

Environmental Assessment

The Official Newsletter of the Pennsylvania Association of Environmental Professionals

Summer/Fall 2010



Environmental Assessment

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2010 Board of Directors

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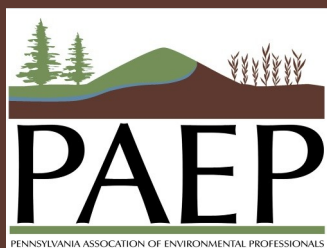
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About the Cover: Crayfish Hunting in Kettle Creek by PAEP Member Ed Smith.



Message from the President

Virginia Bailey—PAEP President

PAEP's 25th year has been a busy one!

The Western, Central, and Eastern Sections have been holding successful monthly events, and I hope you have had the opportunity to attend. The P2E2 Roundtable has also been active in 2010 with events/tours. Remember, PAEP Section events can only continue to be successful with regular member participation! Feel free to contact your Section Leader if you want to find out more about upcoming events and/or become involved in the planning of future events.

PAEP had a great annual conference in May at the Bear Creek Mountain Resort and Conference Center in Macungie, Berks County. Most who attended the conference seemed to fall in love with the environmentally-friendly resort. Conference Chair Camille Otto, planner Keith McNally, and the conference planning committee did an excellent job to make the conference a great success. Planning for the 2011 annual conference is underway, so look for more information on a date and location soon!

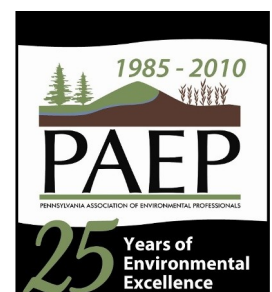
New to PAEP this year, in addition to our existing Karl Mason Awards program, were three new membership awards. Congratulations again to the 2010 award winners! More information about the winners is contained in this newsletter and on the PAEP website.

Thank you to all who submitted photographs in PAEP's first annual photo contest. We received lots of wonderful submissions, which made the Board's duty of narrowing the field to five finalists in each category challenging! Conference attendees enjoyed viewing the finalists and voting for their favorites. The winning photos are contained within this newsletter issue, and one by Ed Smith is proudly showcased on the cover. PAEP will hold another contest in 2011, so start thinking about possible submissions!

I encourage you to take full advantage of your PAEP membership. The organization is here for YOU.

- Interested in networking? Attend Section events and the conference. Make use of the membership directory and get to know new people.
- Looking to expand your technical knowledge? Attend Section events even on unfamiliar topics and network. Talk to other members about their work. Come to the annual conference and sit in on a variety of sessions. Read the PAEP newsletter, *Environmental Assessment*. Visit and register for the PAEP Forum (<http://www.paep.org/forum>); ask questions and initiate discussion.
- Searching for a job? Post your resume on our website. Review job posting emails. Refer to the membership directory and contact other members. Attend section events and network.
- Want to become more involved in the operations of the organization? Contact the Section Leader and help plan future events. Join the planning committee for the annual conference. Write an article for the newsletter. Volunteer to help with student chapters. Run for the Board.

If you have any comments or ideas to further improve PAEP, please feel free to contact me or any other member of the Board.



PAEP News

Virginia Bailey—PAEP President

PAEP Establishes New Relationships with Environmental Professionals-in-Training

PAEP has laid the groundwork to establish working relationships with the environmental programs at both Susquehanna University in Selinsgrove and Harrisburg Area Community College (HACC).

At Susquehanna University, members of the PAEP Board of Directors meet with students during the spring semester to discuss the creation of a PAEP student chapter at the school. Dr. Katherine Straub, Associate Professor of Earth and Environmental Sciences, has volunteered to be the faculty advisor for the chapter. The students are as excited about interacting with PAEP as PAEP is to establish a student chapter! An informal PAEP event was held on campus in late April with students and six PAEP Central Section members to talk one-on-one about career opportunities in the environmental field and resume and interview preparation. PAEP plans to meet again with students and Dr. Straub in early to mid-September to outline student/professional interactions and events for the fall and spring semesters.

PAEP met with Professor Christine Bittering of HACC in the spring and discussed how PAEP and the environmental programs of HACC can best interact. Because the Harrisburg Campus of HACC is located near PAEP Central Section events, students will be invited and encouraged to attend and network. Additionally, there may be opportunities for students to contact and interview interested PAEP members as part of their required coursework. PAEP members and HACC students may also work together on campus service projects. More discussions with HACC are anticipated in the coming weeks as the fall semester gets underway. As a professional organization, PAEP serves as a valuable resource for environmental students by providing insight into the vast spectrum of environmental specialty areas, career development, and potential employment opportunities. For the PAEP general membership, student members/chapters provide opportunities to “give back” and mentor the next generation of environmental professionals, educate students on technical expertise, and network for future interns or permanent hires.

If you are interested in becoming involved with PAEP’s upcoming Susquehanna University and/or HACC activi-

ties or would like to assist in the establishment of new student chapters at other colleges or universities in the future, please contact [Virginia Bailey](#) or [Duane Peters](#).

Section Leaders Committees New for 2011

Beginning in July of 2011, the Western, Central and Eastern Sections of PAEP will each have a Section Leaders Committee made up of three Section Leaders.

Building upon the already increased level of PAEP section events occurring across the state, the Board of Directors has developed a new expanded section leadership structure and guidelines that will allow sections to increase opportunities for events, membership recruiting, and fundraising on the regional level. The Section Leaders Committee will be responsible for following the guidelines outlined in the Section Leaders Operational Policy. Advantages of having a Section Leaders Committee of three include sharing the workload and, if one Section Leader has time constraints at any particular time, the other Section Leaders who are aware of operating procedures can keep the momentum of section operations going in the interim.

Within each section, the three Section Leaders will be elected to the committee by elections. Section Leaders would have equal status within the Committee and divide responsibilities and oversight assignments however they see fit. For this first year of implementation, current Section Leaders would retain the Section Leader position without undergoing the election process. Their seat would be up for re-election in mid 2012. The purpose of this is to allow the current Section Leader to mentor the additional Section Leaders and to provide an alternating election schedule. The two additional Section Leaders positions will be determined by general election in June 2011 with two-year terms starting July 1, 2011.

Individual candidates running for a Section Leader position will be elected by PAEP members from the section they are proposing to lead. Candidates for a Section Leader position cannot be a current member of the PAEP Board. Section Leader elections will take place after annual Board elections have concluded. Term limits would be set at two years for the Section Leaders with no limit on how many terms an individual may

Remembering “Doc”

Marci Mowery

We all have heroes...those people we encounter who then influence us through their words, deeds or actions. They could be historical

figures that we find in books or perhaps on the silver screen, maybe even the billboards we see dotting the highways with inspirational messages. Heroes can certainly be one of those contemporary people who pass through our lives and leave an indelible mark. For me, one of these people is Maurice “Doc” Goddard, whom I had the privilege to meet early on in my career and who intimidated me with his booming voice, strong presence, and list of accomplishments that read like a Roman scroll. Recently, I reacquainted myself with Doc through literature—reading his biography by Ernest Morrison, reading personal stories from the 1997 Goddard Symposium—and by listening to anecdotes from his contemporaries. This hero of the environment offers many lessons for those of us working in the environmental arena, if we pause momentarily to contemplate his life.

My organization, the Pennsylvania Parks and Forests Foundation, in partnership with the Department of Conservation and Natural Resources, WITF, and PAEP, launched the Goddard Legacy Project in September 2009. This multi-year endeavor consists of a successful bid to erect historical markers in key locations across the commonwealth; a full-length documentary which airs on public television in fall 2010; interpretive panels in state parks across Pennsylvania; a rededication of Wykoff Run Natural Area as the Maurice Goddard/Wykoff Run Natural Area; and a symposium which will take place in the fall. These undertakings reconnect the citizens of the commonwealth to a legendary figure to whom we owe a debt of gratitude.

The Legacy

Known for his no-nonsense, blunt style, Maurice K. Goddard served under five Pennsylvania governors as Secretary of Forests and Waters and as the founding Secretary of the Department of Environmental Resources (1955-1979). His legacy as a public servant includes:

- A commitment to professionalism and civil service



- Establishment of a state park within 25 miles of every Pennsylvanian
- A watershed-scale approach to water management
- Securing dedicated funding for natural resource conservation—the Oil and Gas Fund, Project 70 and Project 500 bond initiatives
- A profound influence on national conservation policy
- Instrumental in the formation of the Delaware River Basin Commission and Susquehanna River Basin Commission
- Indelible influence on forestry practices, water quality protection, and ecosystem approach to conservation.

