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LETTER FROM THE PRESIDENT

By Rick Peterson, WWWW President

Greetings,

After a very busy and prosperous Summer, it was a marvelous thing to see the glory of creation all around us in Autumn. Now that Winter has arrived I hope that we can all catch our collective breaths a little and be able to enjoy time together with family & friends.

It continues to be an exciting time of transition and many meetings and phone conferences have been happening behind the scenes. Jennifer from SAMI has been very busy planning and meeting with the DNR and various committees getting prepared for the 2018 Groundwater Convention and Continuing Education. She is doing a great job of pulling everything together and meeting deadlines.

Being that we have all been extremely busy this year and may not have had time to spend with our families enjoying some rest and relaxation, it may be a good time to start thinking about getting away together. A great place to do that would be at the WWWW Groundwater Convention at the Kalahari in Wisconsin Dells in January. It will be a great time to get together with other industry professionals and suppliers and to get the Continuing Education credits we all need. The convention will be very family-focused and should be a great time to be together and enjoy each other's company.

I look forward to seeing you all at the convention in January and let's have a large turn-out for our annual meeting.

Sincerely,



Rick Peterson, Clean Water Testing
920-841-3904, rick@water-right.com



MEMBERS TALKED - WWWW LISTENED

Many phone calls and e-mails have come into the office since the dates and locations of 2018 Continuing Education were announced and we heard the need for a Fall class and a Northern-Wisconsin location loud and clear. A location will be identified somewhere north of Hwy 29 for late Fall 2018. Please see all the dates and locations on the back cover and watch future issues for details on the Fall/ Northern-Wisconsin session.

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GOVERNOR WALKER APPOINTS DAN MEYER TO SERVE AS DEPARTMENT OF NATURAL RESOURCES SECRETARY

reprinted from Gov. Walker Press - Monday, September 25, 2017

MADISON – Governor Scott Walker announced the appointment of former Wisconsin State Assembly Representative Dan Meyer to serve as secretary of the Department of Natural Resources (DNR).

“Dan Meyer will be an outstanding DNR secretary,” Governor Walker said. “He understands the balance between protecting our natural resources and supporting economic prosperity in our state. As a highly respected former legislator and mayor who cares deeply about conservation, Dan will serve in the best interests of Wisconsin.”

Meyer, an avid outdoorsman, represented the 34th District in the Wisconsin State Assembly from 2001 to 2013 and was a strong advocate for the environment, specifically related to protecting Wisconsin’s lakes in the efforts against invasive species. Prior to his time in the Legislature, he served as mayor of Eagle River, Wisconsin, from 1997 – 2001 and is a former executive director of the Eagle River Chamber of Commerce and Visitors Center. Meyer, a Vietnam era veteran, resides in Eagle River with his family.

“I am honored to serve as DNR secretary,” said Dan Meyer. “Our state is blessed with an abundance of natural resources, and we will work to responsibly protect them and ensure they remain a source of recreation, tourism, economic growth, and rich natural history now and for our children.”

Meyer’s appointment was effective September 25, 2017.



EXECUTIVE DIRECTOR MESSAGE

By Jennifer Rzepka, CAE, WWWA Executive Director

It's an exciting time of year for the Wisconsin Water Well Association! The amount of planning that the Board of Directors undertakes on behalf of the membership in the Fall is extraordinary. The budget for the coming membership year factors in this newly re-launched, newsletter, the *Well Log* the upcoming Groundwater Conference, which is attended by hundreds of conference-goers who visit the more than 50 exhibits; and the series of Continuing Education. These sessions will provide exceptional, quality education on specific industry topics which both the WWWA and the DNR believe will enable members to continue to develop their unique skill-sets in order to continue providing fresh, clean safe water in the state.

As the new Executive Director for the WWWA, it is an honor to be involved in these intense discussions and experience the passion and power at the Board table. Along with keeping up with the day-to-day duties in their own business, these dedicated volunteer leaders spend countless hours together in person and on the phone to put membership needs above their own.

Check out the conference pages in this issue to see the hard work they've put into some strategic educational opportunities coming up in January at Wisconsin Dells, and the outline for a great series of upcoming continuing education sessions throughout the state.

Please take the time to read through the article on membership benefits on page 11 and watch your mailboxes for the renewal application coming your way soon. We hope to have a record-breaking year of membership with many returning and new members involved.

It's going to be an exciting new year! Until the next issue comes out after the conference, please enjoy the holiday season with your families, and I look forward to meeting many more WWWA members in 2018.

Happy Holidays everyone!



Jennifer Rzepka, CAE
Executive Director



ADVERTISE TODAY!

WWWA WELL LOG ADVERTISEMENT PRICING

Full Page Advertisement

Entire Year	\$1300
Single Issue.....	\$475

Half Page Advertisement

Entire Year	\$850
Single Issue.....	\$250

Quarter Page Advertisement

Entire Year	\$600
Single Issue.....	\$175

Advertising Graphic Requirements:

All ads must be submitted electronically via email or on a CD. WWWA Well Log is designed on a Macintosh platform. Accepted software: print quality PDF files (preferred), Adobe Illustrator, Photoshop, and InDesign. Fonts and linked graphics must be included with electronic files. Minimum 300 dpi on graphics and photos. Ads not supplied properly may incur additional charges. Ads not sized properly will be scaled proportionately to fit.

Please contact our office for more information:
info@wisconsinwaterwell.com

LOBBYIST REPORT: GOVERNMENT RELATIONS UPDATE — DECEMBER 2017

By Jeff Beiriger, WPWS Executive Director



FROM 30,000 FEET

It's been a year since the president was elected. What's been accomplished since then? Much depends on your point of view. For some, too much. For others, too little. What is certain is that there is a very different vibe to Washington, DC and to the Republican Party in particular.

