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PENNSOIL

The Newsletter of the Pennsylvania Association of Professional Soil Scientists March 2002
P.O. Box 61035, Harrisburg,PA 17106-1035

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Pennsylvania Soil Scientist Planning Meeting for the 2006 World Congress of Soil Survey

On **Friday April 12, 2002** Pennsylvania Soil Scientists will begin our planning process for the July 2006 World Congress of Soil Science that will be held in Philadelphia, PA. The Congress is held every 4 years (this years is in Bangkok, Tailand) by the Internation Union of Soil Science. The theme of the 2006 Congress is "Frontiers of Soil Science: Technology and the Information Age." Web sites to view for information on the Congress and IUSS are:
www.17wcss.du.ac.th/
www/17wcss/li/ac/th/IUSS/IUSS.html

NRCS and Penn State are hosting the **Pennsylvania Planning Meeting on April 12 in Room 118 of the Agricultural Sciences and Industries Building, Penn State University, University Park, PA.** The meeting will begin at **10:00 AM** with and introduction and overview of a World Congress of Soil Science and the status of national planning by Dr. Gary Petersen, PSU. The remainder of the day will be spent brainstorming what we want to showcase in Pennsylvania, including Field Trips, Tours, Exhibits and Symposia. A small fee for lunch will be charged and the meeting should end by 2:00 PM. **Questions can be directed to Ed White (717) 237-2207 or Gary Petersen (814) 865-1540.**

Register by April 7th, 2002, for the *2006 WSSC Planning Meeting* by submitting your name, organization, address, phone number, and email address to Ed White, USDA-NRCS, One Credit Union Place, Suite 340, Harrisburg, PA 17110-2993, or by email to Ed.White@pa.usda.gov.

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Horace Smith Retires as NRCS Soil Survey Division Director.

The following is a letter from Horace Smith who retired January 3, 2002 as the Director of the Soil Survey Division with USDA-NRCS.

Dear NRCSers and Friends:
"If I had my life to live over, I would climb more mountains and swim more rivers. I would ride more merry-go-rounds. I would pick more daisies." With these thoughts in mind, it's time for me to move on. I entered on duty with the Soil Conservation Service (SCS) as a GS-5 Soil Scientist ($4,690.00 per annum) on June 8, 1964 in Champaign, Illinois. I've decided to retire on January 3, 2002. A major decision like this is never easy, but taking into account the fact that I want to pursue other challenges and ambitions and spend more time with my wife and family, I believe it is the right one. I am proud that I've been part of an organization that has left a legacy in the areas of soil and water conservation and in the development and application of soil science in the United States and abroad.

I have had a wonderful career that has far exceeded any expectations I had when I entered back in 1964. My friends who remain with the Natural Resources Conservation Service (NRCS) and continue on in public service know that ours is a career that is both rewarding and fun. From SCS/NRCS in Champaign, IL, Columbus, OH, Cockeysville, MD, College Park, MD, to assignments in Broomall, PA, Chester, PA, Raleigh, NC, Atlanta, GA, and Washington, DC, I have worked with many people and enjoyed every experience. Representing SCS/NRCS and the National Cooperative Soil Survey (NCSS) on short and long-term international assignments in Mexico, West Africa, Taiwan, Brazil,France, Spain, Italy, and Denmark will forever remain some of the most remarkable experiences of my professional life.

Every career has a few memorable highlights and so is the case with mine. Having a hand in selecting, supervising, and mentoring numerous employees and then see them rise to key positions of responsibility and leadership within the agency has to rank as one of the most rewarding aspects of my job. Serving as State Soil Scientist and leader of the NCSS in North Carolina, as Project Leader for the District of Columbia Soil Survey, and having a hand in developing a Soil Survey Program for The Gambia West Africa are all milestones which will always mean a great deal to me as I look back over my career. Being inducted into the George Washington Carver Public Service Hall of Fame at Tuskegee University; representing the agency at the opening of the Underground Adventure exhibition at the Chicago Field Museum; and leading the Soil Survey Program during its Centennial Celebration are all memorable events. Finally,working as Director of the Soil Survey Division and leader of the NCSS--as well as initiating a Soil Science Scholars Program gave me the opportunity to do some of the most gratifying projects of my career.