Early Years

Born in 1912 in Lowell, Massachusetts, Maurice K. Goddard was the son of Norman O. and Susan Kimball Goddard. Maurice spent his childhood in Pretty Prairie, Kansas, where his father was called to a clergy position. While he was in high school, his family moved to Toronto, Can-

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ada and then to Maine, where he earned a B.S. in forestry at the University. He taught for several years at Penn State's Mont Alto campus before pursuing a master's degree in forestry. In 1940, he married Ethel Mae Catchpole. The couple had two sons, Kimball and Mark.

Goddard served in World War II on the staff of General Eisenhower where his service earned him two distinguished awards—the Bronze Star and the Legion of Merit. In 1946, after his Army stint, he returned to Mont Alto to run the forestry school. He then went to Penn State's main campus in University Park to direct the School of Forest Resources where he remained until 1955.

Mr. Secretary

In January of 1955, Governor George Leader appointed Goddard as his Secretary of Forests and Waters. Under Governor Leader, Goddard worked ardently on obtaining civil service status for his professional staff. Goddard considered this to be one of his greatest accomplishments.

In 1955, the state's 45 parks were located on already owned state forest lands in remote areas of the state. A number of things helped to fuel Secretary Goddard's vision of a park within 25 miles of every citizen including a national movement for parks near cities, better roads state-wide, increased automobile ownership, and increased "leisure" time. Not only did Goddard envision a park within an easy drive of every citizen, he understood the need to fund this vision, thus working to develop the Oil and Gas Lease Fund, Project 70 and Project 500.

Conservation Leadership

In January of 1971, the Department of Environmental Resources (D.E.R.) was created merging the Departments of Forests and Waters, Mines and Mineral Industries, and other related responsibilities. Goddard was formally appointed Secretary in 1975 and continued to serve the commonwealth until his retirement in 1979. During this time he more fully expanded

what we now call the ecosystem management approach. In Goddard's later years he advocated for establishing a separate agency for parks and forestry; and in 1995, Governor Tom Ridge created the Department of Conservation and Natural Resources. Goddard died later that same year.

The Lessons

Goddard shaped Pennsylvania's environment and environmental policies, as well as many national endeavors. A review of history helps us make important decisions for the future, while avoiding past mistakes. I strongly recommend reading more about the life of Maurice Goddard, as the few paragraphs above barely scratch the surface of his accomplishments. I now want to focus upon the lessons to be learned from those accomplishments.

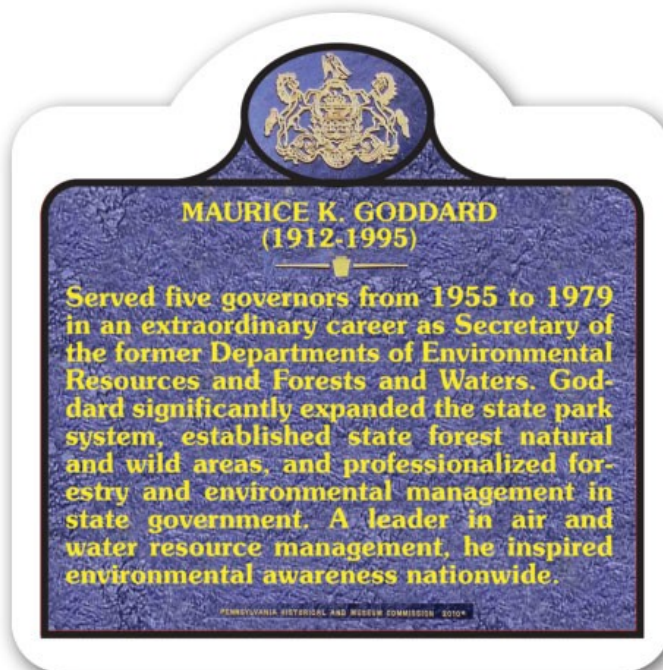
Compass Points—For Goddard, these compass points were **family, friendships, character and love**. While his own family may have suffered due to his

tireless commitment to his work as Secretary, he fully understood the value of family and much of his work was for the children and the children's children. Leadership guru Steven Covey calls these our principles, those things that when made your focus, can produce a better end for everyone involved.

Discipline—Discipline defines itself in many ways, but for Goddard this meant setting your eye on the goal and keeping it in sight until the goal was reached. In our daily lives we are bombarded with distractions, opportunities for new projects, and an array of information that often pulls us in many directions. It is through discipline

that we can **prioritize** and **get the job done**. Discipline to Goddard meant **not cluttering his plate** with unnecessary projects and information, a difficult task in this era of information and "need it now" mentality. Yet this didn't mean not paying attention to detail. In fact, Goddard was a **master of detail**, educating himself on every aspect of a project so as to make informed decisions and to be prepared for opposition.

To reach our goals, we must sort through the human and other **resources** that we have and thoughtfully choose those which lead us to the desired end. Goddard, an avid reader, never went into a meeting **unprepared** with the facts and figures he needed to present his case.



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Streamside Sustainable Engineering

Written by Angela Schreffler, CE, PWS and Michael Hartley, PE, PMP

Special Thanks for suggestions, comments, plans, and/or photographs to Mr. Bill Savage of PA Fish and Boat Commission and Mr. Peter Kawash of PA Dept. of Environmental Protection, NE Regional Office.

Can structural integrity, erosion protection and ecosystems live in harmony? This article suggests – yes! In man's pursuit to maintain safe infrastructure, natural stream flow and habitats get altered. There then is a constant balancing act between man-made protection of the infrastructure with the needs of the natural environment to maintain a thriving ecosystem. Sometimes the answer is over thought and sometimes it is over engineered. The two needs do not always have to dictate counter-productive solutions. This article will provide some food for thought for engineers and biologists over some age-old issues with newer ideas. But before we get into the nuts and bolts of the article, here is a quick version of the answer to the “Why” part of the question. Why not continue to use traditional methods such as utilizing hard structural components such as rip-rap lining? A stream is a complex system and reacts to all changes, no matter how small they seem to us. Adding a structural feature can change the stream's pattern and/or the stream's dimension. By altering either of these two sets of features, you can change the stream's function and value to its larger watershed, as well as to the immediate surrounding ecosystem. Many environmental consultants would love to be involved in the big natural stream channel design project where we analyze the entire system and its interactions and design a natural solution that achieves converting a degraded stream back to its original, almost pristine-like state. But not every project has to be a full blown natural stream restoration to improve, or at least maintain, the stream's natural function and value. The items discussed in this article are minimization of impacts, most of which can be used in the smallest of bridge replacement projects.

Problem #1: I designed my rip rap apron at the outlet of my storm water pipe in accordance with the DEP E&S manual, but it seems unnecessarily large in comparison to the storm water pipe and the receiving stream below.

Answer: The first step is to take a good look at your site. Does the pipe have to empty directly into the stream? Try to pull the endwall/pipe outlet back as far as possible from the stream bank. This way, once the water has exits the pipe and travels through the designed apron, the flow is dissipated and enters the stream closer to a sheet flow condition.

As far as sizing the apron, the DEP E&S manual and engineering calculations work for the majority of situations, but on a case by case basis, may not be the best answer. Perhaps your designed apron turns out to be larger than the

channel itself. Let's say your field visit revealed a relatively stable stream channel with minimal flows. The apron could be sized according to your professional judgment and then the rationale behind your decision be documented in your permit application. No reason to create a larger than necessary impact on the stream! Remember project “right-sizing” of highway/bridge projects to set design criteria? The same thinking can be used on the smaller scale decisions within the project design process.

Alternatively, perhaps your design apron is larger than the channel itself, but due to erosive forces or field observations, you feel the large apron is needed. In this situation, the least impact to the stream may occur, not by changing the size or location of the apron, but by changing the shape of the apron. Instead of using the standard triangular apron detail, another option is to use the large apron to create a smooth transition from the storm water pipe into the stream channel by making the apron fit the existing stream geometry. You can use detailed elevation changes and apron layout modifications to turn the storm water flows into the stream channel to conform to the natural stream flows. This approach will require you to create some new details and to explain the design intent to the contractors, but will also provide more natural post-construction flows and a more stable stream channel.

Cost Comparison: This case scenario is more difficult to estimate variations in unit costs, and so we provide a brief discussion about the associated construction costs in general. In the first situation discussed above there should be a decrease in construction costs. By moving the storm water outfall away from the stream channel the pipe run would be shorter requiring less pipe and potentially less earthwork. Secondly, a smaller, “right-sized” apron would require less excavation and less rock, and would again result in lower construction costs. Finally, no special equipment or materials would be required to install a customized rip rap apron that conforms to the natural stream channel, so construction costs should be the same as a standard apron. Therefore, by creating a few customized details, you can create a more natural project with fewer impacts while not adding construction costs.

