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MESSAGE FROM THE PRESIDENT



Hello!

As summer draws to a close and students are headed back to school, this is a timely opportunity to advocate for student outreach in the geosciences. For several consecutive years, PCPG has sponsored campus visits at universities across Pennsylvania and the neighboring states in order to share career information with our future geologists and geoscientists. There are many geologic disciplines for which employment opportunities are not well known, and PCPG consists of a diverse population of professionals that can share important information with students to prepare them for their job search. If you have the time, visit your alma mater or a university local to your area, encourage the students to focus their education on a discipline of geology that they enjoy, to seek out internships and summer jobs within their discipline, and network with professionals in the industry. A smoother transition for geology graduates into the working world may also enhance the pool of prospective candidates the next time you are in the market for a new hire.

Please feel free to email questions and comments to me at joreilly@gesonline.com, and check out our website for more information at www.pcp.org.

Very Truly Yours,

Jennifer L. O'Reilly, P.G.
PCPG President

WATER-WELL CONSTRUCTION STANDARDS: PAST IS PROLOGUE?

TODD GIDDINGS, PH.D., P.G., PENNSYLVANIA GROUNDWATER ASSOCIATION EDUCATION COMMITTEE CHAIRMAN

Not just one, but two pieces of proposed legislation that would require the establishment of statewide water-well construction standards are currently under consideration in the Pennsylvania Legislature: [HB 343](#) and [SB 1461](#). Déjà vu all over again...HB 343 and SB 1461 today are in the same Senate Committee where a previous bill to establish water well construction standards died an unjust death more than 12 years ago. But this time things could be different, and you can play a role in establishing those statewide standards.

12½ years ago:

Back on November 19, 2001, I was sitting in the Visitor's Gallery in the Pennsylvania House Chamber, admiring the grandeur of the mural, the stained glass, the gigantic chandeliers, and the dome. At that time, Representative Bud Schuster was the Chairman of the House Environmental Resources and Energy Committee, where House Bill 1591 was located. HB 1591 was introduced by Rep. Mary Ann Dailey, and would have set construction standards for water wells throughout Pennsylvania.

Suddenly, HB 1591 was called for a vote, and PGWA directors were in the House Chamber to watch. HB 1591 passed in a landslide vote, and we were jubilant. Days and months of work had come to fruition. Wow! After more than a decade of trying, PGWA finally had a water-well construction bill that had passed in the House of Representatives.

Fourteen days later, on December 3, 2001, HB 1591 was referred to the Senate Environmental Resources and Energy Committee, chaired at that time by Senator Mary Jo White. Members of the PGWA Legislative Committee went to Harrisburg and met with Sen. White and her staff. We explained how improperly constructed water wells could not only allow contamination of the groundwater that they produced, but could also allow contamination of the source water aquifers of Pennsylvania. Our discussion covered all of the reasons why this legislation needed her committee's support and needed to become law.

Some months went by and we learned that legislators were receiving a whole lot of form letters and form faxes that vehemently opposed this legislation. The form letters stated that water well construction standards were not needed in Pennsylvania, and they contained a completely false piece of information: *"If this proposed legislation becomes law, homeowners will be required to install water meters on their wells, and during a drought the DEP can tell a homeowner to turn their well water off."* In fact, there was no water meter requirement anywhere in the text of HB 1591. The opposition letters were also sent to sportsmen's groups, fraternal organizations, and many other civic groups throughout Pennsylvania. Due to the false water meter statement, so many constituents called and wrote their legislators to express their opposition that many of the Representatives who had co-sponsored HB 1591 withdrew their co-sponsorship. In the face of the loud outcry of opposition, HB 1591 was never acted upon by the Senate Environmental Resources and Energy Committee, and thereby died an unjust death.

5½ years ago:

The PGWA and PCPG supported and participated in the development of the new State Water Plan by having members on each of the six Regional Committees. We achieved, with assistance from other organizations, an important goal when on December 18, 2008, the Statewide Water Resources Committee made the following statement its number one legislative priority to implement in the new State Water Plan: *"Enact legislation to require proficiency-based licensing and certification of water well drillers, and to establish statewide private water well construction standards."*

3 years ago:

On July 7, 2011, the Governor's Marcellus Shale Advisory Commission issued its final report. Section 9 of this report contains the Commission's recommendations, and recommendation 9.2.17 states: *"The Commonwealth should enact legislation establishing construction standards for new private water wells to ensure the delivery of safe drinking water to its residents. According to the Penn State Cooperative Extension, more than 1 million water wells serve over 3.5 million residents in Pennsylvania (second only to Michigan), with approximately 20,000 new water wells drilled each year. According to a study financed by the Center for*

The form letters...
contained a
completely false
piece of information

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PCPG OUTREACH TO COLLEGE AND UNIVERSITY GEOLOGY DEPARTMENTS

Bill Gough, P.G.

