PCPG Newsletter

Communicating Key Information and Concerns to Geologists and Environmental Professionals

Issue 4 / 2022

Inside this issue...

Message from the President

As my term as President quickly comes to a close, I'd like to thank my fellow Board Members for their efforts this year and to the membership for being a part of the organization. It's certainly been a year full of ups and downs. I was happy to have our annual meeting in person this year so we could see each other's faces and have those personal interactions that are so important. But, just a few short months later, we at PCPG were also devastated at the loss of a dear friend and colleague, Barb Dunst, P.G.

While reflecting on 2022 and in preparing for a new year at PCPG, I was thinking back to the annual meeting and the discussion on the importance of communication within the geologic community. Throughout my years in consulting and private industry, one thing has always been at the top of the list of important skills to have…good communication. What does that really mean? I recall a lesson from one of my teachers in junior high school, that good communication skills start with listening. Actively listening. I know I took that to heart and have always felt that I was a good listener. Sounds easy, right? But how often do you find yourself listening to someone, but at the same time also thinking about what else you need to be doing? Wondering "How long is this meeting going take?", "Can I get home in time to make dinner?", "I have so much work to do."

PCPG has focused the strategic planning over the last few years around what we've heard our membership say are their main concerns and needs. And while we've taken the main ideas and run with them, we want to make sure that we are still listening. Actively listening. 2023 will bring a continued focus on providing quality education opportunities for seasoned P.G.'s along with new focus in providing the next generation of geoscientists with skills needed to be successful in their careers.

We will continue to listen to our stakeholders and PCPG welcomes input at any time. Ideas and comments can be shared with any one of the board members (emails available on website), by filling out questionnaires after meetings/presentations, or attending an in-person meeting or networking event such as the Continental Drifters, which we hope to revive in 2023 with more in-person events.

Continued on Page 4

UPCOMING PCPG EVENTS

January 12, 2023 - Save the Date

Ethics in the Geosciences

Webinar: 1:00 - 2:00 PM

February 13, 2023 - Save the date!

UAVs for Mapping Geologic and Anthropogenic Targets

Webinar: 1:00 - 2:00 PM

February 28, 2023 - Save the Date

PCPG Annual Meeting, Education Program and Networking

Harrisburg, PA

FOR A COMPLETE LIST OF UPCOMING EVENTS OR TO REGISTER ONLINE, CHECK OUR HOME PAGE EVENT CALENDAR, OR VISIT PCPG'S COURSES AND EVENTS WEB PAGE.

Celebrating the Life of Barb Dunst

Tiffani Doerr, P.G. (Evergreen Resources Management Operations), PCPG President

All of us at PCPG were shocked and saddened to hear of Barb Dunst's sudden passing in August 2022. At the time, Barb was serving on PCPG's Executive Committee as Past President after leading the organization for the previous two terms as President. Her tenure with PCPG started many years prior, including her service as a Director on the Board for six years (2013-2018), Membership Services Committee Chair for five years (2014-2018), and as an active member for 11 years. Barb's length of service and multitude of roles within PCPG are a testament to her dedication to the organization and its members, as well as her passion for geology.

Barb earned a Bachelor of Science degree in Geology from Indiana University of PA and spent the majority of her career in environmental consulting to the coal industry in Pennsylvania. Barb also worked for the PA Department of Environmental Protection and for private industry in a Marcellus Shale gas production group in charge of coordinating efforts with coal companies in Pennsylvania, West Virginia, and Ohio.

Barb lived in Washington, PA with her husband, Brian, who is also a geologist, and she was a proud mother of four children, Michelle, Matthew (and his wife Amanda), Kathleen and Kim. Barb was proud of her involvement with many volunteer groups associated with her children's school and sports activities. She was very active on the steering committee for the Washington County Children's Groundwater festival for over 10 years which introduced thousands of 6th grade students to the idea that groundwater is a valuable resource to be protected. She fostered her love of the environment and geology with her children by exploring numerous national parks, visiting dinosaur museums, going fossil hunting, talus pile digging, and beach rock collecting, as well as a variety of outdoor recreational activities throughout Pennsylvania. Barb recalled often using her children for scale when taking vacation photos of cross bedding, joint sets, and hanging valleys.

Barb loved the field of geology and being involved with organizations other than PCPG. In addition to being a registered professional geologist in PA, she was a certified professional geologist with the American Institute of Professional Geologists, a past president and vice-president of the PA Mining Professionals, and member of the Pittsburgh Association of Petroleum Geologists, the American Association of Professional Landmen, and the Women's Energy Network where she was active on the young professionals mentoring committee.

Continued on Page 13

Registration is open for PCPG's February 28th Annual Meeting

We've lined up another round of exceptional educational sessions and industry speakers for our 2023 Annual Meeting scheduled for Tuesday, February 28, 2023, at the Best Western Central Hotel, Harrisburg, PA.