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Problem #2: We are replacing a structure and the stream channel under the existing structure is much wider than the natural upstream and downstream channel, or, we need a larger hydraulic opening to pass the design storm events and not cause increases in water surface elevations.

Answer: The knee-jerk reaction seems to be to maintain the extremely wide stream channel or widen the channel to maximize the channel hydraulic opening through the structure. After all, your typical bridge photo usually has a stream running under it, from abutment to abutment. However, widening the stream has thermal, habitat, and hydraulic impacts in the immediate vicinity, not to mention impacts within the larger ecosystem. There is again a better option to solve this problem that has multiple benefits. You can keep the stream channel the same width as the natural channel upstream and downstream of the project and create a benched floodplain through the structure. The designed hydraulic opening is required for flood events, not during base flow, so it seems to make sense to keep the base flow channel the natural width, but provide a floodplain and required opening to carry floodwaters during larger storm events. The benched floodplain still allows for increased hydraulic opening during flood conditions once the water surface elevation rises above the stream banks. The benched floodplain can also provide scour protection at the abutments, decreased bank erosion, more natural in-channel sediment transport and deposition, and overall provides a more stabilized channel through the structure. Also, by keeping the natural channel width, you are maintaining a more natural base flow depth and therefore helping to maintain similar in-stream habitat as the natural condition and not result in increased water temperature – which is an even bigger issue in streams containing trout. Again, this option is dependent upon site constraints, but in most cases, you can achieve the hydraulic opening required, without widening the stream and maximizing the opening used during base flow.

Cost Comparison: For this case scenario we are comparing a wide channel construction through a structure and a benched floodplain channel construction through the structure. We assumed a thirty feet bridge length between abutments and a ten feet stream width between tops of banks. With all other conditions assumed to be the same, the benched floodplain construction would only require additional fill and vegetated stabilization.

The fill and stabilization required to construct the benched floodplain would cost approximately an additional \$75. / LF of stream bank. If fill can be used from other excavation activities onsite, this cost is then even less. Excavation of this same section to widen the

stream channel would incur costs associated with removal of material.

From this example comparison we see that the benched floodplain would add initial construction cost to the project, but it should also be noted that a more stabilized channel would likely reduce costly maintenance throughout the structure's useful life. Understandably, the H&H study and required water surface elevations tend to drive the hydraulic opening layout for most structures, but the health of the affected stream channel should also factor into the overall project design. You can achieve both by designing the required hydraulic opening, but maintain the natural cross section shape of the channel.

Problem #3: Without making a major project over it, I'm looking for an alternative to rock lined swales.

Answer: Permanent Turf Reinforced Mats (TRM) provide a great, long-lasting, and more natural alternative to rock lined swales. During construction, the permanent TRM is spread over the newly seeded soil surface and then becomes embedded in the root mat of the vegetated swale as part of the natural growing process. The embedded, permanent TRM then provides long-term vegetation reinforcement which in turn provides greater resistance to erosive forces. There are many TRM products out there, some of which are not rated as "permanent" TRM's; these non-permanent TRM's will biodegrade in a few seasons once vegetation is established. Remember to specify a permanent TRM if the swale lining being designed needs additional shear strength beyond what is provided by only vegetation.



Photo of TRM lined temporary conveyance channel in Wayne County, PennDOT District 4-0. Photo provided by Mr. Peter Kawash, DEP Northeast Region

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Restoring the Chesapeake Bay: TMDLs, WIPs, and the Next 15 Years

John R. Shuman, Ph.D.

The Chesapeake Bay states are facing mounting pressure from the EPA to take action that will meet Bay restoration goals by 2025.

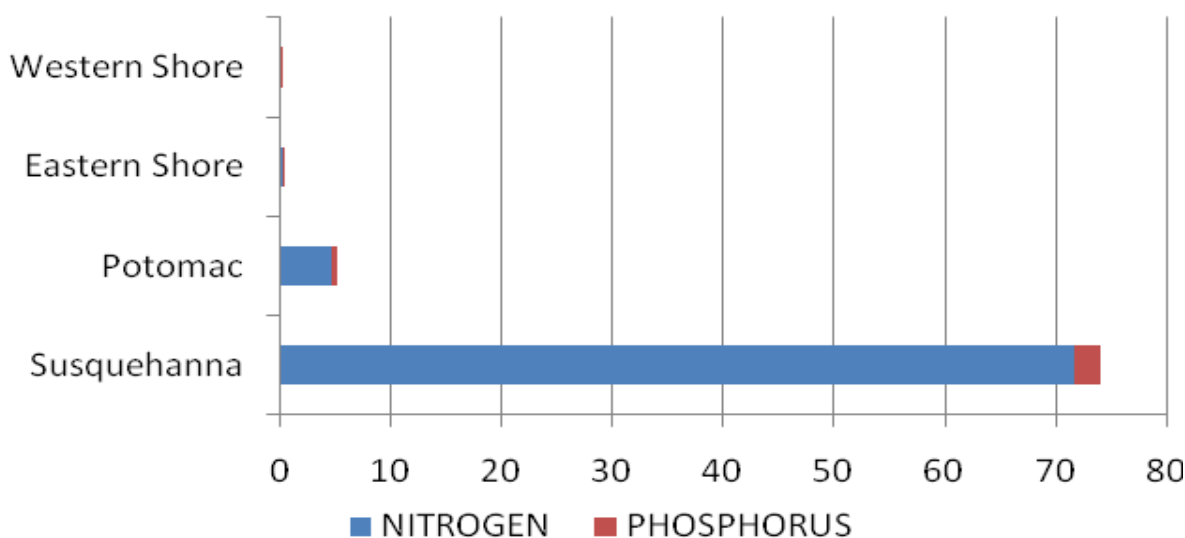
The willingness and desire by the states to meet Bay restoration goals is nothing new, but now there are federal consequences if the goals are not met. What led to these new directives, and what does it mean for the states, and the Bay?

The intent to restore the Chesapeake Bay has its political origin in 1983, when the one-page Chesapeake Bay Agree-

ment was signed by the EPA, Pennsylvania, Maryland, Virginia, and the District of Columbia. The 1983 Agreement pledged a cooperative approach by the Bay state partners to fully address the extent, complexity, and sources of pollutants entering the Bay. This agreement follows earlier scientific efforts, when \$27 million was funded by Congress to conduct a five-year study of the Bay's degradation. Since that time, the Chesapeake Bay 2000 Agreement was signed by the previous Bay state partners, and also by the states of New York and Delaware. The Bay 2000 Agreement set the course for restoring the Bay over the next 10 years. West Virginia signed on to this pledge in 2002. In 2007, however, the Governors of the Bay state partners

acknowledged that they would not meet the goals and timetable of the 2000 Agreement. The Chesapeake Bay Foundation, a non-profit organization focused on restoring the Bay, along with several other partners, announced in October 2008 their intent to sue the EPA for not fulfilling the Chesapeake Bay 2000 agreement. They filed suit in January 2009.

On May 12, 2009, the Chesapeake Executive Council (comprised of the Bay Agreement signatories) announced that Presidential Executive Order 13508 was issued that mandated federal leadership for the



The Chesapeake Bay watershed (left) and the nutrient load allocations for Pennsylvania (graph at right; million pounds per year) established by the EPA for the four Bay tributary basins in Pennsylvania. Cumulative Pennsylvania loads in 2009 are 108.2 M lbs nitrogen and 3.96 M lbs phosphorus. These load allocations must be met by 2025.

ment was signed by the EPA, Pennsylvania, Maryland, Virginia, and the District of Columbia. The 1983 Agreement pledged a cooperative approach by the Bay state partners to fully address the extent, complexity, and sources of pollutants entering the Bay. This agreement follows earlier scientific efforts, when \$27 million was funded by Congress to conduct a five-year study of the Bay's degradation. Since that time, the Chesapeake Bay 2000 Agreement was signed by the previous Bay state partners, and also by the states of New York and Delaware. The Bay 2000 Agreement set the course for restoring the Bay over the next 10 years. West Virginia signed on to this pledge in 2002. In 2007, however, the Governors of the Bay state partners

restoration of the Chesapeake Bay, including the development of a coordinated implementation strategy and annual action plan for restoration. The Chesapeake Bay Foundation and partners suit was settled on May 11, 2010.

As a result of EPA's mandated leadership by EO 13508, the restoration of the Chesapeake Bay has taken on a new process for setting and achieving goals on a strict timetable. The EPA is set to finalize a TMDL (total maximum daily load) for the Chesapeake Bay and its tributaries in December 2010.