For Republicans, it's not the what they see in the rearview mirror that concerns them, it's what lies ahead. By most accounts, the elections in 2018 will be challenging for Republicans for a couple of reasons. First, it's a mid-term election where the party in power generally loses seats. More than that, the Party and many of its incumbents and other candidates will not have a highly-popular president to help them. A big challenge will be positioning themselves along a spectrum of being for the president or somewhere else along the spectrum. Expect a lot of tugging and pulling for control of the Republican Party, even as the Party tries to retain control of the House and Senate.

To hold the base, Republicans will have to deliver on health care and tax reform. Right now, it looks as though they may get one accomplished and possibly both by way of eliminating the individual mandate. That will leave many with the option to not purchase health insurance without penalty, but it still doesn't address the underlying issues related to the cost of insurance, medical, and pharmaceutical services.

FROM 10,000 FEET

All of this matters in Wisconsin because there will also be an election for governor, with Scott Walker vying for a third term against what for now is a large and growing field of Democratic challengers. There will also be an election for Tammy Baldwin's U.S. Senate seat, all of the Congressional seats, all of the State Assembly seats, and half of the State Senate.

If the mid-terms bring a Democratic tidal wave across the country, Republicans in Wisconsin may fair better than many of their counterparts. Walker has been a solid campaigner, though he has won previously in solidly Republican years (2010 and 2014). Absent a strong Democratic challenger, he has built a machine that is a proven winner. Baldwin will be vulnerable because of the VA issues, and hers is a Senate Seat Republicans would love to flip. Congressional and Assembly Districts are drawn such that they are very

difficult to flip. The State Senate seats that will be up tend to be ones where Republicans will likely fair well given their geographic locations – either Republican areas or areas where Trump performed well in 2016.

One big question mark in all of this remains the U.S. Supreme Court case that will delve into the manner that Wisconsin redistricted after the 2010 census and elections. While the Court is predicted by most to side with the State, there is always a chance that it will issue a ruling that could be an unexpected disruption to all of the analysis above.

The State Budget was finalized in September and included many changes of interest to the construction industry:

- Prevailing Wages – Repealed Immediately.
- Personal Property Taxes – Partial Repeal Beginning with 2019 Filings.
- Journeyman Licensing – Language to Eliminate Required Testing Was Removed by JFC.
- Plumbing Council – Language to Eliminate the Council was Removed by JFC.
- Reciprocity – Language for Plumbing License Reciprocity Was Made Stricter.
- DSPS Lapsing of Funds – Stopped After 16 Years.
- DNR Budget – Largely Unchanged for Groundwater & Private Well Programs.
- Wisconsin Fund – Approved for \$800,000/Year and Extended to 2021.
- Rustic Hunting Cabins – Exempted From UDC (Indoor Plumbing Only).
- Licensing Study – For DSPS-Issued Licenses Only. DSPS to Report Finding by December 31, 2018.
- Schools May No Longer Make Energy Upgrades Without Going to Referendum.

Lobbyist Report continued on next page

State Legislation That Is Active:

- Licensing Study – Would Restore Governor’s Proposal for Study Committee (Not DSPS).
- Apprentice Ratios and Terms – Will Pass Soon, Affecting Several Trades.
- Apprentice Tax Credits – Recently Heard by Committee.
- Apprenticeships & High School Seniors – Recently Heard by Committee.
- Replacement of Lead Service Lines – Will Pass Soon.
- Funding for POWTS/Well Remediation – Will Pass Soon.
- Administrative Rules > 9 Years – Will Likely Pass.
- Worker’s Compensation Fees – Biggest Battle of the Remainder of the Session.
- Worker’s Compensation Council – Change Would Affect Appointment of Labor Representatives.
- Unemployment Compensation – More Changes, But Fund Stabilized. Search Requirements.
- Electrical Licensing – Yet Another Version Moving, With No Changes to Trades Exemptions.
- Testing of Private Wells – Advanced by Minority Party Members, So Likely to Die in Committee.

Future Legislation:

- Sales Tax – Apply to Services. Broaden the Base to Lower the Rate.
 - » Tennessee: Property & Income Tax = \$1,300.00 vs Wisconsin \$13,000.00.

State Agency Actions

- NR 812 – Currently Being Reviewed by Code Committee.
- POWTS Code – Currently Being Reviewed Following Public Hearings.
- Plumbing Code – Currently Being Reviewed by Code Committee.
- Religious Exemptions/Amish – DSPS Legislation Would Eliminate Outdoor Plumbing Exemption.

- Groundwater & Drinking Water Study Group.
 - » Meeting Held Earlier This Month.
 - » Cross Connection Subgroup
 - » Guidance Document Issued on Replacement of High Capacity Wells.
 - » Multi-Family Fire Sprinklers (3 to 20 Units)
- Electrical Licensing (Interpretation) – Revised Opinion from DSPS was issued recently.
- Continuing Education – Intervenor Working to Modify DNR Interpretation.
- Course Approvals – Intervenor Working to Modify DNR Interpretation.
- Private Water Advisory Committee
 - » Meeting Held Last Month

Judicial Actions

- Decision Issued in Dane County Regarding Use of AG Opinion to Affect High Cap Reviews.

Federal Budget

- Tax Reform – Conference Committee Working Through Final Details
- Geothermal Tax Credits – Residential Included in the House Version of the Budget. Currently, Both Chambers Will Allow for Commercial Credits and Depreciation.

