# Wisconsin Ground Water Association Newsletter

## 4th Quarter 2013, Vol. 27, No. 4

## **PRESIDENT'S MESSAGE**

## Greetings WGWA Colleagues!

We hope that many of you will be able to take a short break from your busy schedules and join WGWA for our next "lunch and learn" Lecture Series, which will be at NRT's Conference Center Milwaukee shortly after publication of this issue (Friday, November 15). We will start at 11:30 with an opportunity to network with fellow WGWA colleagues. During lunch, Doug Davis, the Central Region Services Manager and Director of Remediation Design at Regenesis will present on enhanced reductive chlorination to remediate chlorinated solvents in groundwater.

On Friday, December 6, we welcome all members to attend the WGWA annual holiday dinner, which will be held at the Delafield Brew Haus. Additional details will be sent out in an upcoming email. The annual holiday dinner is a wonderful opportunity to network with fellow members and offer suggestions for events and educational seminars. If you are interested in getting more involved with WGWA in 2014, the holiday dinner is also a great time to visit with WGWA board members about open positions for 2014 (including President Elect and At Large Board Member positions).

Finally, please "save the date" for the 2014 WGWA Annual Meeting on March 7, 2014, which will again be held at the Milwaukee Marriott West in Waukesha. We are looking forward to reviewing abstracts for presentations and posters for next year's conference!

Jodie Peotter, WGWA President-Elect

## Share your Knowledge!

The Newsletter welcomes the submission of manuscripts that meet the general criteria of significance and scientific excellence.

Papers may be submitted from any discipline related to Groundwater.





WGWA Newsletter, 4th Quarter



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#### **OFFICERS AND COMMITTEES**

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#### **BOARD MEETING MINUTES**

 Board Meeting Minutes are archived on the WGWA website and can be found <u>here</u>

## **2013 BOARD MEMBERS**

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### GROUND WATER RELATED CONFERENCES, MEETINGS, EVENTS, AND COURSES

- November 15, 2013 WGWA Lecture Series: Join us at the Natural Resource Tehcnology (NRT) Conference Center in downtown Milwaukee for this Luncheon event. 11:30am Networking with lunch and presentation starting at 12noon. Event site: 234 W. Florida Street, Fifth Floor; Milwaukee Wisconsin 53204. Click here to register.
- November 15, 2013— Abstract Submission Deadline: 9th National Monitoring Conference accepting abstracts for oral and poster presentations, including work done in all wetland community types of the Midwest region, as long as the content of the presentation applies to wetlands of Wisconsin. Click here for more info.
- November 21, 2013- 2013 **Edward Wilkommen** GeoFocus Lecture - "The Ledge, the Lake, and the Limestone: How the Niagara **Escarpment Impacted the** Stone Industry and the Maritime Development of Lake Michigan" – University of Wisconsin-Milwaukee. Lecture begins at 6:00pm at the American Geographical Society Library, 3rd Floor, East Wing, UWM Golda Meir Library, 2311 E. Hartford Ave., Milwaukee, WI. Free and open to the public. A reception precedes the lecture at 5:30pm.

## **WGWA News and Updates**

## Save the date!

- The Annual Membership Meeting will be held on March 7, 2014 (more info to come)
- The WGWA Holiday Dinner is Friday, December 6 at the Delafield Brew Haus. All members are welcome. More information will be sent out in an upcoming email. If you are interested in getting more involved with WGWA in 2014, the holiday dinner is a great time to visit with WGWA board members about open positions for 2014 (including President Elect and At Large Board Member positions).

## Annual Membership Meeting Call for Abstracts Abstracts are requested by February 1, 2013

The Wisconsin Ground Water Association (WGWA) is soliciting abstracts for papers and posters to be presented at our annual WGWA meeting. Oral and poster sessions are intended to address both surface water and groundwater issues in Wisconsin. Suggested topics include:

- Water Supply Issues
- Water Quality Issues
- Watershed Management
- Reports of Ongoing Research
- Other topics of interest

#### Presentations

Speakers will present a 20 minute talk followed by 10 minutes for questions from the audience.

#### Posters

One session will be devoted to viewing posters, so you won't have to decide whether to hear the talks or see the posters!