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This TMDL will establish maximum loads of nitrogen, phosphorus, and sediment for the Bay tributaries so that water quality is restored in the Bay. Draft allocations for nitrogen and phosphorus were set and released to the Bay states on July 1, 2010 (see inset). Sediment load allocations were released on August 13. The total Pennsylvania sediment allocation was released as a range from 1,903 to 2,093 million pounds per year, with the Susquehanna basin comprising 87 percent of the allocation. These draft allocations released by the EPA set the targets for maximum loadings to the Bay of nutrients and sediments that the states must meet. The gap between current loadings and these lower load allocations must be met by 2025, with at least 60 percent of that gap being met by 2017.

To achieve these load reduction goals, the Bay states are required by the EPA to develop Watershed Implementation Plans (WIPs) that outline how they will reduce current nutrient and sediment loads, and setting 2-year milestones of progress for reductions.

The Phase I WIPs, due to EPA on November 29, 2010, will divide the basin nutrient and sediment allocations among the nonpoint sources and the point sources, and they will include a description of the methods the states expect to use to achieve the needed load reductions so that the allocations are met. Phase II WIPs are due to the EPA by November 1, 2011. The primary focus of these second phase WIPs are to further subdivide non-point source load allocations among smaller geographic areas such as counties or subwatersheds. The intent here is for the Phase II WIPs to provide local governments (counties, municipalities, watershed associations) a better understanding of their responsibilities for reducing pollutant loads.

The EPA expects the states to achieve, by 2017, at least 60 percent of the required nutrient and sediment load reductions necessary to meet the load allocations set by the EPA. Consequently, the EPA is requiring the states to establish two-year milestone goals. These milestones, with the first starting in 2012, are set by the states with specific nutrient and sediment load reduction goals and associated pollutant reduction controls that the states are committing to achieving over those two-year periods. EPA will assess the progress by the states with status reviews of the two-year milestones.

Finally, on November 1, 2017, the states are required to submit their Phase III WIPs. These plans will incorporate refined actions and controls that the states will implement between 2018 and 2025 to fully achieve their nutrient and sediment load allocations. The EPA has es-

tablished a series of eight federal actions it might take if the states do not meet their obligations with WIPs and two-year milestones. Among these actions the EPA could take are expanding NPDES permitting to currently unregulated sources, requiring additional load reductions from point sources, conditioning or redirecting federal grants that states typically receive, and establishing federal nutrient water quality standards for local watersheds.

Given the relatively slow progress in reducing sediment and nutrient loads since the first Chesapeake Bay agreement in 1983, over 27 years ago, the states face the daunting task of reducing loads down to the EPA-prescribed allocation levels over the next 15 years. The states will need to address not only what pollution control strategies and best management practices they will utilize to achieve the required load reductions, but also how these strategies and practices will be funded. The federal consequences facing the states if they fail are significant. So stay tuned as Pennsylvania develops their WIPs and milestones to meet these mandates by 2025.

Dr. Shuman is an Associate in the Environment & Natural Resources Section of JMT. He has more than 30 years of professional experience in water quality assessments and restoration, watershed management and modeling, agricultural and other non-point source pollution best management practices, aquatic systems monitoring, and environmental planning. He has worked on water resource projects across the country, and has published and presented numerous times nationally on topics including agricultural water quality and TMDL's, nutrient trading strategies, nitrate pollution in the Chesapeake Bay, sediment management, partnerships for water quality improvement, floodplain restoration, water quality restoration techniques, and dam removal analysis.

Dr. Shuman holds a Bachelor's degree in Biology from Millersville University and a Ph.D. in Environmental Science from Kansas State University. He is a member of numerous water quality and Chesapeake Bay committees and workgroups, and he serves as the president of the Octoraro Watershed Association in Lancaster, Pennsylvania.

NAEP Update

Bill Plumptre, PAEP Representative to the NAEP

The summer NAEP quarterly board of director's meeting was held in Pittsburgh July 16th and 17th. The weekend started with the Western Section's July Event at the Phipps Conservatory. The NAEP board of directors thoroughly enjoyed the program, opportunity to tour the conservatory, and chance to socialize with members from the western section. Thanks to Keri Rebeck for making the arrangements and the Western Section for being a wonderful host.

The day-long board of director's meeting consisted of executive committee and headquarters reports, reports from the editor and publisher of the quarterly journal the *Environmental Practice*, a review of the 2010 conference in Atlanta and an update of the planning for the 2011 conference in Denver, a lengthy discussion of and reports from the various committees and working groups, chapter reports, a discussion of possible new chapter and member benefits, and an update on the development of the plan to market NAEP in the future. Thanks to Jenn Granger and AECOM for hosting the board of director's meeting. Their efforts are greatly appreciated.

The next NAEP quarterly board meeting will be held in late October in Denver in conjunction with planning for the 2011 annual conference. The primary agenda item will be further develop, review and approval the 2011 budget.

The NAEP recently revised its mission statement.

NAEP Mission Statement

Our mission is to be the interdisciplinary organization dedicated to developing the highest standards of ethics and proficiency in the environmental professions. Our members are public and private sector professionals who promote excellence in decision-making in light of the environmental, social, and economic impacts of those decisions. Our vision is to:

- *Be the primary source of unbiased information on environmental practices*
- *Support the advancement of the environmental professions as a whole and our individual members in their careers*

- *Encourage better decision-making that thoughtfully considers the full implications of those decisions*

NAEP Environmental Excellence Awards Nomination Information - Deadline extended to December 1, 2010

The National Association of Environmental Professionals (NAEP) is seeking nominations for our annual National Environmental Excellence Awards. We are requesting nominations from you, your company, or agency describing outstanding environmental contributions from applicable projects and programs. It is not necessary for you or your organization to be a member of NAEP and nominations may include projects or programs recognized by others. The Environmental Excellence Award nomination(s) are to be submitted to the NAEP Awards Review Committee and **must be received by December 1, 2010**. Each selected Award Winners will receive a beautiful award plaque and an invitation to briefly address participants at the Annual NAEP National Conference. This year's conference will be held in Denver Colorado, April 26-29, 2011. Award winners are required to prepare a poster for display during the entire conference. Award winners may also be asked to present their program or project in one of the technical sessions scheduled throughout the conference (optional).

Save the date!

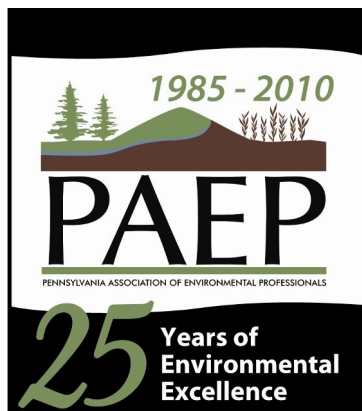
National Association of Environmental Professionals
NAEP

36th Annual Conference

Seventh Generation Thinking
Learning from the Past – Planning for the Future

April 26-29, 2011
Sheraton Denver Downtown

More information about the NAEP can be found at www.naep.org/



Celebrating 25 Years of Environmental Excellence

Camille Otto, PAEP Treasurer

This year, PAEP celebrated their 25th anniversary at the 2010 Annual Conference. The conference was held at the Bear Creek Mountain Resort in Macungie, Pennsylvania in May, and was a great success. The focus of the conference was 25 Years of Environmental Excellence. Bear Creek proved to be the perfect backdrop for the event, providing an extremely green facility with a tremendous recycling program, eco-friendly products, sustainable practices, and beautiful scenery and trails. The conference began with tours to the Rodale Institute where we learned about their organic practices, research and education; as well as a tour of a local wetland mitigation site. That evening, Chuck Yorks of McCormick Taylor provided a humorous and informative discussion on dealing with "all kinds" of people; a perfect way to start off the conference!

Thursday's sessions included topics such as corporate sustainability initiatives, do's and don'ts of PennDOT's electronic Joint Permit System, trends in wetland mitigation and restoration, cultural resources, and green technologies. The Karl Mason awards were presented in the afternoon, followed by a tour of Bear Creek's eco-friendly resort, highlighting their stormwater management best practices, spray irrigation septic treatment, recycling program, energy efficient HVAC, and more. The evening ended with a presentation on Pennsylvania's Statewide Rail Plan, along with raffle prize drawings. Congratulations to Angela Schreffler, the big winner of the Bear Creek Spa Package, and thanks to everyone who participated in the raffle.

Through your generosity, and the competitive nature of a few of you (you know who you are), PAEP raised over \$400 for the general fund, which helps to fund other PAEP section events and activities throughout the year.

Friday began with a birding tour, and closed with presentations on FHWA's Livability Initiative and electricity and the competitive market. A few die-hard golfers then headed out to the links - we hope that more of you will consider joining us next year - none of us are really that good, so you will fit right in! And of course, let's not forget the many important discussions held over a cold pint in the evenings...