Sessions include:

PADEP Land Recycling Program Updates/Risk Assessment Pitfalls
Mike Maddigan, Environmental Program Manager (PADEP)
Brie Sterling, Environmental Group Manager (PADEP)

Hydrothermal Porosity as a "Sequesploration" Target
Randall Hunt, Senior CCUS Geoscientist (Battelle) & Owner, Hunt Geophysical
Bedford County Emergency Landslide Mitigation - Pennsylvania State Route 26
Matthew B. Morris, P.G., Vice President and Geotechnical Practice Leader (Gannett Fleming)

Development of the Modern Coal Mining Regulatory Framework and Ongoing Program Initiatives
Seth Pelepko, P.G., Division Manager, Division of Environmental Analysis and Support (DEP Bureau of Mining Programs)

Licensing Update for Pennsylvania Geologists
Martin F. Helmke, PhD, P.G.
Member, State Registration Board for Professional Engineers, Land Surveyors and Geologists

The full agenda containing session descriptions and speaker biographies can be found on pages 10, 11, and 12 in this newsletter.

We're also planning a student and young professional program on the broad topic of *Soft Skills: Communications, Business Etiquette, Ethics and More*. This session, aimed at students and young professionals, will be conducted in a separate room. Plans are still being finalized so check the event page often.

Doors open at 8:30 a.m. and the meeting kicks off at 9:30 a.m. ending with the *Barb Dunst Memorial Fund Bottle Auction* and Continental Drifters Networking Reception.

With 2023 being a Pennsylvania P.G. license renewal year, this is a great opportunity to access informative and relevant talks, network with your peers, enjoy a delicious lunch, and happy hour with libations and munchies; and last but not least – earn PDHs!

Hope to see you February 28 in Harrisburg.

2023 Inaugural Barb Dunst Memorial Fund Bottle Auction

February 28, 2023

The Best Western Central Hotel
800 East Park Drive, Harrisburg, PA 17111

Plans are well underway for another outstanding PCPG Annual Meeting on February 28. Each year this meeting adds new educational programs and ample opportunities for personal and professional growth.

This year we are introducing a fun event and we are encouraging attendee participation. We are holding the ***Inaugural Barb Dunst Memorial Fund Bottle Auction!*** Proceeds from this activity will benefit the memorial fund and directly impact one or more of Barb's passions: mentoring the next generation of geoscientists.

We are asking every attendee to bring one bottle of alcohol to the conference. (Feel free to bring cases if you like!) *Please have the bottle wrapped nicely so the identity of the bottle is hidden*. The fun part is that some may bring a bottle of Arbor Mist White Zinfandel and others may bring a bottle of Johnny Walker Blue Label Scotch.

Donated, dressed bottles will be on display throughout the day and we'll make announcements asking attendees to stop by the registration table to sign-out a numbered paddle.

When the annual meeting concludes and as part of our Continental Drifters networking reception, we will introduce our volunteer auctioneer and the bidding will commence!

Bidders will not know what they are bidding on until after the bid is won. The more bottles donated, the more fun the event!

Form teams to pool resources and stimulate some friendly competition against other teams, or bid as a single participant. No rules except everyone enjoys the event and we raise revenue for Barb's memorial fund.

Help support this important fundraiser by donating a bottle or more and also by bringing your checkbook to participate as a bidder! At the end of the event - after all bottles are won and before you depart the Continental Drifters Networking reception - stop by to settle your bidding account. We can only accept personal and corporate checks, and cash. We will not be accepting credit cards.

Come and help bid the Barb Dunst Memorial Fund to success!

Phone (717) 730-9745 for more information.

PRESIDENT'S MESSAGE *Continued from Page 1*

I'd like to end by welcoming in our next President, Vincent Carbone, P.G. Vinny is full of ideas for improving the organization to better serve our current members and future generations of geologists. Thank you and wishing all a Happy New Year!

Kind regards,

Tiffani Doerr, P.G.
PCPG President

Pennsylvania Resource Spotlight – Zinc

Emily Glick, P.G. (Tetra Tech), PCPG Communications Committee Co-Chair

Zinc is an abundant element in the Earth's crust. The most common ore of zinc is sphalerite (zinc sulfide). The United States is one of the largest producers of zinc in the world. Physical and chemical characteristics can be read here. Today, zinc is often used to impart corrosion resistance to various metals through plating. Zinc is used to make various alloys, such as brass. Zinc is used in creating batteries. Zinc is used in dietary supplements and as the active compound in anti-dandruff shampoos. Zinc is a biologically important element; it is required for proper growth in utero and in childhood. About two billion people in the world suffer from zinc deficiency that leads to various disorders and ailments.

If you type "zinc in Pennsylvania" into a search engine, you will likely find many hits on Palmerton, a former zinc smelting plant in eastern Pennsylvania's coal region, located in what started as a company town. In 1917, the largest zinc research and technology center in the world was built there! This industrial town of just under 5,500 people is on Blue Mountain, on which also runs the Appalachian Trail and Aquashicola Creek, which drains into the Lehigh River. This smelting plant exhausted on average over 3,300 pounds of sulfur per hour from 1918 to 1970. In 1970 additional equipment was added to reduce emissions, which did drop sulfur emissions to about 1,400 pounds per hour. Zinc smelting in Palmerton stopped in 1980.