Since I announced my retirement, I've received several phone calls and emails. Some of these, especially a few from the field, would like to see me reconsider and stay on a few more years. Well, I guess there is no perfect time to do anything, but in the words of Ecclesiastes: "To everything there is a season, and a time to every purpose under the heaven: A time to be born, and a time to die; a time to plant, and a time to***.." In other words, as a wise individual once wrote, "A person should leave the stage while the audience is still applauding".

My wife, Myra, and I would enjoy hearing from you and would welcome your visits if you are ever in the Raleigh area. We will be at: 9300 Litchford Road, Raleigh, NC 27615; (919) 847-7131; hossnc@aol.com.

HORACE SMITH
Director, Soil Survey Division

More NRCS News

From the National Soil Survey Center, NRCS, Lincoln, NE

January 14, 2002

Several personnel changes have occurred within the Natural Resources Conservation Service Soil Survey Division during the past few months. These include:

National Headquarters

Dr. Berman Hudson has been selected as the Director of the Soil Survey Division to replace Horace Smith who retired on January 3, 2002. Prior to this position, he was a Senior Soil Scientist.

Soil Quality Institute

Dr. William Puckett has been selected as Director of the Soil Quality Institute. This position is located with the ARS National Soil Dynamics Laboratory, Auburn, AL. Dr. Puckett was formerly State Soil Scientist/MLRA Office Leader, NRCS, Auburn, AL.

National Soil Survey Center

Mr. Russell Kelsea has been selected as National Leader for Soil Survey Technical Services, NSSC, Lincoln, NE. Prior to this position, he was a Soil Scientist (National Soil Information System (NASIS))

Coordinator, NSSC, Lincoln, NE.
Dr. Karl Hipple has been selected as National Leader for Soil Survey Interpretations, NSSC, Lincoln, NE. Prior to this position, he was State Soil Scientist, NRCS, Spokane, WA.
Dr. Cathy Seybold has accepted a position at the NSSC, Lincoln, NE. She was formerly a Soil Scientist on the Soil Quality Institute's staff at Oregon State University, Corvallis, OR.
Mr. Ricky Bigler has been selected as Soil Scientist (NASIS Coordinator), NSSC, Lincoln, NE. Prior to this position, he was a Soil Scientist at the NSSC, Lincoln, NE.

Other Activities

Mr. Falk Hieke, Soil Science Scholar and Doctorate Candidate from Freiberg Germany, spent three months in the United States--August, September, and October--gaining firsthand knowledge of the NCSS, including field activities. His visit started in Washington, D.C. with an introduction to the National Soil Survey Program, the NCSS, and World Soil Resources by the Director of the Soil Survey Division and his staff. Mr. Hieke spent time in Alabama, Colorado, and California with Major Land Resource (MLRA) Soil Survey Offices and Soil Survey Project Offices getting practical field experience. He also spent time at the National Soil Survey Center learning database issues, laboratory procedures and research methods. His last week in the country was spent attending the Soil Science Society of America Annual Meeting in Charlotte.
Dr. Sergey Goryachkin, Head, Laboratory of Soil Geography and Evolution, Institute of Geography, Russian Academy of Science, Moscow, Russia, will be at the NSSC for seven months as a Fulbright Scholar. He arrived October 2001. Dr Goryachkin will be working on the Russian part of the circumpolar database which is a joint project of NRCS, Agricultural Canada, European Soils Bureau, and several groups in Russia. It is tied to projects of the Cryosol working groups of the International Union of Soil Scientists (IUSS) and the International Permafrost Association (IPA). He is integrating the Russian data to an NRCS database (maps and pedon data) and placing U.S. Soil Taxonomy names on the Russian maps and pedon data as well as WRB classifications and the Canadian Soil Classification.