Federal Legislation

- Rules Oversight – Would Cause Regulators to Seek Industry/Congressional Input & Approval.
- Immigration – An Issue That Republicans Don’t Want to Address May Have to Reemerge Soon.

Federal Agency Actions

- Regulatory Freeze: Cranes/Hoists Delayed One Year.
- Silica Rules Went into Effect in September.

WELL OWNER TOOLS AVAILABLE THROUGH NGWA

NGWA provides a wealth of practical information for you to share with your crew and customers, including videos demonstrating well cleaning and water treatment. They also provide recommendations on scheduling an annual water well checkup, and a Finished Well Checklist. You can find these and other tools at <http://wellowner.org>.

WPWS REPORT: FALL GOLF OUTING A SUCCESS!

By Jeff Beiriger, WPWS Executive Director

The Wisconsin Pump & Well Suppliers held their Fall Golf Outing at Trappers Turn (Wisconsin Dells) on Tuesday, September 19. Nearly 50 golfers came out to play on what turned out to be a spectacular weather day in Wisconsin!

Both the Spring and Fall Golf Outing have been growing steadily. A move to the Dells helped, but the biggest reason for the growth has been the pursuit of something larger than a just a networking event. The industry has responded in a big way to the work being done at the outings to raise money to build wells for those who don't have easy access to a source of clean water.

Between golfers, sponsors, and a few fundraiser events held during the outing, nearly \$2,000 will be raised. Together with the Spring Outing next year and the proceeds from a Water Walk held in conjunction with the Wisconsin Dells School District, the WPWS is on track to approve a fourth water well project by the middle of next year!

The big winners, of course, are those whose lives are affected by the well projects. For some, the wells we have provided have meant the difference between walking five or more miles each way to a water source or using that time to focus on agricultural, business, or educational pursuits. Still, there are other winners, and here they are:

Low Score (-9): Lucas Antonioni, John Beahm, Mike Recheck, Seth Schulz

And because we want everyone to know that players of all skill levels are welcome, we also recognized a team that was just 19 strokes off the pace:

High Score (+10): Bill Bright, Randy Kleiber, Rob Gingles, Steve Tesmer

Flag events were won by Connor Odykirk, Scott O'Brien, Seth Schulz, Jake Bowling, and Andy Jelinski.

Thanks to our sponsors:

- Franklin Electric
- Headwater Corporation
- Marshall Well Drilling
- MBE CPAs
- Pentair
- Preferred Pump
- Rep-Rite Burk & Associates
- Rundle-Spence
- Trappers Turn
- Walter Products
- Wisconsin Water Well Association

The Spring Outing is set for May 8, 2018 at Trappers Turn and we hope to see you there!



A great day was enjoyed by all!

MANUFACTURERS SPOTLIGHT

GRUNDFOS: ONE PARTNER FOR ALL OF YOUR WATER TREATMENT CHALLENGES

Grundfos can supply pumping solutions for irrigation, agriculture and livestock applications that reduce energy costs, safeguard the water resource, and keep productivity at its best. Their pumping systems are efficient, tested for reliability and designed to work seamlessly with modern irrigation systems as well as agricultural and non-agricultural applications. Whether you are looking for packaged solutions or individual pumping products for each stage of the water treatment cycle, Grundfos offers a range of high-quality products and unique expertise.

Grundfos has been a strong supporter of WWSA for many years, and has been a major sponsor of our educational activities. Additional valuable resources provided to the groundwater industry include development



of the "Irrigation Pump Handbook", a comprehensive presentation of pumps for irrigation.

Find out about the products and solutions Grundfos offers for agricultural irrigation, turf irrigation, fertigation and chemigation, water supply, water treatment, livestock handling and renewables at <http://www.grundfos.com>.

WWSA is grateful to Grundfos Pumps for their generous support to the WWSA throughout the years, including SILVER SPONSORSHIP of the 2017 Conference.

WISCONSIN PUMP & WELL SUPPLIER REPORT: WHERE IN THE WORLD IS THAT THIRD WELL?

By Jeff Beiriger, WPWS Executive Director

WPWS is proud to report that work on its third well project in Bulu, Uganda has been completed.

The well supplies water to villagers, a primary (elementary) school, secondary (high) school, a clinic, and a church. Excess water is used for irrigation.



Additional projects are being planned for 2018, possibly in a rural area of Uganda with water being used to supply villagers with the excess being used for irrigation. The "farmers" are orphans and widows and widowers. The orphans have no source of money for school fees and the older folks have no family, other than grandchildren, whose parents have died from AIDS or during a civil war led by the Lord's Resistance Army.

The idea is for the orphans to supply most of the labor to plant and harvest quickly maturing crops, and the older folks to tend to the crops while the students are in school.

For the last two years there has been a drought in the area. It rained this year but due to the drought there was an invasion of army worms. Army worms eat any plant from the cereal grain family. This includes corn, sorghum, millet, rice, etc. Producing alternative crops will provide income to the orphans for school fees and subsistence to the older folks. They should be able to produce crops during the dry season, providing fresh food to the area when it is not normally available.



2018 WISCONSIN GROUNDWATER CONFERENCE

This year's
conference
features a
Poker Run!