I would like to take this opportunity to thank all of our sponsors and the 2010 conference committee. And a special thanks to Keith

McNally, PAEP's conference coordinator. It is because of all of your efforts that the conference was such a great success!

The 2011 conference committee, chaired by Camille Otto has begun to plan for next year. We hope you'll be able to join us! Keep watch for details as they become available.



2010 PAEP Conference Awards

Karl Mason Award



Left to Right: Gary Bloss, Eric Buncher, and Jinnie Woodward (ALLARM)

Individual

Gary Bloss, Consultant, Past Executive Director, Susquehanna Greenway Partnership, nominated by Robert Hosking.

Mr. Bloss has over 30 years experience in the field of community planning and landscape architecture. Most recently Gary served as the first Executive Director of the Susquehanna Greenway Partnership. Prior to serving the Susquehanna Greenway Partnership, Gary spent 10 years running his own consulting firm specializing in community planning, watershed conservation, greenways, open space, and trails. Among other projects, as a consultant Gary contributed to completion of the Monroe County 2020 Vision & Plan; the River to Bay Greenway; Pennsylvania Center for the Performing Arts; and the Nittany and Bald Eagle Valleys Greenway & Bikeway Plan. Gary has a Masters in Landscape Architecture from Harvard and a Bachelor of Science in Landscape architecture from Penn State, which included a semester of foreign study at the University of Lisbon, Portugal. Gary lives in Cherry Valley, Pennsylvania, which includes one of our newest National Wildlife Refuges.

Organization

Alliance for Aquatic Resource Monitoring, Dickinson College, nominated by Sarah Brylinsky

The Alliance for Aquatic Resource Monitoring made significant contributions to the maintenance and restoration of Pennsylvania's environment since it's found-

ing in 1986, when it trained over 700 volunteers in 66 out of 67 Pennsylvania counties to collect stream quality data associated with acid rain. Today it's work is focused on providing watershed organizations with needed technical assistance to meet their goals of watershed monitoring, restoration and protection. The Alliance for Aquatic Resource Monitoring continues to make significant contributions to the maintenance and restoration of Pennsylvania's environmental quality.

PAEP Membership Awards



Clockwise from upper left: Duane Peters, Christopher Spahr, Angela Welt (Baker), and Angela Schreffler (Baker)

Founders Award

Duane Peters, PAEP Board of Directors 2009-2010, Vice President 2010, A.D. Marble & Company (**Keri Rebuck** and **Camille Otto** were also nominated)

Young Professional Award

Christopher Spahr, Michael Baker, Jr., Inc., (**Michelle Rehbogen** was also nominated)

Corporate Member Award

Michael Baker, Jr. Inc.

(**Skelly & Loy, Inc.** was also nominated)

The awards were presented in person the morning of May 13th at the annual conference. More information regarding the winners can be found at <http://tinyurl.com/2fv2vxk>

(Continued on page 14)

Photo Contest

Wildlife

Spicebush Swallowtail Caterpillar - Ed Smith



Projects

Green Roof 2—Mike Parrent



Landscapes

Sunset - Jim Pahel



PAEP

PAEP Wind Farm Tour - Keri Cimarolli (Rebuck)



People & Nature

Crayfish Hunting in Kettle Creek - Ed Smith



Grand Prize

Spicebush Swallowtail Caterpillar - Ed Smith



PAEP Corporate Member News

A.D. Marble & Company

Happy 25th Anniversary, A.D. Marble & Company! As we celebrate this milestone, we reflect on our progression from a one-woman wetlands firm to an employee-owned environmental, cultural, and engineering consulting firm. Since 1985, we have developed and served countless clients' needs across the Mid-Atlantic region and beyond. Join us as we commemorate 25 years of memorable moments and achievements. We're looking forward to many more!

A.D. Marble & Company attended the 2010 Diamond Awards for Engineering Excellence on February 4, 2010. A.D. Marble & Company was pleased to be twice recognized during the course of the evening.

A.D. Marble & Company received an Honor Award in the Environmental Category for U.S. Route 220 Stream Restoration. The project was completed for Pennsylvania Department of Transportation (PennDOT) Engineering District 2-0 with the help of subconsultant KCI Technologies. By receiving this award, A.D. Marble & Company is eligible to participate in the national competition.

A.D. Marble & Company also received a Diamond Award Certificate for the Creation of an Environmental Education Park: Restoring the Ecological Function of Angelica Creek Park. The project was completed for the Department of Public Works in Reading, Pennsylvania.

The ceremony was sponsored by the American Council of Engineering Companies of Pennsylvania (ACEC/PA) in Hershey, Pennsylvania. The Diamond Awards is well-attended by privately and publicly owned Pennsylvania engineering consulting firms. The awards aim to recognize quality engineering services and outstanding contributions in the interest of clients and the communities they serve.

Michael Baker Jr.

Michael Baker Jr., Inc. has a new Harrisburg Office Principal. Following a 20-year career at the Pennsylvania Turnpike, Bradley J. Heigel, PE has joined Baker in April.

Baker's Harrisburg Office held the 3rd Annual Baker Memorial Golf Outing on Friday, July 16th at The Golf Club at Felicita. Over the first 2 years, Baker has

raised over \$6,700 for the American Cancer Society by holding this event, which was started to honor the memory of former Harrisburg employees who lost their battles with cancer. Thank you to all participants!

Baker's Angela Schreffler has become a Certified Ecologist through the Ecological Society of America's certification program. Angela is an Environmental Specialist in the Water Resources and Environmental Group in Baker's Harrisburg Office.

Baker and Areva, NP's TMI Steam Generator Transport/Replacement Project Wins Awards.

- CMAA (Mid-Atlantic Chapter) 2010 Project Recognition Award
- CMAA (Baltimore Chapter) 2010 Project Achievement Award
- ACEC 2010 Grand Award for excellence in engineering design
- ACEC/PA 2010 Diamond Award - Honor Award, Special Projects

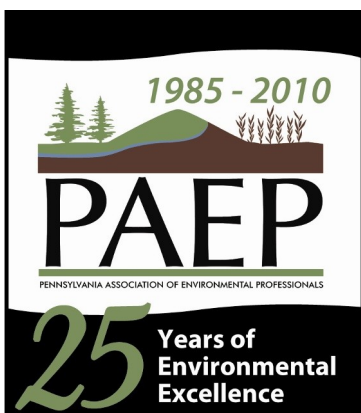
Skelly & Loy

Sandra Loy Bell, Skelly and Loy's Chief Executive Officer, was recently named as one of Central Pennsylvania's 25 Women of Influence of 2010 by Central Penn Business Journal and its program sponsors. This prestigious award was given to Ms. Bell because of her significant career accomplishments, leadership and mentoring, and community involvement.

The Women of Influence Awards, created in 2010, are an effort to recognize women leaders in the Central Pennsylvania area who are making significant positive impacts on their companies, industries, and communities. Award recipients were featured in a video presentation at the Power of Women event held on May 10, 2010 at Hilton Harrisburg, and in a special supplement to the May 14, 2010 issue of the Central Penn Business Journal.

John Gunnett, Skelly and Loy's President, had this to say about Ms. Bell's award. *"We at Skelly and Loy are very proud, but not surprised, that Sandi has been given this esteemed award. She works tirelessly in support of the firm, the engineering and environmental industries, in general, and dedicates her spare time and resources to many professional, civic, and charitable organizations where she lives, works, and plays."*

(Continued on page 23)



PAEP Member Spotlight

Michelle Rehbogen

ASC Group, Incorporated

Where did you attend college and what Degree(s) did you earn?

I attended Shippensburg University and earned a B.S. in Biology with a concentration in Ecology and the Environment. I also received certification in GIS.

What is your Job Title at the ASC Group?

Environmental Scientist

What are your job duties?

My job duties include NEPA documentation specifically CEEs, Section 4(f) evaluations, Threatened and Endangered Species coordination, Agricultural coordination, wetland delineations, and Phase I ESAs.

What lead you to decide to go into the environmental field?

As I was growing up I always enjoyed being outdoors more than indoors, and wanted to have a career where I would be able to spend some time outside and also be able to help protect natural resources.

Any funny job-related story you'd like to share?

Not so much funny but exciting/scary, about a month ago my co-worker, JT Graupensperger, and I were doing a wetland delineation in Somerset County, as I was placing a wetland flag, I took a step and almost stepped on a Copperhead. Since then, when I'm doing fieldwork I'm pretty jumpy whenever I hear anything move.

How did you find out about PAEP?

I found out about PAEP when I came to work for ASC Group, Inc. Susan Peters and my former co-worker, Amy Altimare, encouraged me to get involved with PAEP.