http://www.statlab.iastate.edu/soils/soildiv/

PAPSS Annual Business Meeting

About 45 people attended the PAPSS 2001 Annual Business Meeting on Friday, November 9, 2001 at the DEP South Central Regional Office in Harrisburg, PA. After a discussion and a tour of the DEP "Green Facility," the PAPSS business meeting was held. Reports by the Treasurer, and other Committees were given. Nancy Sansoni, PAPSS Web Master, gave a report on the **www.papss.org** website and the number of hits to each page. An average of 575 people have used the PAPSS web site each month. Discussion of the current issues included the Hazleton State Soil Bill, Soil Scientist State Registration, a Smithsonian Soils Exhibit, and What do you want from PAPSS. The PAPSS 2002 Board and officers were elected before lunch. In the afternoon, a technical session focused on new frontiers of soil mapping. Dr. Marty Rabinhorst discussed sub-aqueous soil mapping and its applicability, Dr. Doug Miller, Tim Craul and Ed White demonstrated some uses of digital soil data, and Dr. Larry Hepner gave a presentation on the filming of a Mel Gibson movie on the Delaware Valley College corn fields. Look for the movie, that was advertised during the Super Bowl, due out in August. Thanks to DEP for hosting the PAPSS Meeting and allowing a tour of there "Cool, Green Building."

Make Plans to Attend:
The 2002 Northeast Branch Meeting of the American Society of Agronomy and Soil Science Society of America
July 14-17, 2002, West Virgina University, Morgantown, WV
Contact:John Sencindiver
jsencind@wvu.edu

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Stormwater Infiltration

by Russell Losco

In recent years, the emphasis on stormwater management in this region has changed. In the past, the main concern had been with detaining or retaining stormwater and slowing it's release to surface waters to prevent flooding. Increasingly, the emphasis has been on infiltrating stormwater into the soil to recharge groundwater while also slowing the waters transport into surface water by making the groundwater the means of conveyance. The approaches used to accomplish this are many and varied. Dry wells, seepage beds and trenches, infiltration basins and infiltration berms are just a few of the methods that we have seen used. Unfortunately, there appears to be no uniform set of standards for utilizing this method of stormwater management, outside of the suggestions found in the Pennsylvania Handbook of Best Management Practices for Developing Areas (BMP handbook). This presents a number of problems.

First among these problems is the fact that although the BMP handbook recommends infiltration of stormwater wherever possible, it does not give detailed instructions as to how and where to situate these infiltration structures in order to make them most effective. Often, designers who are used to dealing with stormwater in traditional ways, situate infiltration structures according to traditional principles. This means that structures intended to infiltrate stormwater into the soil are often situated in the lowest landscape positions, where the soil is of heavier textures, exhibits high groundwater, and is unsuitable for infiltration of water. Many times, this soil scientist has been asked to conduct testing for stormwater infiltration immediately upslope of delineated wetlands, and then is blamed when permeability values are not what the designer desired (A classic case of the "shoot the messenger" syndrome). Further, when stormwater infiltration structures are situated in these landscape positions and fail to perform as intended, designers, engineers, builders, and developers get the attitude that stormwater infiltration simply does not work. I have heard this argument brought up numerous times at municipal meetings by individuals seeking relief from having to use the Best Management Practice. Perhaps it would be more prudent to try to intercept the stormwater in higher landscape positions and situate numerous, smaller infiltration structures there within the better-drained soils.

The second problem encountered, relates to the first and involves the fact that the BMP handbook gives very little detail on the appropriate soils for stormwater infiltration. Although it is recommended that a 2-4 foot separation be given between the bottom of the infiltration structure and the water table, the water table is not defined as to whether it is seasonal, observed, or perched and mentions nothing of making determinations based upon the best available data, i.e. soil morphology. The result of this is that a lot of unqualified people are conducting testing for stormwater infiltration simply by digging backhoe pits, logging the depth to the observed water table with no attention being paid to redoximorphic features, which may indicate the true seasonal high water table. I know of one case where the soil profile submitted for a stormwater structure to document depth to water table consisted entirely of "Dark brown silt loam at 84 inches." This was given to me by an engineer who wanted me to write up similar soil profiles for another site saying that the Township had accepted this before; therefore that was what he wanted. When I gave him detailed profiles he became angry and accused me of trying to sabotage the project. In another case, a consultant compiled a soil profile in a mapped Aquult, which was devoid of any mention of redoximorphic features, yet noted an observed water table at a depth of 60 inches. This consultant then