The Palmerton Plant was placed on the U.S. Environmental Protection Agency (USEPA) National Priority List in 1983. As a result of the operations, an enormous smelting residue pile called the "Cinder Bank" was left behind. The Cinder Bank is made up of 33 million tons of slag, which according to the USEPA, extends for 2.5 miles and is over 100 feet high and 500 to 1000 feet wide. In addition, the smelting process also released heavy metals, including cadmium, lead, and zinc into the air and water of the surrounding area. This resulted in dead vegetation on 2,000 acres of Blue Mountain and elevated levels of lead in local humans and animals. NOAA and other federal and state agencies, comprising the natural resource trustee council for this Superfund site, reached a settlement for damages to natural resources in 2009. Over $20 million in cash and property have been paid to compensate the United States and the

Continued on Page 6

The Palmerton site was lifeless, even in spring no plants were growing. Photo by Matthew Christopher

ZINC *Continued from Page 5*

Commonwealth of Pennsylvania for the natural resource damages to the Aquashicola Creek and Lehigh River watershed (think about that!). After years of restoration and collaboration, today the Lehigh River is popular among rafters and Blue Mountain is home to a large nature reserve and a ski resort. Palmerton is once again a growing town and is making great progress in moving beyond its toxic history.

Just one year after the settlement, in July of 2010, an explosion at a zinc refining plant in western Pennsylvania killed two people: James Taylor, 53, of Aliquippa and Corey Keller, 41, of Newell, WV. This incident occurred at Horsehead Corporation (Horsehead) in Monaca, PA, which was located about 30 miles north of Pittsburgh. (Note that this is the same property where Shell's Ethane Cracker recently opened.) The facility recycled and purified zinc through a high temperature distillation process.

Palmerton and the former zinc smelters are located near the Lehigh River, which flows through a valley between Blue Mountain (left) and Stony Ridge. (Christine McAndrew/Creative Commons Attribution-NonCommercial-NoDerivs 2.0 Generic License)

At the time, Horsehead correctly listed on its website that the electrothermic zinc smelter in Monaca, "operates as the country's largest." In April of 2014, Horsehead, which employed about 550 people, shut down operations at the zinc production facility in Monaca and transitioned to zinc metal production in Mooresboro, NC (which is the only plant in the world that produces zinc solely from recycled sources). The 2010 explosion resulted in curtailed production rates and forced the company to declare force majeure on some zinc oxide and special high-grade zinc contracts.

The Occupational Safety and Health Administration (OSHA) fined Horsehead merely $45,000 for nine safety rule violations in connection with the explosion. Investigations by OSHA were inconclusive as to the "root cause." A separate investigation was completed by William H. Hunter, a British metallurgist. In reference to the system meant to drain the volatile chemical from a distillation column, Hunter found that the facility had a history of vertical column blockages and explosions. The investigation was conducted so that lessons can be learned and passed on to manufacturers, unions, and government regulators designed to prevent similar incidents, and of course provide the families some closure. Details of the explosion and aftermath are documented in this article from 2015.

In researching Pennsylvania zinc, my assumption was that plentiful information would simply find that zinc is an abundant economic resource of the Commonwealth. However, as highlighted above, zinc production has historically been a dangerous task and technologies largely remained the same for over 80 years.

USGS Open-File Report 2010-1131 provides a comprehensive look at historical zinc smelting in New Jersey, Pennsylvania, Virginia, West Virginia, and Washington D.C. Nine of 19 zinc smelters in the eastern United States were located in Pennsylvania. By 2009, only two of the 19 zinc smelters were still operating: Monaca, PA and Palmerton, PA, which are both now closed. In 2022, zinc has been deemed a critical mineral by the United States, a net importer of the metal. It is worth wondering where our zinc needs are coming from today, what recent technological advances have been made, and what is the true cost.