As part of PCPG's continuing outreach efforts to geology departments in Pennsylvania and adjoining states, PCPG Board of Directors members are currently planning to visit geology departments at West Virginia University, Edinboro University and Clarion University. The visits are planned for the fall semester and will be scheduled in coordination with faculty members at each university. The purpose of the visits is to make faculty members and geology students aware of PCPG and its mission and to foster better communication between professional geologists and faculty and students at academic institutions. One goal of the presentation is to raise awareness of the wide range of job opportunities for geologists and discuss the pathways available for careers in the geosciences. Professors and students will also receive information about options for membership in PCPG. In addition, [a new brochure](#) recently developed by PCPG will be presented. The brochure describes the requirements to become a Licensed Professional Geologist (PG) in Pennsylvania and also the process for obtaining a Geologist-in-Training (GIT) Certificate. Of particular importance to faculty and students is the listing of appropriate coursework required for admittance to the Fundamentals of Geology Exam (FG) and a PG Examination administered by the National Association of State Boards of Geology (ASBOG).

INDUSTRY AND ACADEMIA WORK TOGETHER TO PREPARE STUDENTS FOR CAREERS IN GEOLOGY

Martin F. Helmke, Ph.D., PG, West Chester University of Pennsylvania

The Department of Geoscience at Indiana University of Pennsylvania (IUP) reached out to the professional geologist community this summer to identify ways geoscience programs can better prepare geology students to meet current and future workforce needs. PCPG, Pittsburgh Association of Petroleum Geologists, and Pittsburgh Geological Society members Frank Benacquista, Dan Billman, Barb Dunst, Ray Follador, Mark Ios, Bryce McKee, and Jennifer O'Reilly responded by participating in three teleconference focus sessions hosted by IUP. The theme sessions focused on three geologic market sectors, including 1) oil and gas, 2) environmental, and 3) mining, engineering, and other. The sessions were facilitated by IUP professor Dr. Karen Rose Cercone and Department Chair Dr. Steve Hovan.

Drs. Cercone and Hovan asked participants to: 1) discuss desired professional skills and content knowledge for current and future graduates; 2) identify training or experience that would be beneficial for undergraduates; and 3) suggest activities academic institutions could add that would prepare students for the future workforce.

One of the most revealing outcomes of this exercise was the development of a list of core skills important for all geology graduates, regardless of career sector or subdiscipline. All three focus groups made the following recommendations:

- All students should have a solid foundation in classic geology, including courses in physical geology, historical geology, mineralogy, petrology, sedimentology/stratigraphy, structural geology, field geology, and other courses required for the ASBOG examinations and Pennsylvania licensure.
- Graduates should have a well-rounded knowledge of mathematics (including statistics and calculus), chemistry, and physics.
- Students need excellent technical writing and public speaking skills.
- Students should participate in an internship to demonstrate their ability to work in industry.
- Knowledge of business, project management, budgeting, and economics are critical skills for working geologists.
- An undergraduate degree is suitable for employment at most firms, but a master's degree is preferred.
- Strong field skills are a must; field camp is greatly encouraged.
- Computer mapping skills using GIS and CAD will continue to be important for the working geologist.
- Completing a research project, such as a senior thesis, graduate project, or research that leads to publication or formal presentation demonstrates excellent project management skills and content knowledge.

All participants expressed a willingness to support academic institutions, and recommended that geology programs should invite industry leaders to teach short courses and seminars.

One of the most revealing outcomes of this exercise was the development of a list of core skills important for all geology graduates

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CAREERS *Continued from Page 3*

Geologists from the oil and gas industry emphasized that students interested in careers as petroleum geologists should ensure they take courses in sedimentology, stratigraphy, paleontology, geophysics, and structural geology. They also recommended that students receive extra training in geophysical log interpretation, document experience using log analysis and petroleum reservoir software, and take short courses in mud logging and geosteering techniques. Students entering the petroleum workforce should be familiar with data sets commonly used for oil and gas exploration.

The environmental focus group placed special emphasis on the importance for students to possess a core background in geology. Environmental science degrees generally fail to meet the requirements for PG licensure in the Commonwealth. Additional courses in hydrogeology, soil classification, geochemistry, engineering geology, biology, and risk assessment are also recommended. Students should be capable of collecting field samples, conducting slug and pumping tests, and be exposed to field instrumentation such as water chemistry meters, 4-gas meters, water level tapes, and survey equipment. Students should also be familiar with contaminant fate and transport modeling and receive 40-hour HAZWOPER certification before they apply for employment in the environmental field.

Students seeking careers in the mining and engineering geology fields should consider taking courses in economic geology, engineering geology, and hydrogeology in addition to their core geology curriculum. Three-dimensional mapping skills are a must, including experience using CAD and GIS software. Field experience operating near a drill rig is a plus for students interested in this sector.

We want to thank the faculty at IUP for hosting this discussion and the professional geologists for their valuable contribution to this project. We encourage faculty and students to join PCPG to network and continue this important dialogue between industry and academia. If you would like to provide feedback or propose additional skills and content knowledge for geology curricula, please send e-mail to PCPG at info@PCPG.org or Dr. Helmke at mhelmke@wcupa.edu.



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When Creativity & Experience Count



COLLEGES & UNIVERSITIES SPOTLIGHT: INDIANA UNIVERSITY OF PENNSYLVANIA

Dr. Steve Hovan and Dr. Karen Rose Cercone, IUP Geoscience program

Since its founding in 1968, the Geoscience Department at Indiana University of Pennsylvania (IUP) has offered a research-rich and field-oriented suite of academic programs for undergraduate students interested in the earth sciences. All major classes and laboratories are taught by faculty members, and most faculty research projects are carried out jointly with student colleagues. Annual field workshop classes take our students to locations ranging from the recent volcanic flows of Oregon to the rocky shores of Newfoundland and the coral reefs of the Bahamas. Our students all do capstone research projects in order to graduate, and present their results both on-campus and at regional and national conferences each year.