Conference Dates
January 17-18, 2018
Continuing Education: January 19, 2018

Exhibit Hall Dates
January 18-19, 2018

Kalahari Resort and Convention Center
1305 Kalahari Drive
Wisconsin Dells, WI 53965

For Room Reservations call: 1-877-253-5466

Schedule-at-a-Glance

Wednesday, January 17, 2018

- 9:00 am - 12:00 pm **DNR Advisory Board Meeting**
(meeting by invitation only)
- 2:30 pm - 4:30 pm **General Membership Meeting**
Regulatory/Legislative; Marketing; Elections;
WWWA Updates
- 5:00 pm - 11:59 am **Vendor Set-up**
- 5:00 pm - 7:00 pm **Reception**
Reception; Scholarship and Lifetime Awards
Presentation; Silent Auction

Thursday, January 18, 2018

- 7:00 am - 2:00 pm **Vendor Set-up**
- 7:00 am - 8:00 am **Breakfast**
- 8:00 am - 2:15 pm **General Session**
Including DNR Update/Session
Up to 4 CE Credits

- 12:15 pm - 1:15 pm **Lunch**
- 1:15 pm - 2:15 pm **Breakout Sessions**
Up to 1 CE Credit
- 2:30 pm - 6:00 pm **Trade Show**
*Exhibits; Spotlight Showcase (15 min, 4-6pm);
Children's Area; Poker Run; Door Prizes;
Reception*
1 CE Credit per year for attending trade show
- 7:00 pm - 9:00 pm **Annual Bowling Tournament**

Additional Continuing Education Friday, January 19, 2018

- 7:00 am - 10:00 am **Trade Show & Breakfast**
1 CE Credit per year for attending trade show
- 10:00 am - 2:00 pm **Vendor Tear-down**
- 10:00 am - 4:00 pm **Continuing Education**
Up to 5 CE Credits
- 12:00 pm - 12:45 pm **Lunch**

Attendee Pricing

Early-Bird Savings

December 29, 2017

Attention WWWA Members!

Save \$40 on registration and get a \$100 gift card to the Kalahari if you register and make your hotel reservation before December 29, 2017! **Remember, you can bring your spouse and children for free!**

COST	Before 12/29/17	Before 1/17/18	Walk-in/ Onsite
WWWA MEMBER	\$150	\$190	\$250
NON MEMBER	\$190	\$230	\$290

Special Room Discount!

**WWWA
Members
ONLY**



Special deal for WWWA Members:

Reserve your hotel room *AND* pay for your event registration before December 29, 2017 & get a

\$100 Kalahari Gift Card!

Exhibitor Information

Exhibitor Schedule

Register early: booths are on a first-come, first-served basis (upon receipt of payment).

- **Set Up:** Set up will take place after 5:00 pm on Wednesday, January 17, 2018, and again from 7:00 am to 2:00 pm on Thursday, January 18, 2018. Staff from Valley Expo will be on site during these times.
- **Show Times:** The exhibit hall will be open from 2:30 pm – 6:00 pm on Thursday, January 18, 2018 and from 8:00 am - 10:00 am on Friday, January 19, 2018.
- **Tear Down:** Tear down will begin at 10:00 am on Friday, January 19, 2018. Valley Expo will again be on site at this time.

Costs

Exhibitors/Sponsors: Please download the exhibitor registration form online: <http://www.wisconsinwaterwell.com/formembers/conference>

Basic booth cost is \$450 and includes 2 representatives, the cost is \$35 for each additional attendee. The form has more detail on sponsorship and all other opportunities.

Sponsor/Donor Opportunities

There are many exciting ways to become more involved and get your company name in front of attendees!

- **Sponsorship:** Along with monetary donations that can reduce the cost of your exhibit booth, specific event/item sponsorships are available (new this year) to sponsor things like the food functions, lanyards, the children's area activities and more.
- **Prize Donations:** Donations are also requested for the general door prize drawings in addition to the poker run prizes to be given away in the exhibit area, and prizes for the bowling event.
- **Product Showcase:** Manufacturers and their representatives are given the opportunity to present the benefit and features of a product of their choice at a specified location in the exhibit hall. Eight 15-minute segments are available on a first-come, first-served basis.

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WHY ME? WHY SHOULD I BELONG TO THE WWWA?

By Jennifer Rzepka, CAE, WWWW Executive Director

The Wisconsin Water Well Association became incorporated in 1979, but existed long before that, since Wisconsin Administrative Code was established, to give the health board the authority to supervise the construction of all wells for human consumption. That's a LONG time! Over 60 years!

Since the Association has existed all this time whether each individual has been a member or not, the question is often raised: **My individual dues dollars can't make that much difference... can they?**

The essence of that question is the very foundation of associations. The strength and power of an organization comes from its' members collectively. Every member is part of a whole, a larger force that has limitless ability to have extraordinary impact on the overall industry. Anyone who's ever helped their child or grandchild with a fundraiser knows that many small combined efforts make all the difference.

The WWWW constantly works towards improving the quality and safety of Wisconsin's groundwater and provide for the health and safety of their friends, family and colleagues who work alongside them in the industry.

While there's nothing more valuable than those two items, there are countless other benefits that are difficult to precisely measure:

Networking

There is rarely a higher ranked value in any trade organization rated above networking. From sitting around the Board table, working with the DNR on code updates, sitting among friends while earning continuing education credit, to mingling with customers and colleagues in the tradeshow at the conference – face-to-face contact is one of the best ways meaningful relationships are made.

Member Discounts

In 2017-18, members of the WWWW can save \$50 on continuing education courses and an additional \$50 on conference registration. Children and grandchildren of WWWW members have the opportunity to apply for exclusive scholarships and earn thousands of dollars towards furthering their education.

Professional Development

WWWA provides specific, targeted and leading-edge professional development opportunities in the form of continuing education sessions and breakout workshops at the conference. As a member, you also gain access to a wide network of peers from across the state and throughout the country.