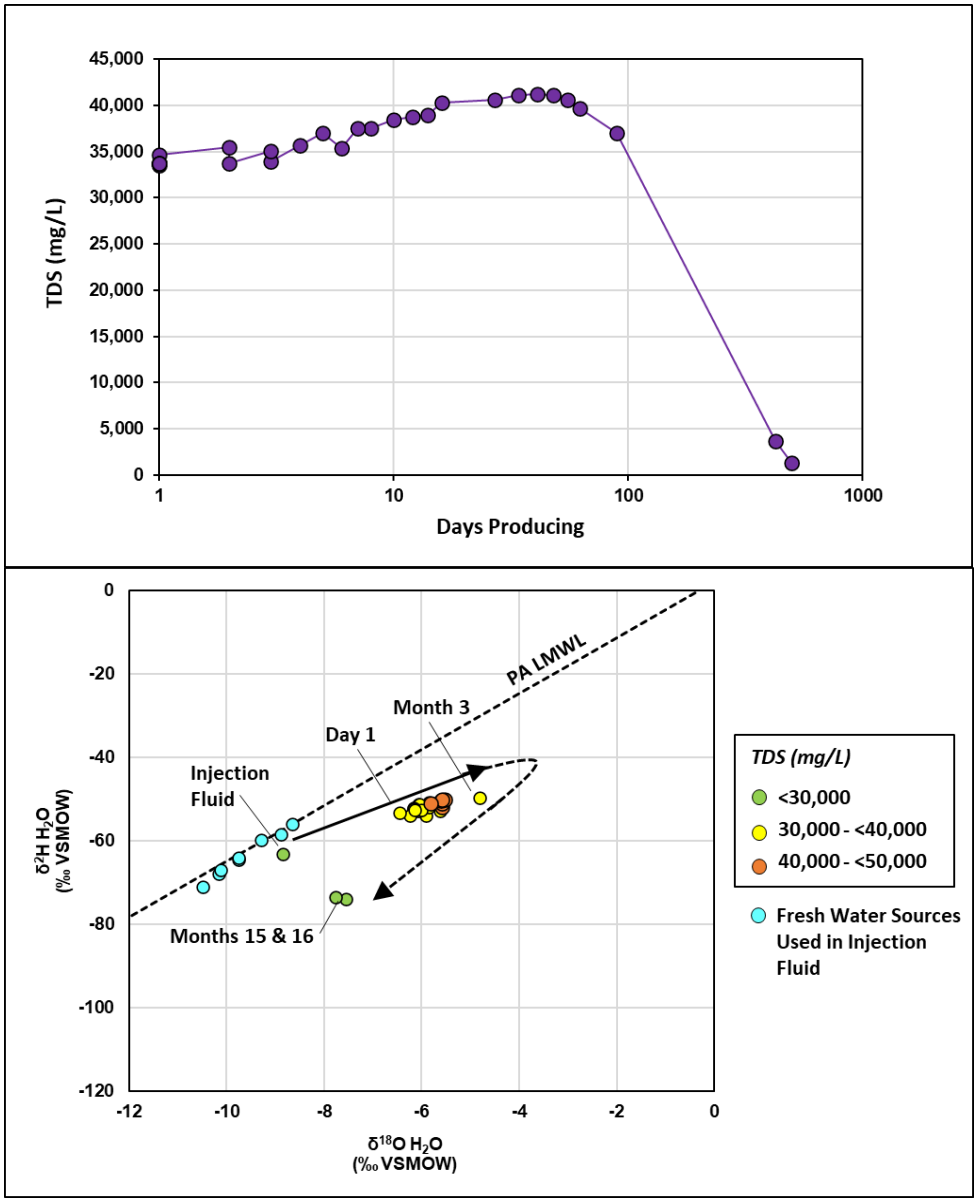
Author's note: *At the end of 2022, I will step down as Newsletter editor and frequent contributing author. I have truly enjoyed sharing my writing with you. I hope to contribute an article or two each year moving forward. Perhaps one of you are or were involved in the zinc industry or remediation efforts at historical zinc smelting sites? Please consider writing an article of a similar length to complement this article for an upcoming PCPG newsletter! "Just do it!" I thank you in advance!*

Freshening of Marcellus Produced Water Over Time: A New Paradigm

Lisa Molofsky, P.G. (GSI Environmental, Inc.)

Produced water composition from oil and gas wells has been utilized to infer the behavior and movement of fluids in deep sedimentary basins as well as reservoir productivity. Until relatively recently, these data have largely originated from conventional reservoirs. With the emergence of hydraulic fracturing in the last 10-15 years, however, a wealth of new produced water data from shale gas and oil reservoirs has become available. The Marcellus Shale is one of the most well studied shale gas plays in terms of its produced water composition and origin. Most Marcellus wells primarily return injected water within the first 30 days, then transition to a small daily volume of a relatively saline produced water. This brine is thought to be dominated by pore fluids in the Marcellus Shale. However, new research shows that a subset of wells in the Northeastern Appalachian Basin exhibit a surprising reversal in produced water salinity as production continues. Specifically, at first, these wells exhibit increasing salinity of produced water coupled with a heavier water isotopic composition ($\delta^{18}O$, $\delta^{2}H$), consistent with the transition from predominantly hydraulic fracturing fluids to predominantly formation fluids. After several months or more, though, produced water salinity exhibits a rapid reversal, becoming increasingly fresher and isotopically lighter over time as the rate of fluid production continues to dwindle (**Figure 1**).

Figure 1. Time-Series Data from Example Marcellus Well in Northeastern Appalachian Basin: A) TDS vs. Days Producing, B) $\delta^{18}O_{H2O}$ vs. $\delta^{2}H_{H2O}$



Continued on Page 8

MARCELLUS *Continued from Page 7*

For the first time, new research uses the water isotopic composition of Marcellus produced water, coupled with information on salinity and the rates of fluid and gas production, to demonstrate that the freshening of produced water over time in some Marcellus gas wells is associated with fluid dominated by water vapor condensing out of the gas phase (water of condensation). Similar to rainwater, water of condensation is characterized by low total dissolved solids (TDS) content and an isotopically light $\delta^{18}O$ and $\delta^{2}H$ composition. The volume of water vapor contained in a set volume of gas can be estimated based on available information on reservoir temperature and gas composition. At equilibrium conditions in the Northeastern Appalachian Basin, Marcellus production gas at reservoir temperature of ~60°C is estimated to hold ~0.2 bbls of water vapor/10^6 ft^3 of gas (~1.1 m^3 of water vapor/10^6 m^3 of gas) (McKetta and Wehe, 1958). This water vapor is hypothesized to condense as temperatures decrease once fluids leaves the reservoir, or when processed through a gas-water separator at the surface.