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IUP *Continued from Page 4*

Three different geology tracks offer a solid core plus a range of workforce training

The three geology tracks at IUP all require the same introductory sequence of rigorous fundamental classes: Foundations of Geology, Quantitative Methods in Geoscience, Surficial Processes, Historical Geology and Mineralogy. After taking these courses, students can choose to take a traditional Geology Track (built around courses such as Structural Geology, Igneous and Metamorphic Petrology, and Plate Tectonics). This track is designed to prepare students for graduate education and research, or for immediate employment in fields that require a solid background in traditional skills and knowledge.

Students can also choose an Environmental Track which includes workforce training in courses such as Geochemistry, Hydrogeology, and Environmental Geology or an Energy Resources track which emphasizes courses such as Sedimentary Petrology, Geophysics, and Stratigraphy. It is worth pointing out that the two workforce-training tracks are not 'lighter' versions of our traditional major – all three tracks share the same chemistry, physics and calculus courses and all of them require the same number of science credits. Students in these tracks can participate in many local projects sponsored by IUP's Sustainable Energy center, which helps to prepare them for immediate employment in the energy industry or the environmental remediation workforce.

In addition to the geology tracks at IUP, the department also offers a BS in Earth and Space Science Education. This program prepares students to be high-school educators and includes a diverse range of earth science courses, such as Oceanography, Meteorology and Astronomy. IUP currently has 40 geology majors, 50 energy resource majors, 19 environmental majors and 12 education degree majors.

IUP Geoscience faculty carry out research projects across the US and around the world

The department currently has eight full-time tenured or tenure-track faculty members, plus three part-time instructors.

- Dr. Steve Hovan, Ph.D. University of Michigan, chairs the department. Dr. Hovan teaches oceanography and meteorology courses, but is also deeply involved in the work of the Energy and the Environment research cluster. His climate-focused research often takes him and students aboard scientific vessels in the equatorial Pacific and Atlantic.
- Dr. Nick Deardorff, Ph.D. University of Oregon, joined the department just last year and has already taken several IUP students to the field to study recent lava flows. Dr. Deardorff teaches courses in mineralogy, igneous and metamorphic petrology, geochemistry and volcanology.
- Dr. Katie Farnsworth, Ph.D. Virginia Marine Institute, College of William and Mary, studies the interactions of rivers and coastlines around the world and has co-authored one of the most authoritative resource books on the subject of global river flow. Dr. Farnsworth teaches courses in surficial processes, geomorphology and coastal geology.
- Dr. John Taylor, Ph.D. University of Missouri, is one of the world's leading experts in trilobite paleontology and early Paleozoic stratigraphy. Dr. Taylor hunts fossils in locations as far away as Alaska and Newfoundland, and as close as the Valley and Ridge of Pennsylvania. He teaches courses in stratigraphy and dinosaurs as well as traditional paleontology.
- Dr. Jon Lewis, Ph.D. University of Connecticut, specializes in the dynamics of plate boundaries, looking at patterns of deformation and earthquake generation in Taiwan as well as other subduction zones. He teaches courses in structural geology, field geology and environmental geology.



Faculty member, Nick Deardorff, reviews LIDAR and photographic surveys along the flanks of the Cascades before students head into the field to measure flow patterns and collect samples of recent lava flows in Oregon during this summer's regional field course.

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IUP *Continued from Page 5*

- Dr. Greg Mount, Ph.D. Florida Atlantic University, is the newest member of the department. He specializes in environmental geophysics and hydrogeology, and has studied the dynamics of karst aquifers in the Florida Everglades. Dr. Mount teaches courses in hydrogeology and environmental geophysics.
- Dr. Ken Coles, Ph.D. Columbia University, is the department's educational specialist. He teaches courses in astronomy, planetary geology, space exploration and geophysics and is currently helping to put together a new atlas of Martian geology.
- Dr. Karen Rose Cercone, Ph.D. University of Michigan, is the department's assessment expert and teaches many of the non-major education classes. She also advises students doing research on the thermal maturity of sedimentary basins.



Undergraduate Geoscience students at IUP develop research skills in the Pacific Ocean aboard the research vessel R/V Revelle. Core samples will be analyzed back on campus by Dr. Hovan and his students to help decipher global climate patterns of the geological past.

Undergraduate Research at IUP

Every major in the geology tracks is required to carry out and present the results of a capstone research project in order to graduate from the Geoscience Department at IUP. Students can develop their own projects (for example, looking at environmental hazards and risk assessment for properties in their home towns), but many choose to join the existing research program of an IUP geoscience faculty member. Over the past 10 years, the IUP geoscience faculty has received more than \$750k in research grants to support their work. In addition, generous IUP geoscience alumni have created a fund specifically to support student research, which is used to help underwrite the costs of summer field workshops to distant locations. Students all present the results of their research at IUP campus-wide poster sessions and at a special day-long symposium held each spring by the department. Examples of capstone student research projects from recent years include topics ranging from modeling thermal maturity and

geothermal gradients in the Marcellus shale to assessing the dissolved material flux draining into Yellow Creek reservoir. Some students have focused their studies on biostratigraphic correlations and interpretations from samples collected along the ancient Iapetus margin while others delve into large 3-D seismic datasets to interpret mass transport deposits in the North Atlantic. In every case, students gain tremendously from the process of collecting, analyzing, interpreting, synthesizing the presenting genuine geological data.

