



PENNSOIL

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The Newsletter of the Pennsylvania Association of Professional Soil Scientists
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Inside:

- 2 Legacy Sediments
- 3 PAPSS member teaches soils at MCCC
Regional soil judging
On-lot sewage regulations update
- 4 PAPSS/PCPG tackle Stormwater BMP loading ratios
- 5 US Senate passes soils resolution
- 6 DIG IT!
- 7 Tech session program November 7-8, 2008
- 8 State soil bill update
Professional licensing?

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Annual Meeting and Fall Technical Session to be Held November 7-8, 2008 at Stroud Water Research Center

By Michael Lane

The PA Association of Professional Soil Scientists will hold its annual business meeting and fall technical session on November 7 and 8, 2008 at the Stroud Water Research Center in Avondale, Chester County.

The Stroud Water Research Center seeks to advance knowledge and stewardship of fresh water through research, education and global outreach and to help businesses, landowners, policy makers and individuals make informed decisions which affect water quality and availability around the world.

The two-day program is planned to be a joint session with the PA Council of Professional Geologists (PCPG) and will highlight the research projects at the Center with a focus on the soils derived from the deep, crystalline bedrock that underlies the Stroud property. Dr. Bern Sweeney of the Stroud will lead a morning tour of the facility and provide information about their ongoing research. Dr.

Dr. Kyungsoo Yoo of the University of Delaware and Dr. Howell Bosbyshell of West Chester University will share insight into the geology and soils of southeastern PA. Also joining us will be Mr. Dana Aunkst of the PA DEP to discuss the State's Chesapeake Bay Initiative and efforts to reduce pollutant loading to the Bay.



©David Funk, Stroud Water Research Center

Day two will include the PAPSS annual business meeting and a field session on the Stroud property with test pits excavated across a catena sequence typical of the Piedmont region of southeastern Pennsylvania.

More information about the meeting and program registration forms are available at www.papss.org. To make donations to The Stroud Water Research Center, an independent, 501(c)(3) not-for-profit organization, or to find out more about the Center's projects, please visit: www.stroudcenter.org. ■

The Story of Legacy Sediments

by Chris Whitman

Somewhat akin to a light bulb being turned on, two insightful Professors from Franklin and Marshall College (Dr. Dorothy Merritts and Dr. Robert Walter) have tied together the preponderance of 17th to 19th century milldams across much of the Piedmont to the incised stream valleys that many soil scientists have witnessed conducting field work such as alluvial soils mapping. During such field work, I have personally observed sediments that are on the order of 3 to 5 feet thick, and often wondered how such volumes of material could have been transported and subsequently deposited by recent and even historical flooding.

It turns out that these sediments are more appropriately classified as having a lacustrine origin, in that they represent the gradual in-filling of “slackwater” behind milldams, over the course of their lifespan. Based on numerous sources of historical data, thousands of such milldams were constructed along streams throughout Chester County alone, as a routine part of the social and economic framework of the period.

Fast forward to today’s typical smaller-order streams, associated valleys, and bottoms: predominantly flat “floodplain” areas that often contain typical mixed hardwoods that are less than 100 years in age. Add to this scenario the classic, deeply incised stream channel that appears to be cutting into historical alluvial sediments, and you’re got the remnants of an old millpond that is being altered by today’s stormwater-fueled streamflow. Much of this evidence is supported with carbon dating of sediments, basic comparison of particle size classifications and inferred water velocities, core borings, and test pits.

Perhaps as interesting is the discovery of the pre-settlement landscape as that of very broad wetland areas, perhaps with no channel at all. These pre-settlement wetlands are now completely buried under the depositional material, and their value as carbon sinks lost.

As with any discovery that seeks to explain the physical world and the effect that we’ve had on it, questions remain.

Should these areas be restored in an attempt to return them to their pre-development condition? (An area was restored under the direction of Drs. Merritts and Walter with general success near Lititz). How do increased volumes of stormwater runoff relate to current and past conditions? How should these millpond sediments affect alluvial soils mapping in their vicinity?