Water of condensation can dominate produced water composition when rates of downhole fluid production are very low relative to rates of gas production. After the initial return of hydraulic fracturing fluids, most Marcellus gas wells transition to producing a smaller volume of formation fluids mixed with some fraction of remnant injection fluids. Additionally, because many parts of the Marcellus Shale are characterized by relatively low volumes of movable water, the production of formation fluids can quickly diminish over time. For a subset of wells in the Northeastern Appalachian Basin, once the fluid production declines enough (in this case, <1 bbl water/10^6 ft^3 gas, or <5.6 m^3 water/106 m^3 gas), it begins to be dominated by water condensing out of the gas phase, rather than formation fluids. As noted above, similar to injected fracturing fluids, water of condensation is characterized by low salinity. However, water of condensation exhibits a distinctly different isotopically light $\delta^{18}O$ and $\delta^{2}H$ composition from injection fluids, enabling differentiation between these two potential freshwater sources.

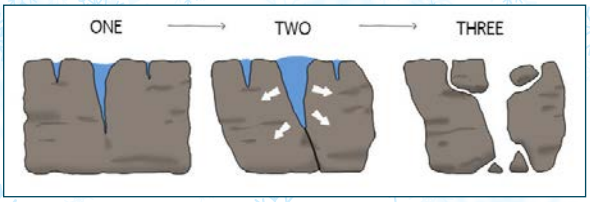
This research shows that the chemical composition of later-stage produced water from shale gas wells does not necessarily reflect formation fluids from the targeted formation, and instead may be significantly diluted by water of condensation. This finding has important implications for studies evaluating the nature and composition of deep formation waters in shale gas and oil reservoirs.

Kid's Geology Education: Freeze-Thaw

Emily Glick, P.G. (Tetra Tech), PCPG Communications Committee Co-Chair

Here is a simple geology topic to share with your family and friends this season!

Colder temperatures bring ice and snow, and for many a chance to build a snowman or practice snow sports. Did you know that ice can destroy rock? In a process called **freeze-thaw**, overtime mountains will crumble to gentle hills. Don't worry, this is all part of the rock cycle! **Freeze-thaw** is a type of physical weathering.



Freeze-thaw occurs when water enters cracks in rock. If temperatures drop below freezing, the water will turn to ice. When water turns to ice it expands. The expanded volume of ice can cause the cracks in the rock to grow larger. Eventually the ice will melt, but water will enter the crack and freeze again, making the crack even bigger. This process will repeat over days, months, and years. Depending on the rock type, fragments of rock will simply fall off or in some situations, large amounts of rock will shatter and form a scree slope. Here is a short video demonstrating the freeze-thaw process.

Now for the real fun!

You can demonstrate the **freeze-thaw** at home with some simple experiments.

First, to demonstrate that water expends when it becomes frozen, place an unopened water bottle in the freezer. Observe the frozen water bottle about three hours later. What happened to the shape of the bottle?

If an adult can fully supervise, you can take this a step further. Fill a small glass bottle with water and seal with a lid, then place inside of a plastic container or bag. Carefully, put the glass bottle with its containment inside the freezer and check back in a few hours, as demonstrated in this video. (Do you still have any glass or ceramic flowerpots outside that need to be rescued?)

Finally, as you look outside the window this winter, perhaps keep your eyes trained on a particular outcrop that you pass occasionally. Maybe even make the effort to photograph the outcrop throughout the freezing season. How much rock will fall off, where does the fallen rock land, does the fallen rock cause any safety issues, can the fallen rock be useful?

Have a safe winter!

PCPG

Pennsylvania Council of Professional Geologists
116 Forest Drive • Camp Hill, PA 17011
Phone (717) 730-9745 • pcpg.org

PCPG 2023 Annual Meeting, Education Program, Networking

Tuesday, February 28, 2023

The Best Western Central Hotel & Conference Center
800 East Park Drive, Harrisburg, PA 17111

8:30-9:30 *Registration and Morning Refreshments (Pre-Function Ballroom A/B/C)*

9:30-9:40 *Welcome/Opening Remarks (Ballroom A/B/C)*
Vincent Carbone, PG, Professional Associate (HDR Engineering, Inc.)
PCPG President

9:45-10:45 *PADEP Land Recycling Program Updates/Risk Assessment Pitfalls*
Mike Maddigan, Environmental Program Manager (PADEP)
Brie Sterling, Environmental Group Manager (PADEP)

Land Recycling Program staff from PADEP's Central Office will participate in a panel format. Several topics will be discussed, including relevant updates about the Land Recycling Program (Act 2), and common problematic issues related to Risk Assessments encountered by PADEP staff.

