

## Final Agenda, Shale Network 2017 Workshop, May 18-19, 2017

*Note new venues: Poster Session at Atherton Hotel (State College PA); computer module in 203 IST Building (PSU); Plenary session in Cybertorium (IST Building); Afternoon sessions in EES Building (PSU)*

### Sharing Data about Shale Gas Development: From Drilling to Disposal

*Workshop organizers include representatives from Penn State (Earth and Environmental Systems Institute; Marcellus Center for Outreach and Research), Univ of Pittsburgh, SUNY Binghamton, PA Department of Environmental Protection, TetraTech, CUAHSI*

<b>Thursday, May 18</b>		
9:45-2:00 pm	<b>Field Trip: Investigating a Hypothetical Site in the Council Run Field for an Underground Injection Well for Waste Disposal (Meet at the Atherton Hotel Lobby at 9:45 am.) Transportation will be provided. Participants should bring a packed lunch and beverages.</b>	Dave Yoxtheimer (PSU), Bruce Jankura (PA DEP), Mike Canich (retired, EQT)
2:00-2:30 pm	<b>Registration in the Atherton Hotel Lobby for Participants in the Computer Module</b>	
2:30 pm	<b>Computer module participants walk to 203 IST Building on PSU campus (6-10 minute walk)</b>	
3:00 - 5:00 pm	<b>Computer Module Demonstration and Hands-On Exercise: "Environmental Issues Related to Brine Disposal from Oil/Gas Development in Pennsylvania," 203 IST Building</b>	Liza Brazil (CUAHSI), Stew Beattie, Seth Pelepko, Harry Wise (PA DEP); Susan Brantley, Dave Yoxtheimer, Andrew Nyblade, Kyle Homman (PSU)
6:00 – 7:00 pm	<b>Registration and Poster set up (must be up by 6:30) in Regency Ballroom, Atherton Hotel</b>	
6:30 - 9:30 pm	<b>Poster Session with reception and cash bar – Regency Ballroom Posters must be taken down at the end of the Poster Session</b>	