I hope we’ll all have some fresh ideas to consider, incorporate, and possibly improve upon the next time we’re either working or enjoying leisurely activities around our local streams.

Dr. Merritts is continuing the research, and inquired about an early soil erosion study that was conducted by the USDA in southeastern PA in the 1930s, with associated photos. Anyone who may be able to assist with this is encouraged to contact Dr. Merritts at dorothy.merritts@fandm.edu. ■



Two budding soil scientists, Jules and Kaitlyn, standing atop an apparent remnant of a millpond, about ½ mile upstream of the SR 113 Bridge where it crosses the Perkiomen Creek in Montgomery County.

PAPSS Member Teaches Students about Land Application of Treated Wastewater Effluent

by Nancy Sansoni



PAPSS member Walter Grube is the soils instructor for a new Wastewater Operator Certification program offered at the Montgomery County Community College. The Department of Environmental Protection together with the Montgomery County Community College now offer coursework designed to help new operators obtain certification in the high demand field of wastewater operations. Walter Grube teaches topics such as effluent renovation in the soil, soil characteristics and soil compaction.

The program, which started in the spring semester 2008 and is again being offered in the fall 2008, is offered concurrently at both the Blue Bell and Pottstown college campuses. It provides the necessary instruction, course work, hands-on training, prerequisite refresher courses and module exams necessary for participants to pass the final exam toward wastewater operator certification. In addition to providing certification exam instruction, the course components also offer additional continuing education units for currently certified operators necessary to maintain their certifications.

Walter's specific land application module is scheduled to be offered in January 2009, and will include a field trip. For more information, contact Walter Grube at wgrube@state.pa.us, or contact the college at 610-718-1979 for test dates, times, and prices. ■

Northeast Regional Soil Judging Contest

by Steve Dadio

The Northeast Regional Soil Judging Contest will be hosted by Delaware Valley College on **October 24th and 25th, 2008**. Joe Valentine is directing this contest; he is looking for volunteers to assist with pit monitoring and scorecard judging. For many of us, our first introduction to the world of soils was by way of a Soil Judging Contest. Soil judging is one of those experiences that students never seem to forget.

Volunteers are needed to help support the next generation of soil scientists as they learn about soils. Aggie alumni may also want to help support their alma mater. Please contact Joe Valentine at JValentine@delvalsoil.com if you are able to help. ■

On-lot Sewage Disposal Regulations Continued...

by Michael Lane

PAPSS is attempting to arrange a meeting with PA DEP sewage planning staff to gain insight into the Department's justifications for proposed changes to the on-lot sewage disposal regulations. After an informal meeting with representatives of the Home Builders Association of Chester and Delaware Counties, Mr. Dana Aunkst of the Department welcomed input from the regulated community. The Department is moving toward more intensive management of on-lot systems by local authorities and also toward a total system concept where treatment and disposal options would not necessarily be tied together.

DEP is still in the process of re-working the draft regulations and will likely be in the process for months to come. We look forward to assisting with the work by reviewing the Department's data and reasoning behind the proposed changes. ■

Soil Scientists and Geologists tackle PA's BMP Manual

by Paul White, P.G.

The Pennsylvania Council of Professional Geologists (PCPG) has teamed up with PAPSS to assist the Pennsylvania Department of Environmental Protection in a cooperative effort to improve the process by which stormwater management facilities are designed and constructed. This process began in February 2008 with meetings between PADEP's top permitting staff and PCPG and PAPSS representatives.

PADEP has been working very hard trying to implement the new Stormwater Best Management Practices Manual, and they wanted to provide additional guidance regarding the size of stormwater best management practice (BMP) facilities, especially those intended to recharge stormwater into the subsurface groundwater aquifer. They believed that design engineers were routinely trying to squeeze too much water into the ground over too small of an area, and that they feared that this would result in adverse and unintended consequences. Potential problems include clogging of the BMP, changes in the depth to groundwater and the direction of groundwater flow, formation of sinkholes, and damage to structures to name but a few. Therefore, they decided they should establish loading ratio limits, which would restrict designers to pre-determined "drainage area" to "BMP area" ratios. For instance, for every five acres of drainage area, the design would require that the stormwater BMP "footprint" would be equal to at least one acre (i.e. a 5:1 loading ratio).