What do you like most about PAEP?

The thing I like most about PAEP is being able to talk with colleagues also in the environmental field. It's nice to be able to discuss the field with people who understand what is involved.

In her spare time, Michelle enjoys spending time with friends and family. She visits her family's lake house where she likes to go kayaking, boating, and jet skiing. Michelle plays volleyball, kickball, dodgeball, and ultimate Frisbee, and she is also a member of Harrisburg Young Professionals. She resides in Harrisburg and has two cats.

Michelle was nominated for PAEP's 2010 Young Professional Award.



Meet the Regulator

Mike Danko

United States Army Corps of Engineers (USACE)

What is your job title?

Biologist, Regulatory Project Manager

Years of Experience? Years with the USACE?

Twenty years of experience, all with the Corps. I've been working out of the Carlisle Regulatory Field Office for 11 years.

Responsibilities with current position?

I evaluate all permit applications (except PennDOT projects) in York County and the Baltimore District's portion of Berks County, all of the Pennsylvania Turnpike projects within the Baltimore District. I represent the District on the PA Interagency Review Team for the establishment of mitigation banks and in-lieu fee programs. I assist with the development of programmatic initiatives and other special projects when assigned.

What aspects do you enjoy about your job?

Achieving approvable project designs (primarily commercial and residential developments) that avoid and minimize impacts to aquatic resources for both the short term direct and indirect impacts and the long term cumulative impacts. Also, compliance and monitoring efforts for successful wetland mitigation projects in which I had involvement with site selection approval and design modification recommendations.

Are there any lessons you've learned over the years that you would want to share with young environmental scientists?

Ensure that they do a thorough, honest and conscientious job with both their wetland delineation work and preparation of permit applications. If they don't any experienced regulator will have to call this work out, and we certainly don't want to embarrass you in front of your clients! Also, establish a good working relationship with your regulators and get them involved as

early as possible in projects, especially if they will be complicated or controversial. Don't be afraid to ask questions.

What do you believe are the benefits of PAEP?

PAEP provides excellent opportunities to network with a wide range of environmental professionals in the private, government and academic communities; sponsors or announces regular training events; and serves as a very important source for listing job opportunities in our field of work.

Are you married? Do you have any children?

Wife Lauri, we will be married 10 years in October. One child, Eli (3 years old).

Do you have any hobbies?

Fly fishing for trout has been my life-long passion. I serve on the Board of Directors of the Cumberland Valley Chapter of Trout Unlimited and also as the Chair of the Conservation and Water Quality Committee. I also enjoy running, cross country skiing, teaching fly tying, and reading. My wife and I have been visiting a new Pennsylvania State Park each year with many, many more to go.

Any funny stories to share from your time as an environmental scientist?

Many years ago in Maryland, I was assigned a project called the "Wheel of Fortune" development. The wetland consultant for the project (whom I know well), perhaps to see if I was paying attention, listed on the data sheet a plant called the "letter turner", scientific name *Vanna whiteis*.

Anything else that you would like to share?

I have been a certified Professional Wetland Scientist (SWSPCP) since 1999.



Pennsylvania Legislative Update

FY 2010-2011 State Budget

The FY '10-'11 budget totaling \$28 billion, 1% more than the FY '09-'10 budget, almost passed by the June 30th deadline, the final pieces falling into place on Saturday, July 3rd. The increase was necessary to maintain the Governor's commitment to educational reform and early education and to cover mandated federal programs. Revenue collections remain down (in April they were 11.8% below official estimates) again impacting the State's ability to provide comprehensive services in most other areas, including the Department of Environmental Protection (DEP), which took a 1.2% hit, mostly scaling back administrative costs. Compounding the revenue crisis, Congress failed to enact a Medicaid funding bill, known as FMAP, placing an additional \$850 million in potential state revenues in limbo and in March the Federal Highway Administration rejected Pennsylvania's application to toll Interstate 80.

The tolling initiative's projected revenue stream would have provided temporary funding for a number of roadways and mass transit projects across the State. It is estimated that this lack of funding has created a \$472 million gap in transportation funding. The Pennsylvania Department of Transportation (PennDOT) hosted hearings over the summer to review alternative options in all 11 PennDOT Districts and the Governor called a Special Legislative Session on Transportation this past August. The Legislature met; however, an agreement on closing the gap has not been considered, yet alone negotiated. PennDOT Secretary Allen Biehler and the Administration worked with lawmakers to host a number of informational hearings on the issue stressing the urgency of the funding crisis in hopes of gaining additional momentum. A number of ideas were provided including; increasing PennDOT consumer service fees, taxing sports tickets and parking garages, shifting Motor License Fee revenues from the State Police to transportation improvements, and even tolling additional roads in the State, which in theory frees up additional revenues to fund other transportation-related projects. Unfortunately, the hearings did not lead to the consideration of any legislation to resolve the issue and lawmakers will be forced to

deal with it again in the new year, as there are not enough session days remaining in 2010.

Specifically, the fiscal year 2010-2011 Budget includes the following agency funding changes over last year's state budget (*1 Figures are in the millions*):

Department/ Agency	FY 2009- 2010 ¹	FY 2010- 2011 ¹	% Change
PennDOT	\$355,234	\$343,801	-3.3%
DEP	\$469,837	\$464,163	-1.2%
DCNR	\$129,459	\$120,467	-7.4%
PHMC	\$24,565	\$22,494	-9.2%
DCED	\$677,876	\$595,297	-13.8%

Programmatic Funds

The Pennsylvania FY 2010-2011 budget also includes a number of discretionary programs aimed at economic development and job creation. In the climate of 9 percent state unemployment, the Governor supports these programs as tools to create much-needed jobs in Pennsylvania; however, a number of lawmakers perceive these programs being unnecessary and a waste of taxpayer resources. No matter how you view these programs, the majority is administered by the Department of Community and Economic Development (DCED) and must be vetted through a formal application and credit process. There are a number of strict requirements contained within the state's grant system such as stipulating a minimum number of jobs to be created, mandating private investment or matching private dollars, and ensuring local land use, zoning, and permitting processes are followed, to name a few.

Additional programs either funded through the budget or being self-sustained are as follows; PENNVEST, Redevelopment Assistance Capital Program (a debt ceiling increase of \$650 million was passed with the budget), the Sunshine Program, and the Keystone HELP program. The Commonwealth Financing Authority also has a num-

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ber of programs it manages including; Solar Energy, Geothermal/Wind, High Performance Buildings, H2O PA (Flood Control, High Hazard Unsafe Dams, & Water and Sewer), Building PA, Business in Our Sites, First Industries, and Tax Increment Financing Guarantee where financing may be available depending on the program.

Legislative Review

The following are current bills being considered by the Pennsylvania House and Senate of interest to environmental professionals. The House Environmental Committee has 118 bills and generally, will report out, for a vote on the Floor, approximately 10% of these bills. The remainder of the session was expected to focus on Marcellus Shale-related issues such as, the severance tax, bonding, surface owner's rights, water quality/safety/withdrawal, erosion and sedimentation (E&S), and well casing requirements.

However, the House passed a version of a Marcellus Shale Tax by amending Senate Bill 1155, a maneuver the Senate and its legal staff claimed was unconstitutional. In Pennsylvania all amendments must pass a relevancy test in order to be considered valid. House attorneys and the Legislative Reference Bureau were asked to rule on the issue and refuted the Senate's attorney's claims, but the Senate declined to consider the bill. Additionally, there were at least two bills the Senate could have amended, but did not.

The issue is officially considered "dead" as the two legislative chambers cannot agree on a tax number or the appropriate distribution of revenues and it is not expected to be reconsidered until a new Gubernatorial administration is in office. Senate Republicans favor a phased approach, taxing 1.5 percent on the selling price of gas at the wellhead for the first five years of a tax, and increasing the tax later. Governor Rendell favors a 3 percent tax the first year, rising to 4 percent the second year and then 5 percent thereafter. The House Democrats passed what equates to a 5% tax (39 cents per 1,000 cubic feet severed at the wellhead) on gas produced with a distribution of 40% to the General Fund and 60% to environmental funds and local governments. The language in the version that passed the House was similar to the original House proposal of HB 1489, outlined below.

In hopes of forcing movement on the issue, Governor Rendell, signed an Executive Order on October 26, 2010 effectively halting all future drilling on state forest land. Approximately 73,000 acres, or one third, of the 2.2 million acres opened for leasing will not be impacted. However, the remaining two thirds will temporarily be off lim-

its to drilling companies. Although, the Marcellus Shale tax issue appears to have little hope for revival, most of the bills listed below will be reintroduced in the new year. It is important to note that in consideration of the constraints on length, this is not an all inclusive list of environmental bills.