### **ATTENTION STUDENTS!**

We are interested in having both undergraduate and graduate student presentations, and will be presenting cash rewards for the best student presentations and posters! Submit your abstract to:

#### Becky Caudill

Natural Resource Technology, Inc. WGWA Treasurer 234 W. Florida Street, Fifth Floor Milwaukee, Wisconsin 53204 414.837.3580 direct 262.719.4517 cell



### GROUND WATER RELATED CONFERENCES, MEETINGS, EVENTS, AND COURSES (CONTINUED)

 December 3-6, 2013–2013
 NGWA Groundwater Expo and Annual Meeting in Nashville, TN. For more information and registration go here



- December 6, 2013—Drilling Fundamentals for Hydrogeologists. Nashville, TN. Get acquainted with various drilling methods, well design concepts, design calculations, and troubleshooting techniques during this one-day course.
   0.7 CEUs. For more course info and registration click <u>here</u>
- December 6, 2013— Groundwater Sampling and Environmental Monitoring: Nashville, TN. Receive a working knowledge of groundwater monitoring systems, sampling, and field measurements during this one -day short course. 0.7 CEUs. Click here for registration info.
- May 4-7, 2014—2014 NGWA Groundwater Summit: Denver, Colorado. For additional info and registration go <u>here</u>

# **WGWA Lecture Series**



WGWA will host the next Lecture Series event at the Natural Resource Technology, Inc conference space on Friday, Nov 15th.

Doug Davis, the Central Region Services Manager and Director of Remediation Design at REGENESIS, will present "A Multi-Site Performance Review Assessing the 5 Most Common Questions Asked When Considering the Implementation of Enhanced Reductive Dechlorination (ERD) to Remediate Chlorinated Solvents in Groundwater". The five questions he will focus on are:

- Can ERD be used to treat high concentrations of Chlorinated Solvents?
- What about daughter product formation?
- How long does it take?
- How much does it cost?
- In-situ Chemical Oxidation (ISCO) or ERD?

Join us at the Natural Resource Tehcnology (NRT) Conference Center in downtown Milwaukee for this Luncheon event. 11:30am Networking with lunch and presentation starting at 12noon. Event site: 234 W. Florida Street, Fifth Floor; Milwaukee Wisconsin 53204 Registration: Click <u>Here</u>



#### UPCOMING WEBINARS

- Nov 20, 2013 Noon-1:30 pm – Pervious Paving Materials: Why, Where and How—Kevin Haley, Milwaukee County; Pete Wood, WDNR; Gini Knight, WI Land & Water Conservation Assoc. Visit <u>www.waterstarwisconsin.org</u> for more topic and speaker info.
- January 15, 2014 -Environmental Isotopes in Groundwater Studies: Tracing Carbon Sources and Reactions with Carbon-13 and Carbon-14. For information on this webinar go here.
- January 23, 2014— Addressing the "Tyranny of Scales" in Groundwater Modeling. Click <u>here</u> for registration and more info on this webinar.
- January 29, 2014 Annular Seals Research -- Beyond the Nebraska Grout Task Force Study. Click <u>here</u> for registration and more info on this webinar.
- February 25-26, 2014— NGWA Conference on Hydrology and Water Scarcity in the Rio Grande Basin, Albuquerque, NM. Click <u>here</u> for more information on this conference.

# **Stratigraphic Corner**

## Sheboygan's Fountain Park Well

Wells are not often in the news. Only when they become contaminated or dry up do they normally become newsworthy. A few gain notoriety in their own right by providing curative mineral water like those old wells in Waukesha, Wisconsin, or San Pellegrino, Italy.



Fountain Park well in the early 1900's (photo from G.M. Groh & Bro, Sheboygan)

The San Pellegrino mineral water has been produced since 1395 and its "miraculous" properties were documented by none other than Leonardo da Vinci. This curing power probably derived from its 3.2 mg/l dose of strontium, a naturally-occurring radioactive mineral (<u>http://en.wikipedia.org/wiki/San\_Pellegrino#History</u>). The Waukesha, Wisconsin, mineral water wells gained some notoriety at the Chicago World's Fair in 1893 and more recently as having "too much" radioactivity for a public supply well.

The City of Sheboygan has a well with a similar story! Until now, however, Sheboygan's Fountain Park well is probably little known outside of Sheboygan County. Hopefully this article and one apparently being prepared by the Wisconsin Geological and Natural History Survey will change that. On October 2<sup>nd</sup>, 2013, the newspaper "The Beacon" (www.plymouth-review.com) published an article by William Wangemann entitled "Fountain Park has gone from pine trees to mineral water". Excerpts from the Wangemann article are given below in italics.