117 Years Ago...
From W.D. Hoard Founder of HOARD'S DAIRYMAN 1885

"...men have completely stripped those noble old hillsides of fertility. They have been land robbers, every one of them. And now they are turning over the old oranges with the juice all sucked out of them to the state claiming that they have been No. 1 citizens. The man who will rob the soil is not a citizen, he is a robber."

proceeded to run a passing percolation test at a depth of 72 inches at this same location.

This brings us to the third problem, which is that the BMP handbook recommends that permeability testing be conducted to assure that the soils can receive the stormwater. Unfortunately, no mention is made as to what type of permeability testing should be conducted. As a result, percolation testing is the method which is almost universally utilized. Unfortunately, as has been often discussed, percolation testing is inherently inaccurate and unreliable. Percolation testing, at best, can only give a combined measure of vertical and horizontal permeability and does not adequately fit the needs of stormwater infiltration. It is being widely used, however, because it is almost universally familiar to engineers and lay-people.

I believe that the soil scientist community should step forward and lend their expertise to this field. Soils should be characterized to ensure that stormwater infiltration structures could function properly. Appropriate soil permeability testing should be conducted to ensure that these structures are sized properly. Currently, this work is being conducted largely by excavators, Sewage Enforcement Officers and lay people who do not fully understand the principles involved. I think that PAPSS should consider this topic as a possible future training session with invitations extended to township supervisors and engineers in hope of providing some standardization to these practices.

by Russell Losco, C.P.S.Sc.,Lanchester Soil Consultants, Inc.,311 East Avondale Road,West Grove, PA 19390 (610) 869-3066. Rlosco@aol.com

2002 Soil Planners: State Soils and Protecting Important Farmlands

The 2002 Soil Planner include with this PENNSOIL issue highlights selected State Soils and the Importance of Soil Resources and Farmland to our Nation. The planners are cooperatively published by the Natural Resources Conservation Service and the Soil Science Society of America. PAPSS member Mark Mills obtained the planners for PAPSS members by calling 1-800 THE-SOIL. Mark Mills also sent each state legislator on the House and Senate State and Local Government Commitees as copy of the planner with a letter encouraging them "to act toward moving this proposed legislation out of committee."

Although Pennsylvania leads the nation in the preservation of farmland, significant portions of our prime and important farmland soils are still being converted to other non-renewable uses each year. And as you can note on the map, Pennsylvania does not have a large portion of prime farmland. The American Farmland Trust has identified the Northern Piedmont area as the second most threatened farmland area in the U.S..

History of Soil Survey

A new book "*Profiles in the History of the U.S. Soil Survey*" edited by Douglas Helms, Anne B.W. Effland, and Patricia J. Durrana, has been published by the Iowa State Press. "*Profiles in the History of the U.S. Soil Survey* offers a broad-ranging collection of essays chronicling the development of the U.S. Soil Survey and its influence on the history of the soil survey as a scientific discipline that focuses on mapping, analysis, and description of soils. Soil Scientists and other soil survey professionals will find this collection valuable for the new research it provides and for the memories it preserves of life and work in the field and laboratory. Historians will increasingly turn their attention to this crucial earth science as the intriguing connections between soils, the environment, and human history become more apparent." The book is available from the Iowa State Press web site: **www.iowastatepress.com**

Need To Know Pennsylvania's Soil Moisture or Temperature Status?

www.wcc.nrcs.usda.gov

Pennsylvania has two SCAN (Soil Climate Analysis Network) monitoring sites installed that collect hourly readings of soil moisture, soil temperature, at various depths, climatic information such as rainfall, air temperature, and more. The sites are at Rock Springs, PA and Mahantango, PA. Check the web

site and download the data for any day in the last few years.