Student Outcomes: Employment and Graduate School

After finishing their undergraduate work at IUP, about half of our geology majors go on to earn their Masters or PhD degrees at institutions such as the University of Oregon, Colorado State University, University of New Mexico, University of Connecticut, Carnegie-Mellon University, University of Virginia, Virginia Polytechnic University and Texas A&M University. The other students generally find jobs within a year of finishing their degree, either in energy-related or environmental companies or working for a state or federal regulatory agency. IUP has an active alumni network, with yearly newsletters and networking events at national meetings to allow our students to benefit from the experience and knowledge of our successful alumni.

For more information about the IUP Geoscience Department, please visit our website at <http://www.iup.edu/geoscience/default.aspx>.

DAYTRIPS TO OUTSTANDING GEOLOGIC SETTINGS IN PENNSYLVANIA

The Glen Onoko Falls Trail, Lehigh Gorge State Park, Jim Thorpe, PA

John Torrence, P.G.

Pennsylvania has many outstanding geologic settings that for me have become destinations for day trips. My excuse to get out and do something fun, teach my family and friends about geology and get some exercise all at the same time. Many of these destinations are off the beaten path, tucked away within state parks which, in addition to being interesting, provide helpful comforts such as parking areas, trail maps and facilities. One such destination is Lehigh Gorge State Park, located in the Pocono region of Pennsylvania.

A rails-to-trails path runs almost the entire length of Lehigh Gorge State Park offering easy hiking and biking with many exposed sedimentary outcrops along the Lehigh River. It is common to see dipping beds, cross-bedding, graded bedding from siltstone to conglomerate and other characteristics of sedimentary rocks along this roughly 30 mile-long trail. This article focuses on one section of the trail located between Jim Thorpe and Glen Onoko, the southernmost access point of the Lehigh Gorge State Park.

Begin the daytrip by parking in the Jim Thorpe municipal parking lot located on Route 209 behind the railroad station in the center of town, adjacent to the Lehigh River. There is a fee for parking. The Jim Thorpe Trailhead, also known as the D&L Trailhead at Carbon County, begins at the upstream side of the municipal parking lot, under the Route 903 bridge. You will walk past historic railroad cars along the way to the trail head. The distance up to Glen Onoko is 2.1 miles but the walk is easy because the rails-to-trails path is flat, well maintained and climbs at an approximate grade of 1%. Keep in mind that the walk back to Jim Thorpe is all downhill. The Lehigh Valley Gorge is steep-walled and there are numerous outcrops of the Mississippian Pocono



Joints and bedding planes observed in an outcrop of sandstone transitioning to conglomerate

Formation along the path. The outcrops within the gorge are siltstone, sandstone and conglomerate that dip approximately 15 degrees to the southeast, according to my Brunton compass. While walking along the rails-to-trails path you can find geologic features such as cross bedding, slickensides and joints within the outcrops that you'll pass along the way. Another interesting feature I observed along the trail was an outcrop with both sandstone and small to medium quartz pebbled conglomerate in the same bedding plane. To me this backs up the belief that the Pocono Formation in this area of Pennsylvania was created in part by streams that were moving fairly swiftly. When you arrive at the Glen Onoko area there are trail maps, a beach-like area along the Lehigh River, facilities and picnic tables.

There are a few points of interest on this daytrip that are worth pointing out. The first is the bridge that crosses the Lehigh River about a mile or so from Jim Thorpe. It offers spectacular views of the river both up and down stream. The remains of a

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UPCOMING EVENTS

September 30, 2014

Using Conceptual Site Models to Communicate Project

Understanding Harrisburg, PA

October 9, 2014

Act 2 Toolkit: An Overview (and dive into) the Pennsylvania Land Recycling Program

Malvern, PA

October 16 – 18, 2014

79th Annual Field Conference of Pennsylvania Geologists
Carlisle, PA

Don't forget to check the "Courses & Events" link on PCPG's [home page](#) frequently for up to date information on upcoming educational opportunities.

DAYTRIPS *Continued from Page 7*

lock, part of the Delaware and Lehigh Canal, can be accessed at the bridge by taking a side trail that is identified with a sign. At Glen Onoko an old railroad tunnel is visible in the side of a steep outcrop adjacent to the Lehigh River. The bridge that was once connected to the tunnel is no longer there, but the trestles still exist. You can enter the tunnel about 200 feet away on the other side of the outcrop, adjacent to a parking area. It is dark inside and you walk down an earthen slope at first, so bring a flashlight. The exposed rock inside the tunnel has been discolored green, yellow and pale orange, perhaps due to the buildup of locomotive smoke many years ago. A barricade is present at the mouth of the tunnel above the river to prevent anyone from getting close to the edge and accidentally falling. The last point of interest is the Glen Onoko trail. Glen Onoko is a steep and rocky ravine with a fast moving tributary named Glen Onoko Run flowing through it towards the confluence with the Lehigh River. Alongside this tributary is the Glen Onoko Falls Trail. The trail travels up the steep ravine passing numerous waterfalls along the way that reach heights of up to 50-60 feet and offers spectacular views of the gorge below. However, this trail is steep and dangerous if you are not careful and alert. A large brown sign with white lettering is located at the Glen Onoko trailhead warning hikers of the dangers. If you are not a very experienced hiker I recommend that you avoid the Glen Onoko trail and spend a little extra time checking out some sedimentary rock formations instead.