Fountain Park in downtown Sheboygan has for many years been a center for numerous celebrations, band concerts and more recently the well attended farmers market which is held twice a week.

Fountain Park, once known as Evergreen Park, has a long and colorful history dating



## INTERESTING ARTICLES AND OTHER TIDBITS ON THE WEB

- "The next Winter Olympic Games will be held in Sochi. One of the speed skating contestants will be Luke Tweddale, the son of WGWA member John Tweddale. Read John's <u>update</u> to find when you might see Luke perform on TV."
- DNR: Drought dramatically increased groundwater pumping in 2012. Article <u>here</u>.
- Being familiar with the life -giving qualities of groundwater, it may be hard for us to go along with at least one part of the following report from the European Association for Geochemistry. They say that abundant water creates conditions unfavorable for the creation of life. Therefore, they conclude, life must have started on Mars. Full article here.

# **Stratigraphic Corner (continued)**

#### (Continued from page 5)

all the way back {to} 1817 when it was set aside for a city square by the common council. The park may have been designated as park but it took years to develop. ... By 1875 the city had a paid fire department which needed a constant water source in the downtown area for firefighting. A John Dobyn, professional welder, was hired by the city to drill a well in Fountain Park for the purpose of supplying water for the fire fighting. A contract was signed with Mr. Dobyn for \$5,000 which in those days was a considerable amount of money. As the drilling was begun the city began to construct a series of cisterns, each measuring 14 feet square and 20 feet deep with a water capacity of approximately 800 barrels. A cistern was constructed along Eight Street at every cross street heading south from the Park to Pennsylvania Avenue and then west to the river.

The cisterns were all interconnected with a pipe system so that when the first cistern filled with the well water it would then overflow into the seond cistern and so on until all the cisterns were filled with the final overflow running into the river. All the while the cisterns were being built the well drilling continued.

At 1,475 feet water was discovered and to the delight of everyone the well turned out to be an artesian well



Fountain Park fountain as remodeled today.

that was measured at 42 lbs. pressure which could raise a column of water to 96 feet above the ground. Furthermore the water was found to be a mineral water well.

The actual flow was measured at 104 feet above land surface datum, according to records of the United States Geological Survey. The well discharge was 225 gpm and the water temperature was 59.1 degrees Fahrenheit (Wisconsin Chief Geologist, p 165).

To again quote Mr. Wangemann, It didn't take the fire department long to discover that the strong mineral content of the water was rusting and corroding their firefighting equipment. After several years they had to abandon the use of the cisterns and seek other water sources. Fortunately the city had begun to construct a pumping station and began to draw water from Lake Michigan.

But all was not lost. Many people felt that the strong mineral content of the water had curative powers. Local doctors even prescribed the water for their patients for every possible malady. ...

Shortly after the well was drilled the public was allowed to take water only from 6 a.m. to 8 a.m. and from 6 p.m. to 8 p.m. each day.

In between these times the water was piped to the Sheboygan Mineral Water Company owned by John Bertschy and J.O. Thayer who paid a monthly royalty to the city of Sheboygan. Some people thought that the city of Sheboygan would become famous for its mineral water and mineral baths as in Kissengen and Kreutznach in Germany.

The bottled water from Sheboygan Mineral Water Co. for many years was sold worldwide. It was recorded that cases of the mineral water were even shipped to the White House.

So what were the hydrogeologic conditions that formed this mineral water? An analysis of the water by Dr. C. F. Chandler showed dissolved solids of 589 grains/gallon (Wisconsin State Geologist, 1877). The well was deeper than most north of Milwaukee and penetrated the Maquoketa Shale to be open to the St. Peter Sandstone.

# **Stratigraphic Corner (continued)**

#### (Continued from page 6)

The well driller's notes indicated that he believed he had hit "granite" when he stopped drilling. This may be true, based on the monadnocks of granite present in the Fond du Lac area, but is not the typical geologic sequence. The most probable geologic cross section running through this well is represented by Section D1-D2 in HA-731 (Kammerer, Trotta, et al, 1998).

Looking at the cross section below, one can see why most towns east of Fond du Lac did not drill through that 1200 feet of dolomite and shale (blue shaded layers) to reach the sandstone below. It's a much easier drilling job where the upper layers have been eroded away from Fond du Lac to the west. I believe the high dissolved solids of the Fountain Park well is related to the high-radium saline waters found at lower elevations of the sandstone aquifer up and down the west coast of Lake Michigan (Trotta, 2006).

