Department of Agriculture’s Farm Service Agency and Natural Resources Conservation Service and other sources, along with point-by-point images of the entire area of the Earth, can help them fine-tune the things about their farm that always exist, but often are overlooked: For one, the soil.

With applications such as Soil Web, Geothermal Potential and Carbon Index, farmers can home in on a single patch of ground to study its unique structure and morphology. Since, as Noel said, farmers usually know where there’s a wet spot in their field, they can customize the program to their farm, giving them a new way of making some of their oldest decisions.

Noel is based in Madison, Wis., and has been working with the Crave Brothers, a Wisconsin dairy operation, to develop sustainable programs for the farm, including using manure as a fuel for anaerobic digestion. Recently, he was busy helping them install a well on their property.

(Continued on page 5)
Cornucopia of Farm Information Just a Click Away

(Continued from page 4)

You can download Google Earth in minutes and search data for anywhere on the globe, and the Crave Brothers is one of the agricultural companies that has fine-tuned the program for their farm.

Groundwater is one issue in agriculture that Noel explained has historically been misunderstood in farming. A huge percentage of the population derives its water from a groundwater source, which has the potential to be contaminated and lead to farmers and agriculture being blamed down the road.

He pointed out that Indiana is home to a cornucopia of information just one click away. Indiana Maps, available online, is the largest public collection of GIS map data made available through federal, state and local partnerships. It was spearheaded by Gov. Mitch Daniels and it just might make you fall in love with geology.

As it exists now, Google Earth basically gives its user carte blanche to information. Harrison Schmitt, the astronaut who flew the Apollo 17 mission to the moon, is one of an assortment of characters who will introduce you to the Google program if you’re using it for the first time.

In addition to earthly areas, Google Earth also offers you a tour of Mars and the moon, including options to view human artifacts, visit six Apollo landing site and watch Neil Armstrong’s first steps.

One of the most important things I learned from talking to Noel was hearing how Google Earth can help farmers address the challenge of regulation in agriculture.

Google Earth offers layer upon layer of data concerning a farm’s soil profile using information from USGS. It offers some great insight into how farmers could potentially save quite a bit of money, develop better soil and nutrient management on their farms and avoid excessive regulation by making subtle adjustments to the way they farm rather than being forced to take one-size-fits-all measures just to stay in the business.

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**Editor’s Note**

Noel Anderson conducts Webinars on the use of Google Earth to prevent groundwater problems in agriculture. They are live, free Webinars focused on enabling all employees to become much more productive through Google Earth and Cloud Based GIS Computing. Ability to "Connect the Dots" is one of the most powerful abilities we can possess in our professional and personal lives. For hundreds of years a natural connecting medium has been available to humans. It is called a map. Google Earth dramatically leverages the power of the map to dramatic new level. Noel Anderson, graduate education in geology and engineering, 16 years experience as a GIS Analyst, over 20 years experience both as a Professional Geologist and Professional Soil Scientist, Former Supervisor of Indiana’s RCRA Hazardous Waste Hydrogeologists, 20 years as a private sector consultant, is offering free 1hr, Google Earth Webinars that get under the hood of Google Earth, show you how it works and how you can develop content for Google Earth, and how it can greatly increase your understanding of how things are connected. Context is everything. Just email Noel at namadisan@gmail.com with "Google Earth Webinar" in the subject line and let him know which dates (please give alternative dates) can work for you for a morning GoToMeeting.com Webinar. Typically the start times are at 10:30am. If this time does not work for you please let him know what morning time frame works for you. Up to 15 locations can be in any given Webinar.

The Editor thinks most WGWA members could use a little refresher on using GIS to solve our mappable problems and this fits the bill. Don’t forget that the WGWA website has a page of GIS coverages for use in your studies too.
The Scoop on Frac Sand
By Ed Morse | Originally Published September 2011 | Reprinted from the WRWA Journal

Rural Water’s Jeff LaBelle has been seeing a lot of deer in his back yard lately. That might seem like a nice benefit of country living, but Jeff isn’t happy about the cause. The deer are fleeing a new sand mine being developed about a mile and a half from his home. Jeff has been caught up in a mining frenzy in western and central Wisconsin, where at last count there are at least twenty-two mines that are active or in development for production of frac sand. Another sixteen or so are proposed. Five years ago there were fewer than five frac sand mines in the state.

Frac sand is used in oil and gas production in a controversial process called hydraulic fracturing, or “hydrofracking” or just “fracking,” which is currently one of the hottest topics in groundwater and water supply. In order to extract oil and natural gas from low-permeability formations such as shale, it is necessary to inject water into the rock under pressures high enough to open fractures in the formation, through which oil or gas can then flow to the well. To hold the fractures open, sand is injected into them, and in order to carry the sand hundreds of feet along the fractures, the sand is usually suspended in a high-viscosity gel. When the injection pressure is released the weight of the rock layers squeezes anywhere from twenty to eighty percent of the injection fluid back up to the well surface, leaving the sand (known as a “proppant”) to prop open the fractures. This “flowback” is stored in ponds and then is generally transported by tanker to a municipal wastewater plant for disposal.

The flowback contains not just the gel and minerals from the formation but also a cocktail of chemicals added to the injection fluid to enhance the process, including; a succession of chemicals to increase and decrease the viscosity of the gel, biocides to kill bacteria, corrosion and scale inhibitors, oxygen scavengers, friction reducers, brine carriers, tracers (some of which are radioactive), and acids. Most of these are toxic to some degree. The controversy arises from environmental mishaps and the potential for contamination. There are certainly opportunities for accidental release of injection fluids at the surface and there are many instances of surface water contamination around fracking sites. There is also concern that injection fluids and methane can be forced upward through vertical fractures or abandoned wells to shallower drinking water aquifers. We’ve all seen the footage of home owners in fracking areas of Pennsylvania and Colorado igniting methane at their kitchen faucets. While surface water contamination is a real concern, the gas industry insists that there is no proof that fracking has contaminated a drinking water aquifer. I’m sure we haven’t heard the last of this.