HB 2405 – (known as the "new HB 80") Introduced by Representative DePasquale includes language to increase the Alternative Energy Portfolio Standards (AEPS) Tier 1 requirements for electricity companies (retail and wholesale) over the next 15 years and provides for a carbon dioxide sequestration network. Under this legislation, 15% of electric generation would have to be derived from Tier 1 (solar/wind/hydro/geothermal energy sources) by 2024. Additionally, 3% must come from solar photovoltaic or solar thermal energy sources by 2024. The bill also adds advanced coal combustion with limited CO2 emissions as a Tier II alternative energy source.

Another feature of the bill creates alternative energy credits (AECs or Renewable Energy Credits) to help utility companies meet and offset the aggressive AEPS increases. Further helping industry, the law would permit the Public Utility Commission (PUC) to declare a force majeure if the price of alternative energy credits exceeds the cost of alternative energy compliance payments.

Finally, this legislation creates a carbon sequestration network to help electricity generation facilities reduce their carbon footprint through the injection of carbon dioxide that would otherwise be emitted into the atmosphere into deep underground networks. More specifically the legislation provides for sequestration facility permitting and for title to carbon dioxide, immunity and transfer of liability; establishes the Carbon Dioxide In-



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As one colleague described Goddard, he would “take important ideas by the throat and stick to them until they were implemented.” It is said that Goddard carried his **goals** in his breast pocket, keeping them nearby to enable him to remain focused. Some might describe being goal-centric as being **inflexible**, and perhaps it is. Goddard, however, could not be accused of being unwilling to listen to others’ ideas, for indeed Goddard had an exceptional **ability to listen**. Nevertheless, his focus on achieving the goal allowed him to commit to seeing the goal to fruition, even if it entailed **fighting the long fight** and **drawing the line in the sand**.

While many of us in the environmental arena yearn for a climate of bi-partisanship, Goddard took this a step farther to what I would define as being **non-partisan**—he favored neither the Democrats nor the Republicans, but instead focused on the task at hand and how to accomplish it. His **vision** for environmental quality, parks and forests, and for a world we could be proud to hand to our children guided him through his work. He **played it straight**—his openness and honesty won him the admiration of politicians on both sides of the political spectrum. His **political sense** enabled him



to understand the **needs of people**, present the project in a manner that made everyone feel like a winner, and often-times present his ideas so that others felt as though they were theirs! His disconnection from the need to be credited with a project’s success and his ability to **choose and mentor capable employees** allowed him to work **behind the scenes** to see a project be successful.

Lastly, Goddard’s **inner yearning** to leave the world a better place fueled his **endless energy** that spanned decades, and resulted in his long list of accomplishments. We can all learn much from Maurice K. Goddard. Take time to read, learn more, and to get involved. And when all else fails, next time you stand at a crossroads, ask yourself, “What Would Goddard Do?”

Get Involved — You Can Help Preserve Our Legacy!

Join the Pennsylvania Parks and Forests Foundation, donate to the Goddard Legacy Project, take part in the Great Pennsylvania Outdoor Challenge, or volunteer your time at a state park or forest! For more information contact the Pennsylvania Parks and Forests Foundation: 717-236-7644, mmowery-ppff@pa.net, or on the web visit papark-sandforests.org.

Follow us on **Facebook**. To read Goddard’s biography, contact the Pennsylvania Forestry Association, who is currently reproducing “On the Downhill Side of the Log; The Life of Maurice K. Goddard.”

Sources:

<http://www.paparksandforests.org/downloads/Goddard.pdf>

Proceedings of the Second Annual Environmental History Symposium; Maurice K. Goddard: His Life, Legacy and Lessons, April 17, 1997.

Dr. Maurice K. Goddard, Environmental Patriarch, Kenn Marshall, Apprise Magazine, May, 1993

Our Priceless Heritage, Pennsylvania State Parks, Dan Cupper, 1983;

A Walk on the Downhill Side of the Log: The Life of Maurice K. Goddard, Ernest Morrison, 2000;

Maurice K. Goddard, His Life, Legacy, and Lessons – 2nd Pennsylvania Environmental History Symposium, Penn State University, 1997; PA DCNR and PA DEP websites.

Special Thanks to the PA DCNR for the images used in this article

(Continued from page 8)

Cost Comparison: In the table below, the costs per square foot of rock swale lining are compared with a permanent TRM lining. Based on reduced equipment and labor requirements due to the TRM's ease of installation, as well as comparable materials costs per area, we see that the TRM swale lining is a more cost effective way to line the swale. It should be noted that the TRM does not provide immediate stabilization like the rock lining. Re-grading and re-seeding may be required to provide a fully stabilized swale.

Table 1. Swale Lining Comparison

Swale Lining Type	Estimated Cost (\$/SF)
Rock Swale Lining w/ Excavation	2.75
Permanent TRM Swale Lining	1.50

Based on this comparison, a properly designed drainage swale with a permanent TRM lining will provide a cost effective alternative to the rock lined swale. And remember, this solution can also be used as alternatives to rock lining for slope and stream bank applications.

Problem #4: Due to H&H analysis or general observation of the existing condition, it is apparent that the stream banks need protection from erosion or we need to create a more stable bank condition.

Answer: The answer to this problem is not rip-rap armoring, or at least, it doesn't have to be. Rip-rap acts as a band-aid to a problem and doesn't actually do anything to solve the problem (ex. after installation of rip-rap, stream flow continues to be directed at the bank). There are many problems with rip-rap, such as the increases in stream velocity it causes along armored banks (which can result in more bank erosion after the rip-rap armoring ends), the interruption in riparian zone and in the stream/wetland/upland interface and ecosystem, and negative effects to both habitat and wildlife. Also, contrary to popular belief, riprap armoring requires monitoring and maintenance post installation, especially following storm events. There are many natural options out there that can provide bank protection, and additionally have benefits of increased habitat, low maintenance (once established) and may even fix the problem that caused the bank erosion in the first place. We list a few here, but we encourage you to explore the wide variety of other natural options out there. Each project and each site has different conditions and different goals – nothing in natural resources is “cookie cutter” so each solution may need tweaks dependent upon the site or project goals. Further, some of these options are appropriate for certain stream types, but may not be effective on all types. To learn more about other negative effects of rip-rap armoring and alternative solutions, FEMA has a good publication available online, ingeniously entitled “Engineering With Nature - Alternative Techniques to

Riprap Bank Stabilization” (available at <http://www.marylandstreams.org/PDF/FEMARiprapalternatives.pdf>)

Mud sills or Bank Cover Cribbing - These devices create a stable surface to protect the stream bank, but at the same time, mimics the natural cover of an undercut stream bank and provides prime in-stream habitat. Mud sills are generally installed in the meander bends of streams and uses materials such as logs, soil covered rock, and vegetation.



Photo of mud sill or bank cover cribbing in Centre County, District 2-0, just after construction. Photo provided by Mr. Bill Savage, PFBC.

Log Vane or Other Deflectors – Deflectors can be made of various materials, but all direct flows toward the center of the stream, thus protecting the stream bank. These structures create a variety of habitats in the immediate area they are used. The placement of the log (or logs if using the multi-log type) is important and shouldn't just be randomly placed. Log vane deflectors utilize similar materials as mud sills – logs and



Photo of rock cross vane.

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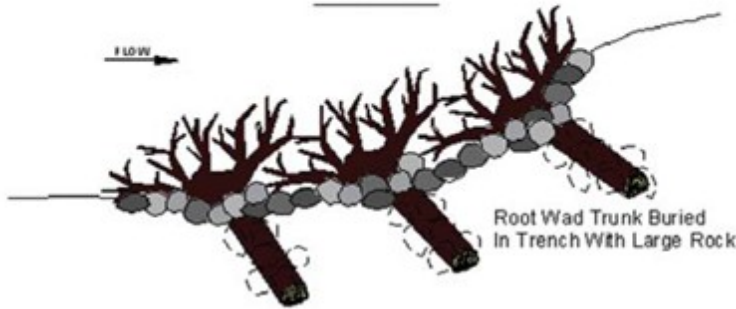
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large stone. J-hook vanes, cross vanes, and rock vanes are similar structures, but use mainly rock and are placed in the stream differently.

Root Wads – Root wads (the root ball of a mature tree) provide excellent fish and macroinvertebrate habitat. The structure functionally acts similar to a log vane deflector, but has the added benefit of the root wad habitat. Typically, these do not extend into the stream as far as the log vane deflectors do (log vane deflectors typically extend 1/3 of the stream width where root wad deflectors are tighter against the stream bank).