As mentioned earlier in this article, the walk back to Jim Thorpe is all downhill from Glen Onoko at a gentle grade of approximately 1%. It's an easy walk. When you arrive back in town you may want to stay a while to enjoy food and drink from one of many of the local establishments in town. This will give you a chance to relax and talk about the best part of your day trip, which is the geology of course, with your family and friends.



Slickensides



The old railroad tunnel at Glen Onoko

Park Entrance Address:

D & L Trail
Lehigh Gorge
State Park Trail
Jim Thorpe, PA 18229

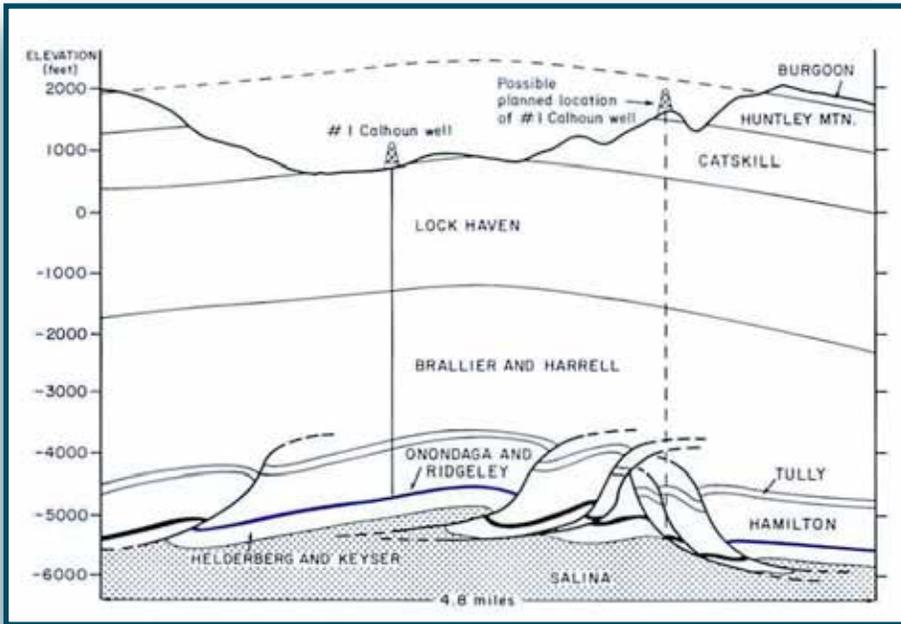
GIS DD:

Lat. 40.8835
Long. -75.75914

LEIDY GAS FIELD DISCOVERY – EXTRAORDINARY LUCK OR ASTONISHING VISION?

Kelly Lee Kinkaid, P.G.

I enjoy reading through old editions of the Pennsylvania Bureau of Topographic and Geologic Survey's (BTGS's) *Pennsylvania Geology* publication, looking for geologic stories that also have a human interest component, and recently came across a humdinger. It's a little article written by John A. Harper entitled, "The Importance of Serendipity: Dorcie Calhoun and the Leidy Gas Field," which appeared in *Pennsylvania Geology* Volume 21 No. 1, February 1990. I've provided a short abstract of the article below, and a link to the full article is provided at the end of this abstract.



Ever since he was a small boy, Dorcie Calhoun knew there was gas on his family's farm in Leidy Township, Clinton County...he had seen it bubbling up where he would fish in the Kettle Creek. Although he was certain of this fact, few others would take him seriously. Then, with the 1934 publication of the Pennsylvania Geological Survey's *Geologic Structure in the Plateaus Region of Northern Pennsylvania and its Relation to the Occurrence of Gas in the Oriskany Sand*, and the knowledge that New York State Natural Gas had acquired leases for approximately 11,000 acres of land on the Wellsboro anticline near Leidy during the 1940s, Dorcie was finally able to convince several locals to invest in his gas venture. In 1949 the Leidy Prospecting Company was formed. Dorcie purchased an old drilling rig that had been used in the shallow oil fields of western Pennsylvania and brought it back to Leidy.

It was raining on the day that the drilling rig began to make its way up the mountain to the location that had been selected for the first well, and the rig became stuck in the mud near the beginning of its climb. Instead of waiting for the weather to clear, Dorcie decided to drill where the rig was stuck. The old rig was in bad shape and drilling had to stop frequently for repairs. Then suddenly on January 8, 1950, at a total depth of 5,659 feet, in the Ridgeley Sandstone, "...the drillers heard a rumble from deep within the ground and began hauling tools out as fast as they could." When the drilling cable began to fly out of the well faster than it could be reeled in, the experienced drillers, "scattered and took cover....The cable had broken...but the gas coming up the well bore was under enough pressure to...fling the cable out of the well, where it nearly demolished the rig." Gas was estimated to surge from the well at an astonishing 15 million cubic feet per day. This discovery "ushered in a new era of drilling for oil and gas in the Appalachian basin."