Another concern is the two to five million gallons of water used in fracking each well. This is usually taken from nearby rivers or from wells. There is also good evidence that fracking can trigger small earthquakes. By the way, Wisconsin’s only significant shale, the Maquoketa, is not a suitable
candidate for fracking. Most of the shale gas reserves are in the Appalacians, the Gulf Coast states and the High Plains, although there is potential in the geologic basins of our neighboring states of Michigan, Illinois and Indiana.

Although the technology of fracking has been around since the 1940s, it has become very sophisticated lately and more effective. That, plus advances in horizontal drilling technology, through which a large area of shale can be accessed from a single drilling site, and the increase in oil prices has made our large reserves of natural gas shale economically available and that has created the sudden demand for frac sand, which is increasing exponentially. The best sand for fracking has spherical grains of uniform size, which provides maximum permeability, and is composed of a high-strength material such as quartz to resist crushing at the great depths where fracking is commonly done. That describes our sandstone formations that are near the surface in northern Illinois, eastern Minnesota and especially in western Wisconsin. We have the premium proppant sand, known in the industry as “Northern White.”

And so the great sand rush has brought flocks of prospectors to our state looking for mining locations. This has raised concerns near proposed mines about noise, truck traffic, dust, deterioration of roads and bridges, lowering of water tables, alteration of the natural landscape, and the loss of rural tranquility. Whether intentional or not, many of the new mines have been sited in unzoned townships. Without zoning, the only regulatory leverage that local governments have over nonmetallic mining is approval of the post closure reclamation plan. Local opposition has sprung up at several sites. The Town of Cooks Valley in Chippewa County, where Jeff lives, passed an ordinance to regulate proposed sand mines only to have it rejected by the courts. With the help of public pressure, the neighboring unzoned Town of Howard was able to negotiate a rather comprehensive agreement with the mining company, EOG, over processes, compensation and monitoring.

The question we’ve been hearing from our members is whether these new mines could impact municipal water supplies. Except for operations near Tomah, where alluvial sand excavated from cranberry bogs is being sold as frac sand, the mining has been above the water table so that dewatering has not been an issue. This might not be the case after the best high and dry prospects are taken. About a third of the mining sites have or plan to have on-site washing operations where the sand is cleaned of fine-grained material and sorted by grain size. Groundwater in large quantities is generally used for this, although most facilities are recycling this water as much as possible. If you are concerned about drawdown at your municipal wells near a washing plant, we can conduct a study to approximate the impact.

Water quality impacts on groundwater are probably minimal. Sand mining is a relatively clean operation. A chemical flocculant is sometimes used in the washing process to clarify the water for recycling. The commonly used flocculant, polyacrylamide contains the monomer, acrylamide which occurs as an impurity or degradation product. Acrylamide is a neurotoxin and suspected carcinogen but in modern washing facilities with clarifier tanks the flocculant should be fairly well contained, and in any case we are exposed to acrylamide from a number of other more common sources.

The soils that cover the sandstone are nature’s filtration system for removal of surface contaminants and when those soils are removed to expose the sandstone for mining, this automatically increases the risk of groundwater contamination for the life of the mine. Any pollutant that finds its way into the mine would have direct access to the aquifer. Hydraulic oils can leak from mining equipment and sometimes fuel for trucks and mining equipment is stored within the mine. Possible degradation of surface water is regulated by the State through a WPDES stormwater permit required for nonmetallic mines. It looks as if the demand for frac sand will continue in the near future and as new mines are opened in the state, we will continue to monitor the situation for impacts on groundwater and will keep you updated.
President Paula Richardson convened a board conference call on Tuesday, August 14, 2012 to discuss several items. In attendance were Paula Richardson, Betty Socha, Becky Caudill, Anna Fehling, Aaron Schneider, and Mike Raimonde.

Agenda items included:

- Welcome Janis Kesy to the Board
  Janis was unable to attend this call, we’ll do it next meeting.

- Final numbers/discussion on April meeting
  The April annual meeting was very successful with a total of 108 attendees and a net positive balance on costs. Becky will send a summary of the cost details out to the Board.

- President-Elect and upcoming Board vacancies
  WGWA needs a 2013 President and President-Elect, and Secretary 2013-2014 as Paula and Betty’s terms will be ending January 1, 2013. Paula suggested a few people for the President position and will contact them to see if they are interested. Becky thought she may know of someone for the Secretary position.

- Newsletter
  Lee and Wayne sent out a newsletter in July and are trying to get another one out in August, but are requesting assistance with the web formatting of the newsletter. Paula will contact Lee for more specifics of what they need and when.

- Website
  There have been some difficulties accessing the website and with editing the content and format. Becky and Paula will check with KCComputers to see who has control of full access to the site.

- Fall Field Trip update (work day with AIPG – WI chapter)
  The 2012 field trip, with AIPG, will be October 20-21 and will consist of work days on the Ice Age Trail with camping near Devil’s Lake. AIPG is also arranging for a speaker – George Stone (Instructor of Natural Science at the Milwaukee Area Technical College. He is the co-founder and chair of the Green Energy Summit in Milwaukee.)

- Next installment of WGWA luncheon lecture series at the WGNHS core repository
  Anna will contact the WG&NHS for a speaker and core repository tour in late September. The event may be in the afternoon on a Friday rather than at lunch time to allow for the travel time to Mt. Horeb and possibly a visit to the “Grumpy Troll” afterwards.