Information and News

Due to the WWWW's involvement with the Wisconsin DNR, leaders are closely connected with the decision makers at the state level and have the opportunity to be involved in code review and other discussions on regulation. The two-way communication between the state department and WWWW allows for important and frank discussion on all matters affecting the quality and protection of Wisconsin's groundwater.

When you consider your dues contribution for the 2017-18 year, please remember that your dues dollars count. Along with the discounted membership rates you'll receive on event registration costs and all the valuable benefits described here, above all you are enabling this great organization to continue to fight for what's good and right – *Water the Wisconsin Way: Fresh. Clean. Safe.*



**Every member is part of a whole,
a larger force that has limitless ability
to have extraordinary impact
on the overall industry.**

SUPPLIERS SPOTLIGHT

NOLAN INSURANCE AGENCY

Nolan Insurance Agency, LLC was founded in 1968 by John W. Nolan Sr. The agency is located in Brandon, WI but services the entire state of Wisconsin. Thirty years ago John Sr. helped forge the relationship between our agency and the Wisconsin Water Well Association. Michael Nolan, Kathy Mulder, John Nolan and Liz Bille (all siblings) are now continuing John W. Nolan Sr.'s commitment to, and involvement, with the WWWA.



NOLAN
Insurance Agency, LLC
EST: 1968

We have enjoyed attending all the conferences for many years and have developed friendships and met so many wonderful people. Nolan Insurance Agency knows the importance of supporting the WWWA throughout the year and at conference time. Sponsorship of the conference has been continuous for us and we look forward to contributing to future conferences.

We would like to thank the WWWA board for their commitment to us and look forward to continuing our relationship with the association.

WWWA is grateful to Nolan Insurance for their generous support to the WWWA throughout the years, including **PLATINUM SPONSORSHIP** of the 2017 Conference.

ALREADY A MEMBER?

It's time to renew your membership. Please watch your mailboxes & email for your renewal information.





A CONTINUING COMMITMENT



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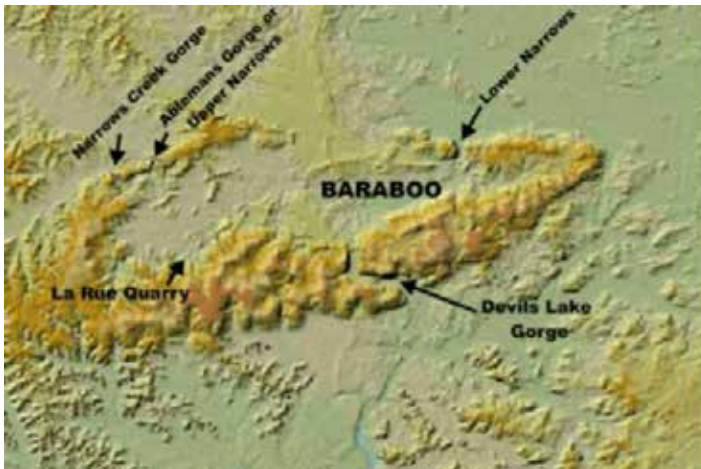
A Headwater Company



THE BARABOO RANGES: PART ONE

By Tom Riewe

It seems hard to comprehend but in the distant past a mountain range dominated the east to west landscape of northern Wisconsin. Over the millennia these 'Penokean Mountains' have long since been eroded away. Today there are no *real* mountains in Wisconsin. In fact its highest point of bedrock, Rib Mountain, is only 1,942 feet above sea level. Any such topographic features having significant relief in the State are anomalies. One of these is the Baraboo Ranges.



Physiographic diagram of the Baraboo Ranges. (University of Wisconsin, Milwaukee – after the Wisconsin Geological & Natural History Survey)

Rising above the landscape of south central Wisconsin, the Baraboo Ranges loom over the surrounding area like old abandoned fortresses. Visible for many miles these quartzite bluffs jut up through younger and softer sedimentary bedrock layers that completely surround them.



The east end of the Baraboo Ranges – looking north, from the rest area along Interstate I 90-94 & 39, just south of the Wisconsin River. (Photo by the author)

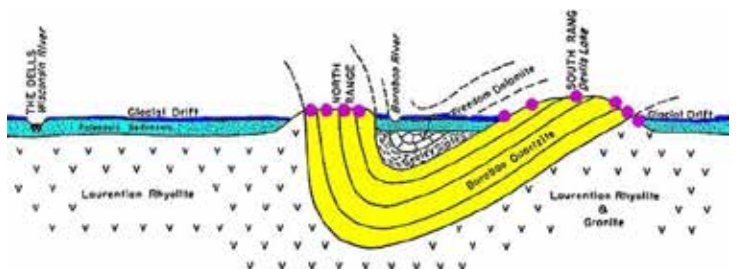
Although definitely not the Grand Tetons, they are one of Wisconsin's answers to mountains and also represent an important geologic feature of the central North American Continent.

The deep purple bedrock that makes up these ridges is a remnant of an ancient Precambrian sandstone layer that once covered much of the upper Midwest. Geologists think the sediment – that gradually solidified into a thick sandstone layer – was deposited at the bottom of an ocean that covered this region some 1,700 million years ago. Long after this sediment consolidated into sandstone, powerful geologic processes involving heat and pressure (*metamorphism*) – operating over millions of years – gradually but thoroughly altered this sandstone until it became a pure crystalline quartzite.



The deep purple Baraboo Quartzite at 'Devils Doorway' – near the top of the southeastern bluff overlooking Devils Lake. (Photo by the author)

While these processes of metamorphism were at work the bedrock layers also got slowly squeezed into contorted folds in the area north and south of the present City of Baraboo. During the eons of time since then, these quartzite folds – due to their density, hardness and warped configuration – have been doggedly resistant to erosion, the reason they remain today as topographic ridges.