Serendipity played a large role in this gas discovery. If it had not rained on the day that the drill rig began its trek up the mountain, the well would have been installed at its planned location at the top of the mountain, and it likely would have been a dry hole. A cross-section showing the Calhoun Well #1, the likely original planned location for this well, and the underlying geologic structure is provided in Figure 1. Although a simple asymmetrical anticline at the surface, the underlying geology is believed to be complicated by a series of thrust faults at depth, and the gas reservoirs are believed to be restricted to fault-bounded flexures on the flanks of the anticline.

You can read the full article at: http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_20027653.pdf

Thanks to BTGS, State Geologist George Love, and retired geologist John Harper (original author) for permission to use their article in this publication.

MEMBER SPOTLIGHT: BRICKHOUSE ENVIRONMENTAL

David Farrington, P.G.

Brickhouse Environmental is a full service environmental consulting firm providing a broad range of consulting and engineering services to clients in the mid-Atlantic region. With an experienced team of Professional Geologists, Engineers, Soil Scientists, Water Resource Specialists, and associated technical experts, our mission is to guide our clients to success with creative, cost-effective solutions.

While we have been doing business as Brickhouse Environmental since 2006, our roots go back to Walt Satterthwaite's start-up environmental consulting firm Walter B. Satterthwaite Associates, which was founded in 1977. Many of the PCPG old-timers will remember Walt and his long-term participation in this organization as a founding member.

The company's core services initially revolved around residential developments and landfills. Satterthwaite Associates quickly established a niche expertise in the solid waste market, with over a dozen landfill clients in the mid-1980s. In the late 1980s, the company diversified and entered the industrial market. Since then, the company has built a strong industrial client base, assisting with wastewater treatment, air permitting, systems design, regulatory compliance, and remediation services. With the resurgence of the residential development market in the late 1980s, Satterthwaite Associates had established a respected expertise in a broad base of service areas, including industrial redevelopment and remediation, water resources management, solid waste management, site development engineering, and hydrogeologic studies.

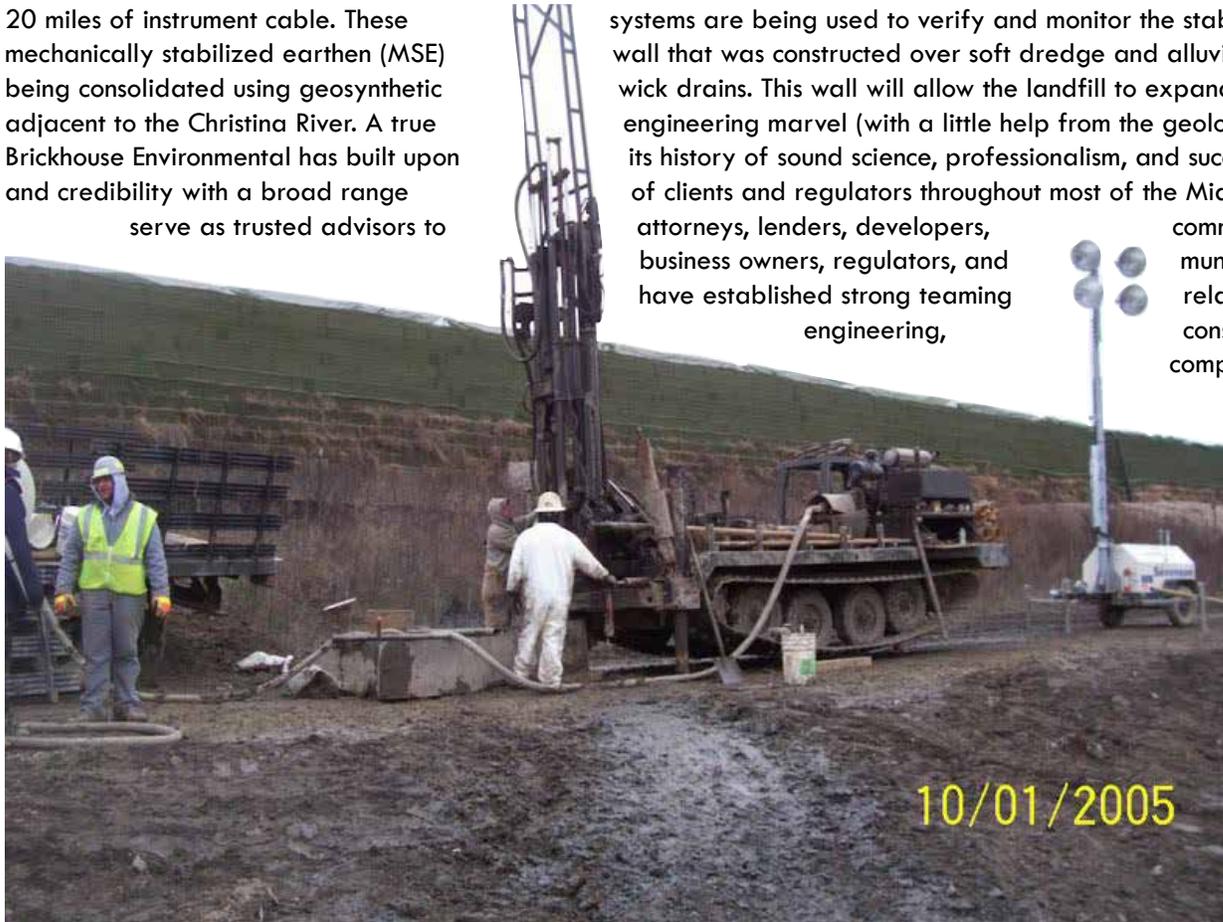
In November 2006, Walter B. Satterthwaite Associates moved its offices into its own renovated Brownfield site, and announced a new name...Brickhouse Environmental. The change of company name and office building were symbolic of a renewed energy, and the commitment to build an even stronger company upon the solid foundation established over the previous 29 years.