#### Posters

- Amal Agarwal**, Sue Brantley, Zhenhui Li, Lingzhou Xue (Penn State Univ) - Modeling Spatially and Temporally Sparse Surface Water Data as a Stochastic River Network
- Kathryn Brasier**, Kirk Jalbert (FracTracker), Abby Kinchy (Rensselaer Polytechnic Institute), Susan Brantley, Colleen Unroe (Penn State Univ) - Barriers to Sharing Water Quality Data: Experiences from the Shale Network
- Liza Brazil**, Jon Pollak (CUAHSI) - Tools & Support for Integrating Real Environmental Data into Education
- Lindsay Byron**, Stew Beattie, Doug Catalano, Seth Pelepko, Rick Swank (PA DEP) - Pennsylvania Legacy Well Integrity and Emissions Study
- Katie Farnsworth** (Indiana Univ of PA), Cindy Rogers (Evergreen Conservancy) – Long-term Stream Monitoring Collaborations in Indiana County
- Thomas Geeza**, Nate Warner, David Gillikin (Penn State Univ) – Reconstructing Surface Water Quality in Western Pennsylvania by the Isotopic and Elemental Analysis of *Elliptio Dilatatus* Shells
- Bryn Hammarstrom**, Alison Dillon (Pine Creek Headwaters Protection Grp) –Minerals, including Heavy Metals, and other Components of Marcellus Shale 'Drilling Returns': Results of DEP File Reviews in Williamsport and Harrisburg
- Kyle Homman**, Andy Nyblade (Penn State Univ) - Seismicity in Pennsylvania and the PA State Seismic Network
- Ramo Lord**, Colleen Unroe (Friends for Environmental Justice) - Fracking Our Environment: A Historical Overview of Impacts in Southwest Pa
- Kelly Maloney**, John Young, Stephen Faulkner (USGS-Leetown Science Center) - Vulnerability of Headwater Streams to Shale Gas Development in the Pennsylvania Portion of Upper Susquehanna River Basin
- Elizabeth Meyer**, Todd Sowers, Erika Beddings (Penn State Univ) - Monitoring Nature Methane Variability in PA Stream Systems
- Ashley Miller**, Katie Farnsworth (Indiana Univ of PA) - Looking for Long Term Impact from a Small Marcellus Wastewater Spill in Indiana County, Pa
- Adam Mumford**, Denise Akob, Kelly Maloney, Arianne Proctor, Jason Ditty, Luke Ulsamer, Isabelle Cozzarelli (US Geological Survey) - Quantifying Relationships between Shale Gas Development and Water Quality in Headwater Streams in Pa State Forests: Initial Results from a Replicated, Disturbance Gradient Study
- Rose Nash**, M. Weiant, M. Bell, Md. Khalequzzaman (Lock Haven Univ) - Long-term monitoring of AMD and Marcellus-related Parameters in Beech Creek and Clearwater Watersheds, PA
- James Shallenberger**, Dawn Hintz, Matt Elsasser, Andy Leakey, Blake Maurer, Kimberly Dagen, Jeff Zimmerman (SRBC) – Surface Water Monitoring Related to Shale Gas Development: The Susquehanna River Basin Commission Perspective
- Elaine Tanner**, Ted Auch (Frac Tracker) (Ohio River Citizens' Alliance) - Upper Ohio River Valley Extractive Industry Mapping
- TeenShale Network**: M. Bardo, M. Bokunewicz, L. Campbell, Z. Cook, J. Donoughe, M. Duiker, A. Fritz, H. Good, K. Lenze, A. Li, E. Lieb, K. Mann, L. Nyblade, Y. Pickering, M. R. Hertz, E. Rowland, E. Ruocchio, B. Schoonover, K. Thomas (S. College High School), B. Forsythe, J. Z. Williams, , M. Carroll, S. Brantley (Penn State Univ) - Monitoring, Collecting, and Analyzing Water Quality Data or Streams in Central PA
- Tao Wen** (Penn State Univ), M. Clara Castro, Chris Hall (Univ of Michigan), Jean-Philippe Nicot, Toti Larson, Patrick Mickler, Roxana Darvari (Univ of Texas-Austin) - Methane Sources and Migration Mechanisms in the Shallow Trinity Aquifer in Parker and Hood Counties, Texas