Only a few other remnants of this quartzite formation survive as part of the landscape of the upper Midwest. (Others include the Blue Hills of Barron County, Rib Mountain, Powers Bluff, Necedah and Hamilton Mounds in central Wisconsin, McCaslin and Thunder Mountains of Marinette and Oconto Counties, the Waterloo Quartzite in southeastern Wisconsin, and the Sioux Quartzite of

The Baraboo Ranges continued on next page

southwestern Minnesota and southeastern South Dakota.) Scattered here and there they offer evidence of this ancient episode of our geologic past.

Since the Baraboo Ranges are complex in their origin and structure, geology instructors from all over the Midwest bring their students to this area on a regular basis. For some it has become an annual pilgrimage. This is one of the few places south of Lake Superior where the diverse periods of Precambrian, Cambrian and Pleistocene geology can all be easily and systematically studied. Instructors are able to use these ranges like a giant diorama to provide a 'field classroom' for their lessons. They can demonstrate various elements of structural, sedimentary and glacial geology in one field trip because all these elements are encompassed within this compact, 10 by 30 mile area. It is not surprising that these ranges have been, since the late 1800s, one of the most thoroughly studied geologic features in the United States. The natural history of these quartzite ridges is long and complicated; but it is also very fascinating. The powerful forces of nature that operated over eons of time to create these remarkable features are evident in both their geologic structure and geographic setting.

The task of amassing and piecing together the many clues that eventually revealed the genesis and transformation of these ridges presented a challenging riddle for the many geologists who have studied them. They were, however, eventually successful in deciphering the age and structural configuration of these contorted bedrock folds. Today we are fortunate to be able to appreciate, explore and continue to study these remnants of our geologic past.

Devils Lake, a popular hiking and rock climbing site, is nestled within a former river gorge that had been carved by a major river (likely the Wisconsin) that flowed through the Baraboo Ranges for millennia prior to the last Ice Age. Devils Lake gorge is a remnant of that river valley, extending through the south limb of the ranges, providing a window into the core of these ridges.



*Oblique 3D diagram of Devils Lake gorge – viewed from south to north.
(Ian Grasshoff, Smart mAPPS Consulting)*

Serious rock climbers have reason to visit this area because the Baraboo Bluffs can provide some of the most difficult technical climbs in the upper Midwest. Climbers and hikers who make it to the top of one of the bluffs

overlooking the lake can see, on the opposite bluff, not only the inclined layers of quartzite but are also rewarded with arresting views of the ranges and the surrounding geographic panorama.

For a well driller who has to construct a well into the hard crystalline quartzite of these ridges, it is often a slow, difficult and costly process. This bedrock is very dense, has virtually no pore space and only minor fractures, so it sparingly releases groundwater to wells. Within this mostly impermeable rock, groundwater emanates only through hairline fractures intersected by an open drillhole. Typically wells must be constructed several hundred feet into the rock in order to obtain adequate quantities of water. Even wells this deep are often able to produce just a few gallons per minute, barely enough water for a single family residence. Some wells end up as virtual 'dry holes' which must be subsequently hydrofractured in order to have a chance of obtaining sufficient yields of water.

In the subsequent articles of this series I will try to more thoroughly explain the geologic anomaly represented by the Baraboo Ranges and attempt to answer questions regarding:

- How this bedrock was initially created – and then dramatically altered over the millennia.
- Why these ranges remain in their present form as topographically high ridges.
- Why these ranges and their bedrock are so important to geologists.
- How geologists have been able to decipher the structural configuration of these ranges.
- How geologists have determined the age of this ancient bedrock.
- How the glaciers of the Pleistocene Ice Age affected these ranges and the surrounding surface water patterns.
- What challenges this dense quartzite bedrock poses to well drillers and how they cope with these challenges?

Next: [How Were the Baraboo Ranges Formed?](#)

Much of the information in these articles is based on:

- The research, publications, field trips and classroom/ seminar presentations of Emeritus Geology and Geoscience Professors L. Gordon Medaris, Jr. and Robert H. Dott, Jr., both of the University of Wisconsin, Madison;
- Publications from the Wisconsin Geological & Natural History Survey, the Ice Age Trail Alliance and the Department of Natural Resources;
- Lawrence Martin's *The Physical Geography of Wisconsin*, The University of Wisconsin Press.

Special thanks to Bruce A. Braun, Wisconsin Geological & Natural History Survey who reviewed these articles and provided many helpful suggestions.

MARKETING MATTERS: “HOW DO YOU MEASURE YOUR R.O.I?”

by Tara Schessler, WAOW+

Advertising can be a tricky thing to analyze. How do you know if your marketing efforts are working? How efficient was your media choice? Was the message strong enough? Did you reach the right audience? Did you sell more products or perform more services? Did your phone ring?

All of the above are excellent questions and you should absolutely ask each and every one of them. But there is one more that needs to be asked. How is my website traffic?

A joke:

There was a loud thud on the porch and a little boy went out to investigate. He didn't see anyone there; however there was a large book on the porch, which he immediately picked up. He had never seen something like this before and took it inside to show his mom.

“Mom, what's this?” asked the little boy.

“Why it's a phonebook,” answered the mom.

“What's a phonebook? What do you do with it?” asked the little boy.

“You use it to call people,” mom said.

The little boy took the phonebook, placed it close to his mouth and promptly said “Call grandma.”