The design engineering community was not pleased. PADEP didn't offer any scientific justification for the proposed limitations, and they were considered so restrictive that they would jeopardize the feasibility of many projects, particularly commercial developments with large impervious surface such as roofs and parking lots. Since the fear of BMP failure was largely driven by soils, geologic, and hydrogeologic factors, the PCPG and PAPSS organizations were the natural associations to turn to for further guidance.

After studying the testing requirements currently included in the BMP manual, the underlying problem became apparent. The manual did not require the designer to conduct an adequate evaluation of the subsurface. Therefore, PADEP designed very conservative loading ratios in an attempt to mitigate the risk of the unknown. PCPG and PAPSS proposed that if the design engineer wanted to design a BMP facility that deviates from the loading ratio's, they would need to justify the design through more intensive soils and geologic investigations to determine whether or not the subsurface environment was capable of receiving the additional water load without causing unintended consequences.

Draft guidance for conducting such investigations have been prepared and submitted to PADEP for their review and comment. Based on our most recent meeting with PADEP officials, we have come to conceptual agreement on a variety of issues, and they have requested refinements to the draft guidance. When complete, it is envisioned that the investigation guidance would become an appendix to PADEP's loading ratio technical guidance document. The applicant will then have a choice to either stick to the loading ratios as published, or determine the natural ability of the ground to absorb stormwater and design around nature. The goal is to have a final testing guidance document approved before year end. ■

ASA-CSSA-SSSA International Annual Meetings Scheduled for November 1-5, 2009 Pittsburgh, Pennsylvania



The Joint Annual Meeting of ASA-CSA-SSSA will be held in Pittsburgh on **November 1-5, 2009**. It is also a great opportunity to meet with other soil scientists and agronomists from around the world and catch up on the latest research. SSSA will be looking to PAPSS members to serve as volunteers to assist with the Meeting and other associated Field Tours. Mark your calendars! ■

United States Senate Soils Resolution – June 23, 2008

Senate Resolution 440

Recognizing soil as an essential natural resource, and soils professionals as playing a critical role in managing our Nation's soil resources.

Whereas soil, plant, animal, and human health are intricately linked and the sustainable use of soil affects climate, water and air quality, human health, biodiversity, food safety, and agricultural production;

Whereas soil is a dynamic system which performs many functions and services vital to human activities and ecosystems;

Whereas, despite soil's importance to human health, the environment, nutrition and food, feed, fiber, and fuel production, there is little public awareness of the importance of soil protection;

Whereas the degradation of soil can be rapid, while the formation and regeneration processes can be very slow;

Whereas protection of United States soil based on the principles of preservation and enhancement of soil functions, prevention of soil degradation, mitigation of detrimental use, and restoration of degraded soils is essential to the long-term prosperity of the United States;

Whereas legislation in the areas of organic, industrial, chemical, biological, and medical waste pollution prevention and control should consider soil protection provisions;

Whereas legislation on climate change, water quality, agriculture, and rural development should offer a coherent and effective legislative framework for common principles and objectives that are aimed at protection and sustainable use of soils in the United States;

Whereas soil contamination coupled with poor or inappropriate soil management practices continues to leave contaminated sites unremediated; and

Whereas soil can be managed in a sustainable manner, which preserves its capacity to deliver ecological, economic, and social benefits, while maintaining its value for future generations:

Now, therefore, be it Resolved, That the Senate—

(1) recognizes it as necessary to improve knowledge, exchange information, and develop and implement best practices for soil management, soil restoration, carbon sequestration, and long-term use of the Nation's soil resources;

(2) recognizes the important role of soil scientists and soils professionals, who are well-equipped with the information and experience needed to address the issues of today and those of tomorrow in managing the Nation's soil resources;

(3) commends soil scientists and soils professionals for their efforts to promote education, outreach, and awareness necessary for generating more public interest in and appreciation for soils; and

(4) acknowledges the promise of soil scientists and soils professionals to continue to enrich the lives of all Americans by improving stewardship of the soil, combating soil degradation, and ensuring the future protection and sustainable use of our air, soil, and water resources.