10:45-11:00 *Break*

11:00-11:55 *Hydrothermal Porosity as a "Sequesploration" Target*
Randall Hunt, Senior CCUS Geoscientist (Battelle & Owner, Hunt Geophysical)

Hydrothermal processes can create very porous, tightly-sealed, areally-compact reservoirs with excellent injectivity. In Appalachia, volumetrically adequate saline reservoirs suitable for CO2 storage are in short supply, making HTP reservoirs of the legacy Trenton/Black River and Beekmantown plays a welcome and potential game-changing option. Legacy hydrocarbon fields in HTP reservoirs can be excellent storage targets and exploring for them is also possible, but relies heavily on seismic data. Selected examples are shown illustrating the storage potential of depleted HTP reservoirs and strategies for exploring for new ones.

11:55-1:00 *Luncheon, Networking*

1:00-1:15 *PCPG Year in Review, Current and Planned Activities, Recognition of Special Guests (Ballroom A/B/C)*
Vincent Carbone, PG, Professional Associate (HDR Engineering, Inc.)
PCPG President

1:20-2:15 *Bedford County Emergency Landslide Mitigation - Pennsylvania State Route 26*
Matthew Morris, P.G., Vice President and Geotechnical Practice Leader (Gannett Fleming)

Throughout Appalachia, Departments of Transportation (DOTs) are impacted by slope stability issues affecting their roadways and infrastructure. These slope failures commonly occur in an unpredictable manner and location, prompting the DOT to mobilize quickly to evaluate and mitigate the failure impacting the roadway. On April 26, 2020, a significant landslide occurred on State Route 26 near the town of Riddlesburg in Bedford County, Pennsylvania. The slide extended laterally 300 feet along the road and upslope approximately 100 feet above the roadway grade. The soil and rock that mobilized downslope completely covered SR 26 in tens of feet of soil and rock. PennDOT

-continued-

Pennsylvania Council of Professional Geologists
116 Forest Drive • Camp Hill, PA 17011
Phone (717) 730-9745 • pcpg.org

engaged Gannett Fleming through an existing engineering agreement to evaluate the slide conditions, develop a mitigation plan and prepare contract bid documents. PennDOT set a goal of awarding the project to a contractor within 3 weeks, ultimately opening the roadway to traffic no later than July 4th weekend, as the road provides critical access to a popular recreational area. This presentation will cover the slide evaluation, development of the mitigation concept, plan and specification preparation, bidding processes, and construction consultation required to remove 15,000 cubic yards of soil and rock, stabilize the slope and restore functionality of the road. The goal of the presentation is to show a landslide case history commonplace throughout Appalachia, and to educate the audience on the processes that PennDOT used to streamline the mitigation design and construction activities. Special emphasis will be placed on the innovative investigation methods used to evaluate the slide and adapting to unforeseen conditions revealed during construction.

2:15-2:30 *Break*

2:30-3:25 *Development of the Modern Coal Mining Regulatory Framework and Ongoing Program Initiatives*
Seth Pelepko, P.G., Division Manager, Division of Environmental Analysis and Support (DEP Bureau of Mining Programs)

More than 40 years ago, Pennsylvania's coal mining regulatory program provided much of the basis for development of the framework of federal laws that ultimately became known as Title V. Pennsylvania has primacy for the Title V Program and implements key provisions through a series of statutes and laws aimed at protecting the environment and public from the most common, unintended impacts of coal mining: subsidence, water pollution, and surface disturbance. A review of how and why Title V developed, and how the current program is funded in Pennsylvania is provided. Additionally, updates on two key programs – the Mine Subsidence Insurance (MSI) Program and the Areas Unsuitable for Mining (UFM) Program – are discussed. Finally, ongoing research and regulatory efforts pertaining to the extraction of Critical Minerals (CM)/Rare Earth Elements (REE) from coal mine waste streams in the commonwealth are reviewed.

3:30-4:25 *Licensing Update for Pennsylvania Geologists*
Martin F. Helmke, PhD, PG
Member, State Registration Board for Professional Engineers, Land Surveyors and Geologists

Geologists in Pennsylvania are responsible for the application of science to protect the public's health, safety, and welfare. Professional Geologists are licensed by the State Registration Board to ensure the highest professional, educational, and ethical standards for the discipline. As one of two Professional Geologist members appointed by the Governor to the State Registration Board for Professional Engineers, Land Surveyors and Geologists, Dr. Helmke will report on recent developments affecting practicing geologists and provide a venue to discuss issues facing working geologists in the Commonwealth. The session will also examine the process for earning the Geologist in Training Certificate and Professional Geologist License, and review continuing education requirements.