Hopefully you had a good laugh. Yes, the phonebook has become nearly obsolete. What is the answer? Websites. People are searching for businesses via the World Wide Web, and unless you have a storefront in this virtual world, you'll be sure to get less of the pie.

The WWWA has a website and via the “Find a Contractor” Directory, if you are a WWWA member, it is promoting yours. What does this have to do with advertising?

The WWWA chose Statewide TV advertising once again in 2017 on a smaller scale than in years' past. The WWWA marketing efforts are in place for two reasons:

1. To educated viewers on the importance of protecting Wisconsin's groundwater, and
2. To earn its' members more business.



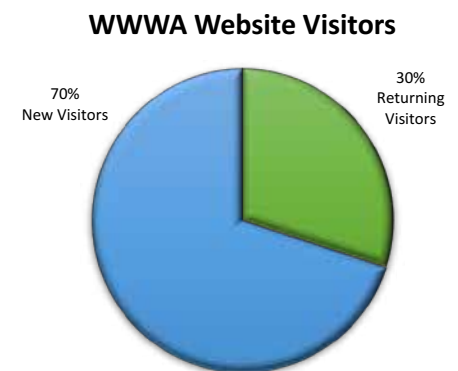
The call to action this year once again was to visit WisconsinWaterWell.com to find a WWWA member near you! The results are in, let's measure the success of this campaign, and the return on the investment. Did viewers visit the website? Did they find you?

According to the website analytics, there was an increased in traffic to the website during the TV advertising months: April, May and June. WisconsinWaterWell.com always sees a significant jump in visitors during the months of January through March due to continuing education; however, during the end of April and throughout May you can see an additional spike of visitors to the website. It even carries through into June a bit when the no charge Public Service Announcements ran on all represented TV stations.



The only call to action we listed on the advertisement was to visit the website. Described here is our tool to measure the return on the investment. Is it earth shattering? No. However, it's a consistent message at a crucial time of year that viewers are indeed responding to.

After five years of this marketing message the Wisconsin Water Well Association has become a leader in all things water well related. Check this out. Of the visitors to the WWWA website, 70% were new, and the majority typed in the exact address WisconsinWaterwell.com to get to the site.



Marketing Matters continued on next page

Direct traffic is a strong indicator of your brand strength and your success in marketing. People know who to turn to. So here's my question to you; if someone in need of your services is looking for you, wouldn't you want to be on the list? And if you are on the list, did you get a call? Share with your board members what, if anything, you've seen from this advertising campaign. They are about to entertain 2018 media plans and need your input.

The moral of the story is this: WWWW and its members are making their mark on Wisconsin. How you, member or nonmember, are capitalizing on this is your call. Members have the exclusive right to use the WWWW logo, tying themselves and their businesses to a very strong brand.

I'll leave you with this. If you are on the list, do you have a digital storefront? While the phone book story was funny, potential customers not being able to find your business is no joke. Stay tuned for the next Marketing Matters entry, "What's in a website."

Once again, thank you for reading.

Top 10 Referral Sources

Sources describes where your traffic comes from.

The Source is the place users are before seeing your content, like a search engine or another website.

Direct traffic

Direct traffic represents those visitors that arrive directly and immediately on your site by: (1) typing your URL into the browser's address bar; (2) clicking on a bookmark; or (3) clicking on a link in an email, SMS, or chat message. Direct traffic is a strong indicator of your brand strength and your success in email or text message marketing.

En	5,034 % of Total: 98.53% (5,109)
1. google	2,764 (54.91%)
2. (direct)	1,118 (22.21%)
3. bing	603 (11.98%)
4. yahoo	290 (5.76%)
5. intranet.dnr.state.wi.us	21 (0.42%)
6. ngwa.org	20 (0.40%)

FAREWELL TO MCCRAY, LONGTERM NGWA CEO

The end of 2017 marks the end of Kevin McCray's tenure as longterm CEO of the National Groundwater Association, as he retires after 22 years as CEO of the NGWA and 35 years in the groundwater industry. Kevin established strong national and international relationships, and managed the Association's National Ground Water Information Center (which holds 45,000 books and magazines on groundwater). His final projects as NGWA CEO are leading the update of the well grouting chapter in NGWA's Manual of Water Well Construction Practices and publishing the guidance document on per- and polyfluoroalkyl substances (PFAS). His focus is represented best by signs he placed at NGWA headquarters;

"Are the groundwater professions better tonight because of what NGWA, its members, and its staff have accomplished today?" **We wish Kevin all the best, and thank him for his extensive commitment to the groundwater industry.**



Terry Morse is the new CEO of the NGWA. Morse is an association management veteran and has experience as a small business owner/operator. He brings a strong background in leadership, sales and marketing with the National Federation of Independent Business, The Ohio Independent Insurance Association, Gibson Guitar Corp., and most recently as regional vice president of sales and marketing at RT Specialty LLC. **We welcome Terry and look forward to working with him.**

IF YOU USE A CRANE, MAKE SURE YOU ARE UP TO SPEED

By John Fowler, CSP, Safety Manager, National Exploration, Wells & Pumps

Some of us in the water well drilling and pump service industry use cranes frequently, so planning ahead for when OSHA begins enforcing its crane operator requirements can help avoid headaches.

On November 10, 2017, OSHA will begin enforcing the requirement all crane operators in the construction industry, operating a crane with a maximum capacity greater than 2000 pounds, will need to be nationally certified (OSHA regulation 1926.1400 Subpart CC).