Comment by President of PAPSS, Tom Benusa, CPSSc:

I am really glad to see that someone is finally recognizing the role of the SOIL PROFESSIONAL and the role we play in soil management and land use. We ask the soil to purify our water, grow our food, provide recreational activities, and provide a stable platform for our homes and offices.

Remember, without soil, life on land would not exist, as we know it. The soils under our feet are a vast reservoir for life and play a part in almost every aspect of human. This vital living system must be protected.

The general public really needs to understand the depth of our dedication and the wide range of experiences that help us maintain not only the soil but also the ecology of the United States. ■

<http://www.papss.org/> PA Association of Professional Soil Scientists

<http://www.ncsss.org/> National Society of Consulting Soil Scientists

<http://www.iuss.org/> International Union of Soil Sciences

<http://www.soils.org/> Soil Science Society of America

<http://soils.usda.gov/technical/> National Cooperative Soil Survey Standards

<http://ngm.nationalgeographic.com/2008/09/soil/mann-text> National Geographic September 2008

The Grand Opening of Dig It! The Secrets of Soil

article and photographs by Laurel F. Mueller



As an insignificant part of the “core design team” for this exhibit, I had the privilege of being invited to a special reception and private tour of “**Dig It! The Secrets of Soil**” on July 17, 2008. After years of planning, walking through a dream-come-true brought tears to my eyes and goose bumps to my arms!

This unique testament to the value of soil on this planet is a 5,000 square-foot exhibition, available to the public for free, on the second floor of the Smithsonian Institution's National Museum of Natural History in Washington, D.C. It will be open through January 3, 2010, and will then go on tour from 2010 to 2013.

For the web tour, go to <http://forces.si.edu/soils/index.html>

For complete information, go to <https://www.soils.org/smithsonian/index.html>

Our precious PAPSS monolith of the Hazleton series joined 54 soil monoliths from each state, territory, and the District of Columbia in an amazing wall display. What a glorious array of soil profiles! At the base of each framed slice of soil, is a plaque listing the contributors from each state.



The exhibit is filled with interactive stations about soil texture, color and parent materials, and the distribution of soils in the United States. Models show water, nutrient, and gas movement in soil and relate soils to our daily activities. There are 5 video components, including a 10-minute feature video, and free-standing and wall-hung panels and graphics.

The **Dig It! The Secrets of Soil** was, in part, the vision Dr. Patrick Drohan, Assistant Professor of Pedology at Pennsylvania State University. When he toured the Smithsonian about 8 years ago, he was upset that soils were overlooked as a part of natural history. He approached the curators at the Smithsonian with great enthusiasm. When he was informed of the millions of dollars it would take to create and support such an exhibit, he called their bluff, and assured them that the sum could be raised. The rest is history.



Patrick Drohan quote:

“We have a duty to help educate the public on the importance of soil by showing them how soil is the foundation for life.” ■

Patrick Drohan and Paul Kamps, founding sponsors of the exhibit.



PAPSS/PCPG 2008 ANNUAL MEETING AND TECHNICAL SESSION
NOVEMBER 7-8, 2008

Water Quality for the 21st Century - Chesapeake Bay and Beyond

Friday November 7

- 8:00am Registration
9:00am Introduction
9:15am **Overview of Research at the Stroud Water Research Center.**
Bern Sweeney, Ph.D. – Director of the Stroud Water Research Center.
9:45am **Tour of the Stroud Water Research Center.**
Bern Sweeney, Ph.D. – Director of the Stroud Water Research Center.
11:00am **Geology of Southeastern Pennsylvania.**
Howell Bosbyshell, Ph. D. - West Chester University
12:00 Lunch
1:15pm **The Chesapeake Bay Initiative.**
Dana Aunkst, PADEP
2:15pm **Evolution of Geochemical Soil Catena on Eroding Hillslopes.**
Kyungsoo Yoo, Ph.D., University of Delaware
3:30pm **Tour of Outdoor Research Projects on the Stroud Property**
Stroud Staff