Soil is not Dirt

A Letter to the Editor pubished in the Harrisburg Patriot News

Webster defines "dirt" as any unclean or soiling matter, as mud, dust, trash, etc., and soil as the surface layer of the Earth, supporting plant life. Soil is not Dirt.

Soils are the natural resource that provide our agricultural, forest, wildlife and economic productivity. Soil is a natural, complex, life-sustaining system. It can cleanse, respire, filter, oxidize, reduce, decompose, retain, release and provide elements essential to life.

Pennsylvania has two bills in the General Assembly, House Bill No 1102 and Senate Bill No. 652, to select the Hazleton soil series as the State Soil for Pennsylvania and recognize the vital role our soil resources provide to all citizens.

Hazleton soils are home to the state bird, tree, animal and flower. They occur on over 1.5 million acres through much of the state.

Hazleton soils, along with all the soils in Pennsylvania, serve a vital role in the landscape. Understanding the functions and value of our soils and protecting, conserving, and improving the soil is the way to assure economic and environmental health and sustainability.

Drought, floods, water pollution and excess nutrients, urban sprawl, conversion of prime farmlands and depleted ground water occur - maybe because too many of us are still treating our soil like dirt.

Edgar A. White

Soil Scientist Laurel Mueller in the News

PAPSS Member Laurel Mueller was featured in an article on Bog Turtles in the Intelligencer Record on March 14th. Laurel was featured in an article that discussed the search for Bog Turtle habitat along a bridge project site in Doylestown Township. Laurel was pictured in the article, examining the soil with an auger. I am sure anyone wanting copies can contact Laurel.

Upcoming Activities

The Southeastern NRCS Soil Scientist staff has begun a study of Use Dependent Soil Properties, their measurement and variability within Chester and surrounding counties. This study is measuring surface and near surface water infiltration rates and soil bulk densities in preparation of the 2006 World Congress and as a part of the Soil Survey updating of Chester County. The study will help understand and document the effects of different land uses on important soil properties. Robert Grossman, Research Soil Scientist, NSSC, Lincoln NE will be assisting in the study and visiting field sites during the week of April 29-May 3.

The NRCS State Office soils staff has begun the creation of a CD-ROM that will show various Pennsylvania soil profiles and landscapes. The plan is to link the slides to the digital STATSGO (State General Soil Map) and to some of the soil lab data, major soil properties, and short descriptions of the soils. Soil Scientists with "paired" soil profile and landscape photographs or slides can help by contacting Ed White, State Soil Scientist.

On-Lot Siting Workshop

On Wednesday January 9, 2002, PAPSS sponsored a workshop regarding the siting of on lot sewage treatment systems. The emphasis was on systems sited on soils with a seasonal high water table between 10-20 inches from the soil surface. These soils in the past had been considered unsuitable for the installation of subsurface on lot systems by the Pennsylvania Department of Environmental Protection. Recent additions to the Alternate and Experimental Systems List have initiated a discussion regarding site criteria especially dealing with restrictive permeabilities. PAPSS was privileged to have speak on this issue, Jerry Tyler, Ph.D. from the University of Wisconsin and Director of the Small Scale Waste Management Project in Madison Wisconsin. Dr. Tyler has conducted extensive research with on lot systems and discussed the various design considerations outlined in his paper entitled "Hydraulic Wastewater Loading Rates to Soil".

Another facet of the siting issue is that site evaluators will be working lower on the landscape in closer proximity to wetlands and hydric soils. To discuss hydric soil identification, PAPSS was privileged to have Lenora Vasilas present this topic. Lenora's presentation dealt with Field Indicators of Hydric Soils. In order to bring the discussion into context, a background discussion of Pennsylvania's alternate/experimental permitting program was presented. As part of the background discussion Richard Kaintz, Sewage Specialist Supervisor from the DEP Northwest Regional Office explained the A/B Soil System. This is an alternate system which

provides treatment by a subsurface sand filter and a UV light disinfection unit before discharging the effluent to an at-grade on lot disposal bed.