One of our recent successes includes the installation of geotechnical and environmental monitoring systems for the Cherry Island Landfill Expansion. To support this vertical expansion, Brickhouse installed over a hundred settlement sensors, inclinometers, vibrating wire piezometers, groundwater wells, 20 miles of instrument cable. These mechanically stabilized earthen (MSE) being consolidated using geosynthetic adjacent to the Christina River. A true Brickhouse Environmental has built upon and credibility with a broad range serve as trusted advisors to

tracer test wells and gas probes throughout the site, in addition to almost systems are being used to verify and monitor the stability of a 60-foot high wall that was constructed over soft dredge and alluvium soils, which are wick drains. This wall will allow the landfill to expand vertically, immediately engineering marvel (with a little help from the geologists). its history of sound science, professionalism, and success, earning it respect of clients and regulators throughout most of the Mid-Atlantic States. We attorneys, lenders, developers, business owners, regulators, and have established strong teaming engineering,

commercial and industrial municipal authorities. And we relationships with numerous consulting, and contracting companies.

Brickhouse Environmental is proud to have maintained its primary office in West Chester, Pennsylvania for almost 37 years, and its principals and employees are active volunteers in non-profit and professional organizations in Chester County and the surrounding region.



Drilling adjacent to landfill MSE wall



STUDENT CORNER

Martin F. Helmke, Ph.D., P.G., West Chester University of Pennsylvania

Welcome to the *Student Corner*, a forum for information exchange between students and geologic professionals across the Commonwealth.

Field geology is a critical component of a geology student's training. Field-based courses develop many skills and traits of the successful geologist, including:

- Describing, measuring, interpreting, and recording geologic data,
- Mapping,
- Developing stratigraphic sections from outcrop,
- Constructing geologic cross-sections from field observations,
- Creating a conceptual model of geologic systems,
- Enhancing spatial awareness and 3-dimensional visualization,
- Application of prior course knowledge in the field,
- Use of field-based instrumentation (Brunton compass, GPS, Jacob's staff, etc.),
- Working effectively in challenging environments,
- Navigation, logistics, and field safety, and
- Interpersonal and professional communication skills.

Graduates seeking the Geologist in Training (GIT) certification or Professional Geologist (PG) license in Pennsylvania must show a field geology course on their transcripts. Traditionally, this meant completing a 6- to 8-week field geology "camp", held exclusively in the field for the duration of the course. Field camp continues to serve as the gold standard of field experience; however, any rigorous field geology course will meet the Pennsylvania licensing requirement. Many institutions, employers, and graduate schools require field camp, yet fewer than 15 percent of geology programs operate field camps due to financial, logistical, and curricular constraints. Some institutions require a field camp experience through another school; others offer local or traveling field geology courses, or field courses that specialize in a geologic subdiscipline. Regardless of your program's requirements, make sure you have a field geology course on your transcript. You are also strongly encouraged to enroll in geology field camp, even after you have completed your undergraduate curriculum.

Supplemental field experience is always of benefit. Consider applying for field-based internships and research opportunities. Take full advantage of all field trips offered by your department. Attend field short courses sponsored by professional organizations such as GSA, the Field Conference of Pennsylvania Geologists, or PCPG (this is also a great way to network!). Regardless of your particular career goals, field experience is an outstanding addition to your professional resume.

Please submit suggestions or questions regarding students and geology to Dr. Helmke at mhelmke@wcupa.edu.



COLLEGE STUDENTS: BEGIN THE PROCESS FOR OBTAINING YOUR P.G. NOW!

By Louis F. Vittorio, Jr., P.G., PCPG Executive Board Member

A summary of the changes to the PG licensing law enacted on January 16, 2014, were presented in PCPG's 1st Quarter 2014 newsletter. Within the adopted changes were provisions for current students and other qualified candidates to obtain Geologist in Training (GIT) Certification. The regulations enable, and PCPG encourages, geology students to begin the GIT certification process while still in school by applying and sitting for the Fundamentals of Geology (FG) Examination. College juniors, seniors, graduate students and geology program graduates can qualify for GIT certification. There are several reasons why PCPG encourages starting the process as soon as possible:

- 1) A GIT certification will look great on entry level job-market resumes as is it shows direction, commitment and that you are tracking to become a Professional Geologist;

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- 2) Due to reciprocity with ASBOG, starting the PG licensing process now will be useful as graduates start their careers in any of the ASBOG states; and
- 3) Completing one-half of the PG examination process now, while in test-taking mode with fresh geological information at hand, simply makes more sense and will be much easier than doing so in 5 years.