Saturday November 8

- 8:30am Reconvene
8:45am **PAPSS Annual Business Meeting**
11:00am **Field Session – Catena Sequence of Soils on Deep Crystalline Bedrock
On The Stroud Property**
PAPSS & Stroud Staff

Where? Stroud Water Research Center
970 Spencer Road
Avondale, PA 19311
www.stroudcenter.org

Who should attend?
Soil Scientists, Geologists, Environmental Scientists, Regulators, Students, Watershed
Association Members, Environmentalists, Concerned Citizens

Questions? Call Russell Losco, Tech Session Organizer:
Phone: (610) 869-3066
Email: Soildude@comcast.net
Or go to www.papss.org

Hazleton State Soil Bill Update

by Steve Dadio

House Bill 771, designating Hazleton as the Official State Soil of Pennsylvania is currently sitting in the House Appropriations Committee. On April 29th, several PAPSS members were present as the House State Government Committee deliberated over HB 771. The Bill passed the Committee by a unanimous vote. While at the Capitol, we made several other visits to key House and Senate members requesting support for HB 771. A week later, we received a copy of a letter addressed to Representative Hershey (sponsor of the Bill) from House Majority Leader DeWeese, expressing his support for HB 771 once it made it on the House floor. We were very encouraged!

At this point, I was lining up PAPSS members to set up meetings with members of the Senate State Government Committee to shore up support in the Senate, where the bill has stalled in previous sessions. Unfortunately, HB 771 has been stuck in the Appropriations Committee since May 6th. There is no point in lobbying Senate members if the bill cannot pass in the House. Despite weekly calls to the Appropriations Committee Chairman's office, no progress has been made.

I'm urging all PAPSS members to call the Chairman's office and ask that HB 771 be brought before the Appropriations Committee so that it may be approved and receive a second consideration on the House Floor.

Hon. Dwight Evans

512 Main Capitol Building
PO Box 202203
Harrisburg, PA 17120-2203
(717) 783-1540

While I am hopeful that this bill will be passed, it may not. If it doesn't pass we may want to re-evaluate this endeavor as a priority of PAPSS. It has been six or eight years now (three of four legislative sessions). We need to either re-double our efforts or focus our priorities in another direction. Maybe we are going about this all wrong?

If PAPSS has any legislative muscle to flex, we ought to be able to get this bill passed. If we cannot get this bill passed that has nobody opposing us, how do we expect to pursue licensing, which likely will have several groups opposing us? I anticipate that this topic will be discussed at the Annual Business Meeting as well. ■

A Purpose for Professional Licensing

by Michael Lane

The Preamble to the PAPSS Constitution and Bylaws states, "The identification of soil as a natural body and the intelligent use of this natural resource are obligations of the professional soil scientist. The Pennsylvania Association of Professional Soil Scientists is hereby dedicated to foster the profession of soil classification, mapping, and interpretations, and to increase and further the dissemination of information concerning soil science as it contributes to the protection of the environment and the general human welfare."

What better way to increase and further the dissemination of information than to elevate soil scientists to the same tier as other environmental professionals through a state-sponsored licensing or registration law. Over the last several years, soil science has been moving further into mainstream consciousness and further into Pennsylvania politics. The use of alternate technologies in on-lot sewage disposal, reliance on infiltration of stormwater to control post-construction runoff, and point-source and non-point source pollutant controls for the Chesapeake Bay watershed all point to the growing understanding that soils are a valued resource.

It is becoming clearer with each project I work on and each educational seminar I attend that licensed soil scientists would be welcomed by other professional groups. This is evidenced by the joint meeting set up for November with the PCPG (see page 1). If we are respectful of other professionals, mindful of our limitations, and diligent in our approach, there is no reason why we cannot join Alabama, Arkansas, Delaware, Georgia, Indiana, Maine, Minnesota, New Hampshire, North Carolina, North Dakota, South Carolina, Texas, Virginia, and Wisconsin in obtaining a state-wide licensing or registration program. ■

Submit stories, news articles, announcements, website links, photographs, corrections, suggestions, or complaints to

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