<b>Friday, May 19</b>		<b>Morning Session: Cybertorium – 113 IST Building, Penn State Campus</b>	
7:30 am	<b>Continental Breakfast: Informal Introductions (speakers please upload talks)</b>		
<b>Plenary Talks (tentative order)</b>			
8:00 am	<b>Susan L. Brantley:</b> Welcome to 2016 Workshop; Introduction to Shale Network and Introductory Overview : Sharing Data about Shale Gas Development: From Drilling to Disposal		
8:30 am	<b>Seth Pelepko</b> (PA DEP) Oil and Gas Development Waste Stream Statistics, Management Options, and Current Regulatory Perspectives Regarding Induced Seismicity		
8:50 am	<b>Radisav Vidic</b> (Univ of Pittsburgh), <b>Dave Yoxtheimer</b> (Penn State) Changes in the Quality and Quantity of Produced Water from Appalachian Shale Energy Development and their Implications for Water Reuse		
9:10 am	<b>Roger Myers</b> (RRM Completions, LLC) Well Construction and Cementing Practices in Shale and Saltwater Disposal Wells		
9:30 am	<b>Tim Tyrrell</b> (XTO Energy) Proactively Addressing Induced Seismicity		
9:50 am	<b>Andy Nyblade</b> (Penn State) Seismicity in PA		
10:10 am	<b>Jennifer Baka</b> (Penn State) eGovernance as a Data source for Evaluating Stakeholder Positions on Hydraulic Fracturing Regulation		
10:30 am	<b>Coffee (speakers please upload talks)</b>		
10:50 am	<b>Dale Skoff</b> (TetraTech) How many disposal wells does PA need and where are formations and locations they could be located		
11:10 am	<p><b>Panel Discussion:</b> What are the emerging issues and concerns among the public and scientists related to future disposal of solid and liquid wastes from shale gas wells?</p> <p><b>Seth Pelepko</b> (PA DEP) State Regulator  <b>Dale Skoff</b> (TetraTech) Disposal Well Technical Expert  <b>Bryan Wary</b> (Fountain Quail) Disposal Well Operator  <b>Rick and Marianne Atkinson</b> (Clearfield County Senior Environment Corp) Concerned Citizens</p>		
11: 50 am	<b>William J. Hughes</b> (Ohio Valley Environmental Coalition) Landfill Disposal of Shale Gas Waste		
12:10 am	<b>Bruce Lindsey</b> (USGS) Groundwater Quality in Energy-Producing Shale Basins of the United States		
12:30 pm	<b>Walk to Earth-Engineering Sciences (EES) Building for lunch and afternoon sessions</b>		
12:40 pm	<b>Buffet Lunch in 117 EES Building and Foyer and Upstairs in 2217 EES</b>		
	<b>114 EES Building</b>	<b>116 EES Building</b>	
	<b>Surface and Ground Water Issues</b>	<b>Brines: From Geological Source to Disposal</b>	
1:40 pm	<b>Josh Woda</b> (Penn State) Jake Lemon (Trout Unlimited) Engaging Angler Scientists in Methane Research: A Collaborative Approach	<b>Richard Lamkie</b> (PA DEP) Ground Vibration from Pennsylvania Surface Blasting Operations	
2:00 pm	<b>Luanne Steffy</b> (Susquehanna River Basin Commission) Preliminary Results from Stream Methane Monitoring in the Marcellus Shale Region of the Susquehanna River Basin	<b>Moses Ajemigbitse</b> (Penn State) Reducing the Environmental Impact of the Petroleum Industry by Waste to Resource Recovery	
2:20 pm	<b>Molly Rudolchick</b> (Indiana Univ PA) Quantifying Methane Emissions from Abandoned Legacy Gas Wells in Indiana County, PA	<b>Dawn Hintz, Graham Markowitz</b> (Susquehanna River Basin Commission) Evaluating Water Quality Trends in the Marcellus Shale Region of the Susquehanna River Basin	
2:40 pm	<b>Harry Wise</b> (PA DEP) The Department of Environmental Protection’s Mechanical Integrity Assessment Program	<b>Marika Nell</b> (Cornell Univ) Detecting Organic Chemical Additives Throughout the Hydraulic Fracturing Life Cycle: An Examination of Matrix Effects on Detection and Quantification Using Liquid Chromatography High-Resolution Mass Spectrometry	
<b>Coffee Service in 117 EES Building</b>			
3:10 pm	<b>Amy Rice</b> (Colorado School of Mines) Methane Leakage from Hydrocarbon Wellbores into Overlying Groundwater: Numerical Investigation of the Multiphase Flow Processes Governing Migration	<b>Md. Khalequzzaman</b> (Lock Haven Univ) Characterizing Sources of Turbidity in Stream Sediments in the Marcellus Shale Gas-Well Drilling Region in Central Pennsylvania	
3:30 pm	<b>David Allard</b> (PA DEP) An Update on DEP's Oil and Gas TENORM Work	<b>Nate Warner</b> (Penn State) Impacts of Treated Oil and Gas Wastewater Discharge on Sediments in Western Pennsylvania	
4:00 pm	<b>114 EES Building</b> <b>Plenary Discussion:</b> How can we use data to design a more sustainable future with respect to shale gas development in the northeastern United States and how can we include the public in this process?		
4:35 pm	<b>Wrap Up Statements (Brantley, Vidic): What Do We Need to Do Next?</b>		
4:50 pm	<b>Assessment and Adjournment</b>		

