

## SOILS WORKSHOP: HOW TO ASSESS, AMEND, MANAGE AND RESTORE SOILS FOR BENEFICIAL USE ON RESTORATION SITES, *University of MD, College Park, MD- March 28, 2013*

The objective of this one-day Soils Workshop is to provide to ecological restoration professionals the fundamentals for using engineered soils. The Soils Workshop will provide the participants with tools to gather information and make decisions about soils for restoration projects, and the skills and knowledge to prepare site plan soil specifications and to make informed choices about engineered soils. Also included: *Participant Case Study Evaluations* where participants submit their on-going or proposed projects as the Case-Study for discussion and problem solving by the Workshop Team (See Below – Putting It All to Use – for additional information).

Workshop Team: Michele Mahoney-USEPA; W. Lee Daniels, PhD-Virginia Tech; Greg Evanylo, PhD-Virginia Tech; and the SER-MA Coordinators: Patti Burns, MS - WET, Inc., and Bill Young, PWS, RLA-Young Environmental, LLC.

Presentation/Activity	Time
<b>Pre-Workshop Reading Assignment:</b> <ul style="list-style-type: none"> <li>• <i>USDA Urban Soils Primer/Chapter 2</i> - (<a href="http://soils.usda.gov/use/urban/primer.html">http://soils.usda.gov/use/urban/primer.html</a>)</li> </ul>	
<b>Registration and coffee</b> <u>Burns</u>	<b>8:30-9:00</b>
<b>Welcome to the Workshop</b> <ul style="list-style-type: none"> <li>• The importance of soils in restoration projects, with a focus to disturbed sites. <u>Young</u></li> <li>• Overview and program agenda and Introduction to the Workshop Team. <u>Young</u></li> </ul>	<b>9:00-9:15</b>
<b>Intro to Soil Ecosystem Services</b> <ul style="list-style-type: none"> <li>• Soil Ecosystem Services - Defining SES and an introduction to the USEPA's program. <u>Mahoney</u></li> <li>• How Soil Amendments Work to Enhance Soil Ecosystem Services <u>Evanylo</u> <ul style="list-style-type: none"> <li>– <i>Soil Physical Properties</i>: Soil structure, pore space, infiltration/drainage, water holding capacity</li> <li>– <i>Soil Chemical Properties</i>: Plant nutrients, pH buffering, cation-exchange-capacity (CEC), Carbon-accumulation, pollutant sequestration/degradation</li> <li>– <i>Soil Biological Properties</i> – enhanced rhizosphere (microbial) activity, improved macroinvertebrate habitat</li> </ul> </li> <li>• <b>BREAK</b></li> <li>• <u>Role of Soil Organic Matter in Sequestration of Carbon</u>: Terrestrial Carbon Sequestration: An Ecosystem Service Provided by Using Soil Amendments for Site Remediation and Reuse. <u>Mahoney</u></li> </ul>	<b>9:15-9:30</b> <b>9:30-10:00</b>  <b>10:00-10:15</b> <b>10:15-10:45</b>
<b>Creating the Soil Ecosystem Services using Amended Soils</b> <ul style="list-style-type: none"> <li>• Testing Soils -what to test for; indicator parameters; interpretation. <u>Evanylo</u></li> <li>• Knowing when to Amend Soils Various Soil Amendments – definition, characteristics, pros/cons, basis for application. <u>Evanylo</u></li> <li>• Organics – sludges (biosolids, PMS, DAF), manures, leaf litter, woody waste, composts. <u>Evanylo</u></li> <li>• Various Soil Amendments, continued – definition, characteristics, pros/cons, basis for application, <u>Daniels</u></li> <li>• Inorganics- combustion wastes, mineral fines, dredge, soil substitutes <u>Daniels</u></li> <li>• <b>LUNCH</b></li> </ul>	<b>10:45-11:30</b>   <b>11:30-12:00</b>  <b>12:00-12:40</b>
<b>Using Soil Amendments to Restore Soil on Disturbed Land</b> <ul style="list-style-type: none"> <li>• Wetlands <u>Daniels</u> – 25 minutes</li> <li>• Highway and Utility Easement Corridors - <ul style="list-style-type: none"> <li>– Overview and general practices <u>Daniels</u> – 20 minutes</li> <li>– Use of compost for soil restoration and re-vegetation <u>Evanylo</u> – 25 minutes</li> </ul> </li> <li>• Dredge Spoils <u>Daniels</u> – 25 minutes</li> <li>• Mined Land - Coal, gravel &amp; heavy minerals – routine <u>Daniels</u> – 45 minutes</li> <li>• <b>BREAK</b></li> </ul>	<b>12:40-3:00</b>          <b>3:00-3:15</b>
<b>Real-World Applications and Conflicts –</b> <ul style="list-style-type: none"> <li>• Writing Engineering Specifications for Amending Soils <u>Young</u></li> <li>• Regulatory Numerical Clean up or /Screening Level Criteria (Short-term Goals) versus Reuse of Soils and Sludges and other Amendments (Long-Term Benefits). <u>Burns and Mahoney</u></li> </ul>	<b>3: 15-3:45</b>  <b>3:45-4:10</b>
<b>Putting it all to Use: Applications for Soil and Site Restoration (Workshop Team and Participants)</b> <ul style="list-style-type: none"> <li>• Case Studies (2 Cases, 20-25 minutes each) – Panel and Participants</li> </ul> <p><b><u>Request for Participants to Submit an Abstract of their Proposed or On-Going Restoration Project Prior to the Workshop.</u></b> If selected, the Workshop Team will use <b>YOUR</b> project as one of two case studies. After participant's 5-minute project overview to the class, the Workshop Team will evaluate the project for up to 20 minutes to help problem-solve the soils amendment options.</p> <p><u>Submit a Brief Case Study Abstracts</u> to SER-MA by March 4, 2013 (Send to Patti Burns: <a href="mailto:pburns.wetinc@gmail.com">pburns.wetinc@gmail.com</a>). Abstracts should provide restoration goals, existing knowledge of soils, general habitat type, restoration site plan, and plans to restore soils, vegetation list, site hydrology (as applicable), name and contact information. <u>Project confidentiality will be honored.</u></p>	<b>4:10-4:55</b>
<b>Evaluations, Take Home, and CEU Coordination</b> <ul style="list-style-type: none"> <li>• Participants leave with an extensive bibliography of sources and handouts with Case Studies (as hard copy or links), and knowledge to improve soil ecosystem services on disturbed sites.</li> </ul>	<b>4:55-5:00</b>