4:25-4:30 *Announcements / Adjournment*

4:30-6:00 *1st Annual Barb Dunst Memorial Bottle Auction Fundraiser & Continental Drifters Reception*

PCPG

Pennsylvania Council of Professional Geologists
116 Forest Drive • Camp Hill, PA 17011
Phone (717) 730-9745 • pcpg.org

About Today's Speakers

Martin F. Helmke, Ph.D., P.G., Professor of Hydrogeology (West Chester University of Pennsylvania) - Dr. Martin F. Helmke is a Professional Geologist of Pennsylvania, Professor of Hydrogeology at West Chester University, President of Helmke Hydrogeologic, LLC, and a Past President of PCPG. Dr. Helmke and fellow geologist Joseph McNally serve on the State Registration Board for Engineers, Land Surveyors, and Geologists.

Randall Hunt, Senior CCUS Geoscientist (Battelle) and Owner, Hunt Geophysical - Mr. Hunt has a B.S. in Geology from Marietta College, and an M.S. from the Univ. of Texas at Dallas. He has been exploring for & developing conventional & unconventional oil/gas resources for 35 years, nine of those living/working abroad in Venezuela, Indonesia, & Brazil. For the past 12 years his focus has been on Appalachian shales & conventional exploration plays, and more recently CCUS. Mr. Hunt helps Battelle with major DOE-funded projects such as CarbonSafe and ARCH2, and also has his own consultancy helping oil/gas clients.

Mike Maddigan, Environmental Program Manager (PADEP) - Mike Maddigan is the Program Manager for Pennsylvania Department of Environmental Protection's (PADEP) Land Recycling Program (Act 2) in Harrisburg, PA. Mike has been with PADEP since 2008 and previously served PADEP as the Voluntary Cleanup and Standards Section Chief and as an Environmental Chemist. Mike and his staff in Central Office are responsible for updating and maintaining the Chapter 250 regulations, the Act 2 Technical Guidance Manual, providing technical oversight of human health and ecological risk assessment report reviews and support the PADEP regional offices with other project-related matters in support of Act 2 remediation projects throughout Pennsylvania. Mike's staff in Central Office also assist with brownfields funding requests, long-term stewardship tracking, and support program promotion and training.

Before joining PADEP, Mike served as an environmental scientist for 11 years with Gannett Fleming, Inc. in Camp Hill, PA. Mike earned a bachelor's degree in Environmental Resource Management from Penn State University in 1993 and a master's degree in Environmental Pollution Control from Penn State University in 1998.

Matthew Morris, P.G. (Gannett Fleming, Inc.) - Matt is a Vice President and Geotechnical Practice Leader with Gannett Fleming, Inc. based in their Pittsburgh, PA office. Matt holds a M.S. in Engineering Geology from Kent State University, B.S. in Geology and Earth Science from Clarion University, and is a licensed professional geologist. Over the past 24 years Matt has worked on a variety of transportation, water resources, and energy infrastructure projects throughout North America. Matt also is involved in several professional societies and is a past President of the Association of Environmental and Engineering Geologists.

Seth Pelepko, P.G., Division Manager (PADEP Bureau of Mining Programs, Division of Environmental Analysis and Support) - Seth Pelepko currently serves as the Environmental Analysis and Support Division Manager for the Department of Environmental Protection's (DEP) Bureau of Mining Programs. He has worked in this capacity for a year and has served as a manager at the agency in various roles for the last ten years. His prior experience includes employment as a petrographer and geologist in the public sector, and as a consulting hydrogeologist in the private sector. Seth's areas of expertise span fossil fuel/mineral mining regulatory oversight, stray gas migration/well integrity, legacy well topics, and federal grant program management.

Brie Sterling, Environmental Group Manager (PADEP) - Brie Sterling is an Environmental Group Manager with the PADEP Land Recycling Program (Act 2) in Harrisburg, PA. Brie has been with PADEP since 2008 and currently leads the Voluntary Cleanup and Standards Section, which provides technical support for risk assessment, vapor intrusion, and other project-related matters in support of the PADEP regional offices. Brie's group also maintains the toxicity database and the MSC calculations for the regulations and provides technical support for the regions in regards to the Chapter 250 regulations. Prior to joining the voluntary Cleanup and Standards section in 2012, Brie worked at the DEP Bureau of Laboratories as an analytical chemist following a number of years in the analytical chemistry field at various environmental and industrial labs.

DUNST *Continued from Page 2*

Focusing on the next generation of geologists was one of Barb's main goals with PCPG as well. She developed initiatives to help guide and support students and young professionals. This includes the "What Does a PG Do?" informational series and the Career Pathfinder spreadsheet that identifies which college courses are most relevant to various industries or career paths. She would often visit college campuses to share information about our organization and the geology industry with students.

Barb was also passionate about advancing the visibility of women in the professional geologic community as well as advocating for a balance between the environment and energy development in Pennsylvania. In her own words, "*My interests have always been in hydrogeology, structural geology, and energy development. Growing up in Johnstown, PA, I thought it was normal to see stream banks lined with unreclaimed bony piles and the rocks stained red from acid mine drainage. Some of those streams of my youth are now tourist destinations with clean water teaming with aquatic life due to the efforts of environmental professionals in many different disciplines. Throughout my career, it has been and will continue to be the task of the professional geologist to balance the development of the Commonwealth's many natural resources while not sacrificing the environment and adhering to changing environmental regulations and enforcement.*"

With her husband Brian's encouragement and support, PCPG established a memorial fund in Barb's name and approved a $5,000 contribution to the fund for 2022. Through generous donations from Barb's friends, family, PCPG members and colleagues, a total of $10,066 has been raised as we go to press. Thank you all for your generosity and for honoring Barb!