The workshop was very well attended attracting not only PAPSS members but DEP staff and other wastewater professionals some from other states. Thanks to the DEP South Central Office for allowing PAPSS to utilize their conference room which was filled to capacity with approximately 80-100 people in attendance. The success of this workshop was due largely to the efforts of Joe Valentine and our thanks to him for arranging the speakers and his organizational skills.

Darryl Fritz
PADEP- Northeast Regional Office
New E-Mail Address: DFRITZ@state.pa.us

"Dig In!" Hands-On Soil Investigations ©

The National Science Teachers Association (NSTA) and the Natural Resources Conservation Service (NRCS) announce the release of ***"Dig In!" Hands-On Soil Investigations.***

This lively, 129-page softbound book, a bestseller when it debuted at the 2001 NSTA convention in St. Louis, will soon assist educators across the nation in teaching scientifically accurate soil and soil conservation information in an enjoyable way. The book is available from NSTA by calling or writing.

National Science Teachers Association 1840 Wilson Boulevard Arlington, VA 22201-3000 or call 703-243-7100 or 1-800-277-5300 (7/24/01) NSTA Book Store.

The book's target audience is Kindergarten through Grade 4 teachers. "Dig In" provides classroom-tested lesson plans, stories, and activities about soil formation, habitats, and land use. The book also discusses animals and plants that depend on soil. The book's activities are interesting and fun and lead to a greater appreciation of the value of soil. Activities meet National Science Education Standards. NSTA is the world's largest organization promoting science teaching and learning for all. The 53,000-member association publishes four journals, a newspaper, and many books and publications for teachers. (Copies may be available by calling 1-800 THE SOIL)

The Federal Laboratory Consortium for Technology Transfer (FLC)

950 North Kings Highway, Suite 208,Cherry Hill, NJ 08034

http://www.federallabs.org

(The FLC Environmental E-Mail Newsletter-dedicated to providing information on environmental news, technologies, facilities, and success stories from federal labs. Their goal is to provide a wide range of information on topics such as pollution prevention, hazardous materials management, remediation, wastewater issues, air quality, and environmentally-friendly materials. The E-Newsletter can be subscribed to on the above web site).

Better Way to Measure Metals in Soil

The Naval Research Lab (NRL) has received a patent for a faster, safer device that measures concentrations of metals in soil located in hazardous waste environments. NRL's invention is a hand-held, X-ray fluorescence spectroscopy device that takes real-time fluorescence measurements of soil and sediment samples. An integral cone tip penetrometer accesses underground soil samples so measurements can be made without removing samples from the ground. The X-ray fluorescence technique enables operators to determine the presence of even very slight concentrations (less than 100 parts per million by weight) of metals typically found in environmentally contaminated sites. This feature is especially useful for initial surveys of hazardous waste sites.

For more info: Diane Banegas, 703-696-2868, banegad@onr.navy.mil <mailto:banegad@onr.navy.mil>

Chemistry Stops Chromium Contamination

Soil contaminated with chromium is being carted up and carried away as part of cleanup projects at government and industrial sites throughout the U.S. But researchers at the DOE's Pacific Northwest National Lab have found a way to convert such soil to a less hazardous form that can be left in place.By injecting diluted hydrogen sulfide into the subsurface, a chemical reaction converts highly toxic hexavalent chromium to trivalent chromium, which occurs naturally in soils. This chemical reduction of chromium causes the material to cling to soil particles and not migrate down to the water table. Without the conversion, the toxic form of chromium moves quickly through soil into groundwater and possibly into rivers. Early demonstrations show potentially large cost savings.

For more info: 509-375-3776.

Soil Monoliths

There has been a lot of interest by Educators and Conservation Districts in obtaining Soil Monoliths for instruction and display. Any PAPSS member interested in helping make Soil Monoliths, or with suitable sites, should contact Jake Eckenrode at 814-355-8769

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