LAT: 43 45 21 N City Well No. 53-15/23/33-
COUNTY SHEBOYEAN VILLAGE SHEBSYEAN
Location NULSE NUM Car. 23, TISN, R.23E
owner City of SHEBOYGAN
Address SHEBOYGAN MIS
From nearcet opendened well fr.
Gasing diam, to in. Casing depth ft.
Screen diam in. Screen depth to ft.
Yield test hrs. at GPM Date
Bouch from surface to water -Louis ft.
Water-low: ] when jumping ft
Driller unk Address
Drillers remarks:
Kind of rock From To
Drift 092
silunian 92-811
Ord. Maguakela 811 1051
Ord. PLATTEVILLE-GALENT/057 126%
Ord. St. PETER- 1264 1476
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Original geologic log for Fountain Park well courtesy of U.S. Geological Survey.



#### REFERENCES

Geologic cross section from Green Lake to Sheboygan (Kammerer, Trotta, et al, 1998)

Trotta, Lee, 2006, The Correlation Between Geology and Where Radium Occurs in Wisconsin: Wisconsin Water Association newsletter, Spring issue, pp. 13-14

Kammerer, P.A., Trotta, L.C., Krabbenhoft, D.P., and Lidwin, R.A., 1998, Geology, ground-water flow, and dissolved-solids concentrations in ground water along hydrogeologic sections through Wisconsin aquifers: U.S. Geological Survey Hydrologic Investigations Atlas HA 731, 4 plates.

Wisconsin, Chief Geologist, 1877, Geology of Wisconsin. Survey of 1873-1879 ..., Volume II, 898 p.

## An Update on US Olympic speed skating hopeful, Luke Tweddale



It has already been two months since our last update, and there is lots of exciting news to share as we careen toward the February 2014 Winter Olympic Games in Sochi, Russia: All That Hard Work is Paying Off. Luke is living at home and working out 1-2 times a day, 6 days a week. He is in regular communication with his trainer here in Madison (Chad, in photo above) and his primary ice coach at the Pettit Center in Milwaukee (Steve Penland). The highlight of Luke's first four time trials at the Pettit was setting a new personal best time in the 5,000m (7:23.06 on 9/21/2013), and he is also focused on improving his 500m start. If you would like to watch a video clip of Luke's 500m race at the Pettit on 10/12/2013, please click on my Dropbox link. Luke is in the inner lane (closest to the camera) in white sleeves and green boots. If you ever want to see more detail about Luke's completed races, please go to SpeedskatingResults.com, click on "Skaters", enter Tweddale in the "Family Name"

box and click "Select", then click on his full name. To see how Luke is doing relative to his U.S. peers using the same website, click on Season\_National Top 20, select Country = USA, choose a Distance, Men, and click select. The First Big Meet Will Be Webcast. The 2013-2014 competition season begins in Salt Lake City at the U.S. Single Distance Long Track Speedskating Championships. Gold medalists Shani Davis, Heather Richardson, and approximately 70 other Olympic contenders will vie for individual titles as well as spots on the U.S. Fall World Cup team. Jenina and I will be there to cheer Luke on, and you can watch for free on <u>IceNetwork.com</u>.

At the U.S. Single Distance Championships in Salt Lake City, Luke set four new personal best (PB) times and finished in the Top 20 among all U.S. men for three of the distances:

500m - 36.97 (16th place, with a 100m opener of 10.44 seconds) 1000m - 1:12.92 (19th place) 1500m - 1:53.91 (23rd place) 5000m - 7:08.03 (13th place, shaving 15 seconds off a Sept 21 PB at the Pettit)

Note - there were some faster skaters from other countries at this event, but their results are not reflected in the placements above.

Unfortunately, Luke just missed the 5000m U.S. Olympic Trials qualifying time by 1.5 seconds. But with 8 more weeks of good training and advice, he is confident that he can improve the 500m, 1000m, and 1500m times when we return to Salt Lake City for the Trials that begin on December 27.



Our local NBC15 affiliate aired a great profile of Luke you can check the video out <u>here</u>. In addition, videos of past races are still accessible for free viewing at <u>lceNet-</u><u>work.com</u>, though it may take some fast-forwarding to find Luke's specific races.