There are three websites that contain the information needed to start the GIT certification process and register for the FG exam:

- 1) The National Association of State Boards of Geology (ASBOG) (<http://www.asbog.org/>) – At the ASBOG website you can obtain significant information about the FG/PG process, including a blueprint of test subject areas, example questions, the geologist code of ethics and a list of the participating States. However, to actually apply for the FG exam you must obtain information from the sources detailed in bullet Items #2 and (mostly) #3, below.
- 2) The Pennsylvania State Licensing Board for Professional Engineers, Land Surveyors and Geologists: http://www.dos.state.pa.us/portal/server.pt/community/state_registration_board_for_professional_engineers%2C_land_surveyors_and_geologists/12510
- 3) Professional Credential Services (PCS) - The PA State Licensing Board contracts PCS to administer the FG application and exam process. The PCS website is the place to go to obtain up-to-date forms, dates, deadlines, and fee information: <https://www.pcshq.com/> Navigate to the FG information on the PCS Website as follows:
 - From the home page click “Applicants and Candidates”
 - Click on “Professional Trades” (Not the engineering button)
 - Click on “PA” then “Geologist”

To take the FG test on **March 6, 2015**, the application **deadline is November 15, 2014**. Begin the process of becoming a Professional Geologist today!

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WATER-WELL *Continued from Page 2*

Rural Pennsylvania, approximately 41% of private water wells in Pennsylvania failed to meet at least one of the health-based drinking water standards. Poorly or improperly constructed water wells can result in pathways for bacteria and other contaminants, such as naturally occurring shallow methane, to migrate into the potable water supply. Pennsylvania remains one of only a handful of states without statewide private water well construction standards.”

1½ years ago:

On April 17, 2013, the House Environmental Resources and Energy Committee held a hearing on HB 343 that would set construction standards for water wells in Pennsylvania. The PSU College of Agricultural Sciences Extension Program, PCPG, PGWA and the DEP presented testimony supporting the bill. No further action was taken on HB 343, and on September 23, 2013 it was tabled.

3 months ago:

On June 27, 2014 HB 343 was removed from the table, reviewed by the Appropriations Committee, and then was passed by the House of Representatives with a vote of 164 to 38. The next day HB 343 was sent to the Senate Environmental Resources and Energy Committee, where it is today.

At the end of July:

On July 31, 2014, Senator Patricia Vance introduced Senate Bill (SB) 1461 which was referred to the Senate Environmental Resources and Energy Committee. SB 1461 is almost identical in wording to HB 343.

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WATER-WELL *Continued from Page 13*

Today:

HB 343 and SB 1461 today are in the same Senate Committee where HB 1591 died an unjust death more than 12 years ago. Someone, somewhere will be opposed to HB 343 and SB 1461, and will make their opposition known to the Senate Environmental Resources and Energy Committee. Now is the time for you to express your support of HB 343 and SB 1461 to your Senator.

To help you explain why Pennsylvania needs water well construction standards, I have prepared some talking points you could use when you talk to your Senator.

Why does Pennsylvania need standards for the proper construction of water wells?

1. 4½ million people (37%) of Pennsylvania's population use groundwater as their potable water source. The groundwater resources of Pennsylvania need to be protected against contamination entering through improperly constructed water wells.
2. It is estimated that more than 15,000 new water wells and geothermal boreholes are constructed in Pennsylvania each year. The absence of any water well construction standards allows wells and boreholes to be improperly constructed and to threaten the quality of Pennsylvania's groundwater.
3. Pennsylvania has the second highest number of residential wells of any state in the nation, but is one of only two states with no water well construction standards.
4. Improperly constructed wells have been identified as potential threats to groundwater quality within Source Water Protection Areas of public water-supply wells. There are documented cases of improperly constructed wells providing a pathway for surface and subsurface contamination to impact Pennsylvania's groundwater resources.
5. Properly constructed water wells protect water quality and thereby help protect the health of the users.
6. Properly constructed water wells protect the quality of the groundwater in Pennsylvania's source water aquifers. Contamination entering the groundwater through improperly constructed water wells can move within its source water aquifer and contaminate neighboring wells.

If I have persuaded you to get personally involved, please contact your senator and explain why this proposed legislation is important to Pennsylvanians and should receive your Senator's support.

[An earlier version of this article was published in the 3rd Quarter 2014 edition of PGWA's Pennsylvania Driller magazine].

Board of Director Elections

PCPG members, our Board of Director Elections are upon us...

If you have someone you'd like to nominate for a 3-year term on the Board of Directors, please send your nomination to Jennifer O'Reilly at joreilly@gesonline.com.

An e-mail from PCPG with a link to your ballot will arrive in early December and elections will close on December 31st.

The election will be held entirely online. PCPG members in good standing are eligible to vote, so be sure to cast your vote and have your say in the leadership of PCPG.

If you do not receive an election email, please contact Jim LaRegina at jlaregina@hrg-inc.com.

Bios for each candidate are provided when you link to the voting website.

DEADLINE FOR OUR NEXT NEWSLETTER IS NOVEMBER 17, 2014

For more information, contact our PCPG Newsletter Editor and Communications Committee Chairperson - Valerie Holliday, P.G., by **Email** or telephone at 610-517-7898.

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Through PA GEOPAC, the official political action committee (PAC) of PCPG, you have an effective way to lend financial support to candidates and legislators who support the legislative goals of our organization, or who are willing to lend an ear to our members. More than 200 trade and professional organizations in the state have formed PACs including doctors, dentists, lawyers, bankers, and builders.

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