There were no limits to Barb's passion for geology and we'd like nothing more than to foster that passion into the future. PCPG has created a work group to determine how best to appropriate the funds in Barb's honor and in support of her many passions. We have a great fundraiser planned for our 2023 Annual Meeting scheduled in Harrisburg on February 28 that will include some fun while raising additional revenue in support of her memorial fund. Stay tuned for more details and save the date.

Included throughout this article and below are some of the many sentiments and condolences shared with PCPG since Barb's death. Barb was a mentor to me and numerous others during her life and career. Thank you, Barb, you will be missed but not forgotten.

The impact of Barb's service to PCPG and the geologic community at large will be felt for many years.

Rich Hazenstab, P.G.

Barb was a friend and colleague who will be missed greatly. It was always a pleasure working with her at EQT for many years.

Craig A Eckert

Very sad. I got to know Barb on one of the F.C.O.P.G. trips a few years ago. She and Brian were very active. She did an excellent job as online host for an annual meeting during the pandemic. What I remember most is how she would sit back during a BOD meeting or come late to an email dialogue having taken in all the back and forth discussion. As we worked toward a consensus or position, she politely offered her opinion that was usually contrary. She didn't do it to halt or slow progress. She just had a way of looking at things from a perspective that the rest of us had not considered and that helped shape the final outcome.

Jim LaRegina, P.G.

In loving memory of Barbara/Mrs. Dunst, an amazing, loving, and generous person who I had the honor to know through one of my very best friends and her son Matthew.

Nick and Ashley Harris

The University Park Country Club team sends their sincere condolences to Matt Dunst, Bob Biroscak, and family members. We are so very sorry for your loss. Our thoughts are with you. May you find peace and comfort with good memories.

Park Boulevard Management, LLC

Barb was an incremental part of our workgroup to establish well licensing regulations. She was extremely knowledgeable and a joy to work with -- she will be greatly missed.

Nicole Faraguna

Barb was a dear and generous friend. My husband Brian McMahon and I are grateful to have known her and happy to support an endeavor that we know would have greatly pleased her.

Leanna McMahon

Such an excellent leader and colleague, she will be missed and respectfully remembered.

Janet L. Bowers, P.G.

Thinking back on all my interactions with Barb – whether related to project goals, team dynamics, child raising, or anything else – one thing is abundantly clear: Barb cared.

Joe Sinnott

Your work lives on. R.I.P.

Emily Glick, P.G.

DEADLINE FOR OUR NEXT NEWSLETTER IS FEBRUARY 10, 2023

Articles are suggested to be about 700 words maximum. For more information, contact our PCPG Newsletter Editor and Communications Committee Co-Chair - Vicki Pitman, P.G., by email.

PCPG ASSOCIATE AND CORPORATE MEMBER SPONSORSHIP RATE

(Rates are listed as amount per issue)

Size	Commitment:	1x	4x
1/2 Page Horizontal (8" x 4.7")		$225	$150
1/2 Page Vertical (3.875" x 9.375")		$225	$150
1/4 Page Horizontal (4.7" x 3.875")		$140	$95
1/4 Page Vertical (3.875" x 4.7")		$140	$95
Business Card (H or V)		$75	$50

OTHER SPONSORSHIP RATES

(Rates are listed as amount per issue)

Size	Commitment:	1x	4x
1/2 Page Horizontal (8" x 4.7")		$300	$240
1/2 Page Vertical (3.875" x 9.375")		$300	$240
1/4 Page Horizontal (4.7" x 3.875")		$185	$150
1/4 Page Vertical (3.875" x 4.7")		$185	$150
Business Card (H or V)		$100	$80

ADS MUST BE SUBMITTED AT CORRECT SIZE AS STATED ABOVE AND MUST BE PRINT-READY, 300 DPI
FILE FORMATS ACCEPTED: .PDF, .TIF, .JPG, OR .PNG

SPONSORS: Please remit payment to PCPG, 116 Forest Drive, Camp Hill, PA 17011

Please consider the environment before printing this newsletter.

PCPG Associate Members

Aestus, LLC
Contact: Kyle Spears
Phone: (970) 278-4090 x706

AWT Environmental Services, Inc.
Contact: Kristen Wolansky
Phone: (732) 613-1660

Elk Environmental
Contact: Jestyn Newswanger
Phone: (610) 372-4760

Eurofins Lancaster Labs Environmental
Contact: Andrea DeCola
Phone: (908) 809-9243

Parratt Wolff, Inc.
Contact: Josh Ellingworth
Phone: (570) 523-8913

Suburban Testing Labs
Contact: John Weisman
Phone: (610) 207-8154