The first thing to understand is the operator certification requirement **does not apply to a “dedicated drill rig”** [OSHA 1926.1400(C)(11)]. Although a pump rig is not specifically mentioned as equipment excluded from this requirement, **a pump hoist does not fit OSHA’s definition of a crane.** The requirement only applies to a crane, which OSHA defines as: . . . power-operated equipment, when used in construction, that can hoist, lower, and horizontally move a suspended load. [OSHA 1926.1400(a)]

For those of us still affected because we use cranes, we first need to decide who in our company needs to hold this certification. Those who operate cranes the most should be the first to be certified.

But do all of your crane operators need to be certified? No.

If you are an “operator-in-training,” you can operate a crane as long as you are under the supervision of a certified crane operator per OSHA 1926.1427(f). The certified operator must be on site at all times, except for short breaks.

This means you can start by certifying the most experienced operator on each crew and then certify more operators as they gain experience.

But who else needs to be certified? What about a mechanic? Technically, a mechanic’s truck crane rated at more than 2000 pounds capacity is exempt if it is only being used “in activities related to equipment maintenance and repair.” [OSHA 1926.1400 (c)(9)] But the catch is as soon as that mechanic’s crane is used, for example, to load a drum of hydraulic oil or bring some needed equipment for the crews in the field, then the operator needs to be certified.

So how do operators become certified?

In order to certify an operator, the training program needs to be nationally accredited. There are four such nationally accredited training programs in the country.

- Crane Institute Certification (CIC) www.cicert.com
- National Commission for the Certification of Crane Operators (NCCCO) www.nccco.org
- National Center for Construction Education and Research Crane Operator Certification Program (NCCER) www.nccer.org/workforce-developmentprograms/disciplines/craft-details/mobile-crane/mobile-crane-operator-certification
- Operating Engineers Certification Program (OEC) www.oecp.org

Of the four, only the CIC, NCCCO, and NCCER are open to the general public. There are also third-party trainers available, but they represent one of these companies.



CONGRATULATIONS TO LEN ASSANTE SCHOLARSHIP RECIPIENT

CONGRATULATIONS to Connor Kuhn, recipient of one of the ten 2017 Len Assante Scholarship Awards. Connor is from Hilbert, Wisconsin, and is pursuing a double-major in pre-law and environmental engineering at Ripon College. Len Assante Scholarships are awarded annually by the NGWA Foundation to assist those studying in groundwater-related fields. Congratulations, Connor!



DEDICATED DRILLING RIGS AND PUMP HOISTS: HOW DOES OSHA CLASSIFY?

By Kathy Butcher, CMP, National Ground Water Association (NGWA)

The National Ground Water Association actively participated in federal Occupational Safety and Health Administration hearings in March 2004 during the development of OSHA's current Crane and Derrick Standard.

From these meetings came the first time "dedicated drilling rigs" were used to refer to the equipment used in the water well drilling industry. And in accordance with federal laws governing cranes and hoisting equipment operators and operations, "dedicated drilling rigs" are exempt.

In February 1982, this statement and question was posed to OSHA:

During the performance of water well drilling, a hoist is used to lower the pump and possibly other objects in the well and for other purposes related to the drilling process. Is use of the hoist covered by the requirements of Subpart CC?

The OSHA response was as follows:

OSHA has determined that water well drilling equipment and activities, like oil and gas drilling, are covered by applicable requirements of 29 CFR Part 1910 (General Industry).

Rationale later cited for the applicability of standards to water well drilling was cited as:

Water well drilling, oil, and gas well drilling expose employees to similar hazards; therefore, employers engaged in drilling operations shall comply with appropriate General Industry

Standards. This is an exception in classifying an industry when using the Standard Industrial Classification (SIC) manual, but is necessary for proper citing of water well drilling alleged violations.

The SIC code for water well construction is 1781, which is categorized under "Construction"—thus the reference to the exception above, since water well construction and related activities are considered under the General Industry Standard.

Dedicated drilling rigs and pump hoists encompass water well drilling activities, and are thus regulated under the General Industry Standard at the federal level. State regulations can and often do treat the activities and equipment differently with greater regulation. It is always advisable to check to see what regulations your state has for your company's activities.

Kathy Butcher, CMP, is NGWA's director of professional development. She can be reached at (800) 551-7379, ext. 1526, or email kbutcher@ngwa.org.



THRON RECEIVES DISTINGUISHED AWARD AT NGWA GROUNDWATER WEEK

CONGRATULATIONS to WWSA member Richard Thron, MGWC who was awarded the Robert Storm Intersectional Cooperation Award by NGWA at the 2017 Groundwater Week in Nashville. This award is presented to a person or team who, through their activities or written works, contributes to promoting collaboration, enhancing cooperation, and fostering community among all groundwater professionals, and to advancing the mutual interests of all those interested in communicating the importance of the Earth's water resources. **Well done, Richard! (pun intended).**





*Providing & Protecting
Wisconsin's Groundwater*

6737 W. Washington St.
Suite #4210
Milwaukee, WI 53214



WWWA CALENDAR OF EVENTS

JANUARY 17-19, 2018

**2018 Wisconsin Ground
Water Conference**
*Kalahari Resorts &
Conventions,
Wisconsin Dells, WI*

FEBRUARY 21, 2018

Continuing Education
Eau Claire, WI

FEBRUARY 22, 2018

Continuing Education
Green Bay, WI

MARCH 21, 2018

Continuing Education
Oconomowoc, WI

MARCH 22, 2018

Continuing Education
Stevens Point, WI

MAY 8, 2018

WPWS Spring Golf Event
Trapper's Turn, Wisconsin Dells, WI

FALL - DATE TBD

Continuing Education
*Northern-Wisconsin
(North of Hwy 29)*

DECEMBER 4-7, 2018

NGWA Groundwater Week
Las Vegas, NV