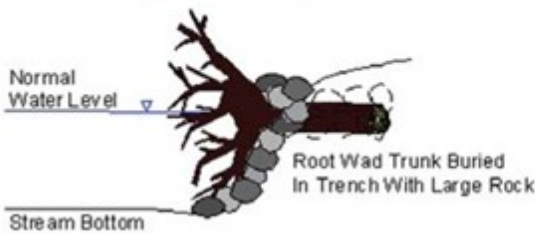
ROOT WAD DEFLECTOR

Plan View



NOTE: Can be placed as a single deflector, or overlapping as shown.

Section View



Example of sketch of a root wad deflector, taken from the PFBC publication "Habitat Improvements for Trout Streams."

Soil Covered Rip Rap – Due to constraints outside of your control, you can't install one of the aforementioned features that have the added benefit of in-stream habitat, but still need a better solution than standard rip-rap armoring. With some extra excavation, go ahead and install the rip-rap, but cover it with soil and then seed and/or plant overtop (using natives, of course). This reduces most of the problems with rip-rap (i.e. causing increase in velocity, interrupting stream/upland interface, decrease in bank roughness, and overall unnatural appearance). Unlike the in-stream devices, this option does not provide additional fish or macro habitat.

Cost Comparison: The cost comparison for this case scenario is difficult because we are trying to compare a broad variety of bank stabilization methods on a unit cost basis. While similar construction equipment is used to build these various stabilization methods, their design and layout will vary greatly from project to pro-

ject. Based on natural stream channel design and construction experience we have made the following assumption/generality to attempt to compare costs between the various bank stabilization methods.

Assumption – In-channel deflectors will protect an average of 20 feet of stream bank. This Assumption is made so that we can compare one in-channel structure with a certain area of rip rap armoring. We will assume that one in-channel deflector is equal to 20 longitudinal feet of rip rap armoring for a mid-sized stream with a protected bank height of 5 feet. Therefore, one unit of rip rap armoring for this case scenario is 20 feet by 5 feet or 100 square feet.

This assumption is made so that we can provide general bank stabilization unit prices for use during project planning phases. Once projects are moving through the design development phase, a comprehensive project cost analysis should be completed to realize the specific project costs. Having said that; the following table lists costs per unit of the various bank stabilization methods discussed above.

From this cost comparison we see that natural stream stabilization structures are an economic alternative to rip rap lining and should be considered during the project planning phase. The natural stream stabilization techniques can provide all of the benefits of rip rap while adding many other environmental benefits to your project.

Table 2. Bank Stabilization Comparison

Bank Stabilization Method	Estimated Cost (\$/UNIT)
Mud Sill w/ Deflector (1EA)	2,200.
Log Vane Deflector (1EA)	1,200.
Rock Cross Vane (1EA)	1,800.
Root Wad Deflector (1EA)	1,200.
Soil & Seed Covered Rip-rap (100SF)	3,200.
Rip-rap Armoring (100SF)	2,300.

To conclude, we have provided a few example plans here, but for other options or other plan versions, a good source (complete with .dgn files) is the Maryland Department of the Environment website (<http://www.mde.state.md.us/Programs/WaterPrograms/Wetlands/Waterways/documents/information/guide.asp>) . Another good resource is PFBC's Habitat Improvement for Trout Streams (http://www.fish.state.pa.us/water/streams/habitat_improve_trout.pdf) for details concerning natural stream restoration structures that also provide in-stream habitat improvements. A lot of these techniques have been used in Pennsylvania (albeit, not commonly...

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yet) and each scientist/engineer seems to live and learn and adapt designs accordingly. This article will be posted on PAEP's forum (www.paep.org/forum) under the Natural Resources/Watercourses category. We encourage everyone to expand on this article – share your own problems and solutions, comments and experience with any of these solutions, and/or other solutions that you also have used. Construction costs are a huge help, as that is always the way a good idea can get squelched. To those in the regulatory realm, please feel free to post common problems you see with designs and preferred solutions. As environmental professionals, we are all working towards achieving client goals, with the least amount of impact to Mother Nature, so it seems “natural” for all of us to share the best ideas to get there.

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SKELLY AND LOY, celebrating its 41st year in business, is a mid-sized engineering-environmental consulting firm with 5 Mid-Atlantic offices and is among the top engineering and environmental firms in the nation, consistently ranking among Engineering News Records Top 200 Environmental Firms. The firm provides expert environmental, engineering, mining, geologic, geo-environmental, water resources, and cultural resources services to public and private sector clients throughout the U.S. and abroad.

Stell Environmental Enterprises

Stell Environmental Enterprises Inc. (SEE) is pleased to announce that Dave Durofchalk recently joined our Project Management team. Dave is a Professional Wetland Scientist with over 21 years of natural resource expertise garnered throughout the Mid-Atlantic and East Coast. He is experienced in all aspects of wetland investigations, and federal and state wetland regulations. Dave has directed and conducted wetland investigations on thousands of acres of natural and disturbed sites, planned commercial and industrial developments, and interstate right-of-way projects.

Dave has been involved with preparing a wide range of environmental documentation for federal transportation and energy projects, and has supervised and directed interdisciplinary team members in the preparation of large NEPA documents.

SEE is proud to announce that two more members of our team have obtained the designation of PMP (Project Management Professional). Congratulations to Allen Heist and Dave Durofchalk.

The PAEP Board of Directors thanks all of existing Corporate Sponsors for their continued support and is pleased to welcome the following new Members to the organization; ***Global Environmental Management, Phipps Conservatory & Botanical Gardens, and Waddell & Reed, Incorporated.***

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demnification Fund; provides for carbon dioxide sequestration facility and transportation pipeline on Commonwealth State forest lands; and provides for application of the Public Utility Code to transporters of carbon dioxide.

Status: *Considered in the House on first consideration on June 8, 2010; recommitted to House Appropriations on June 14, 2010; laid on the table and removed from the table on September 21, 2010.*

HB 1489 – Introduced by Representative George (Chair of the House Environmental Committee), this bill imposes a per volume tax on Marcellus Shale drilling activity. This language also includes an exemption for small drilling operations defined as “stripper wells” producing less than 60,000 MCF per day or less or if the units of gas severed are delivered and used by an end user within five miles of the well for manufacturing goods; or if the gas is provided without charge to a surface owner who uses the gas. The tax is equivalent to West Virginia’s tax rate of 35 cents per 1,000 cubic feet severed at the wellhead. This rate is adjusted annually if 5% of the average price of natural gas at the Henry Hub as traded on the commodity exchange (NYMEX) for the previous year is more than 35 cents.

Distribution of the tax proceeds are as follows establishing three accounts: Natural Gas Severance Tax Account, Local Government Services Account, and Oil and Gas Recovery Environmental Disaster Recovery Account. There will be a one-time transfer of \$75 million to the General Fund in Year 1; the remaining funds will be allocated to the Environmental Stewardship Fund, Local Government Services Account (host counties, municipalities with producing sites and the PA Emergency Management Agency), Hazardous Sites Cleanup Fund, Conservation District Fund, Game Commission, Fish and Boat Commission, LIHEAP, Oil and Gas Environmental Disaster Recovery Account, low-dam removal repair, and restoration projects managed by DEP.

The legislation was amended in committee and now also includes the establishment of a Marcellus Shale job creation tax credit. This tax credit will be available to natural gas production related companies who create jobs for Pennsylvania residents. The tax credit will amount to \$2,500 for each job created. There will be a total of \$25 million per year available in tax credits.

Status: *First considered in the House on June 23, 2009; amended in the House Environmental Resources and Energy Committee on June 21, 2010; and on June 22nd, was referred to the House Appropriations Committee.*

HB 2213 - Introduced by Representative George, this bill

amends the act of December 19, 1984 (P.L.1140, No.223), known as the Oil and Gas Act, further providing protection of fresh groundwater, casing requirements and protection of water supplies; providing for hydraulic fracturing chemicals disclosure; further providing for bonding and for well plugging funds; well permits; well location restrictions; monitoring, and surface impoundments; enforcement orders; penalties; and for local ordinances.

E&S - The bill adds Subsection g.1 (relating to well permits), which authorizes the County Conservation Districts to conduct quarterly reviews of expedited erosion and sedimentation control permits, and compels the Department of Environmental Protection (DEP) to revoke any erosion and sedimentation permit for material omission or misstatement.

Well location restrictions - Wells within 1,000 feet from any building, existing water well, or within 100 feet from any watercourse, natural or artificial lake, pond, reservoir, wetland or the boundary that affects the functions and values of a wetland are prohibited. Additionally, the bill restricts wells using hydraulic fracturing or horizontal drilling within 2,500 feet of a surface water source and within 1,000 feet of a groundwater source that serves a public water system.

The bill also provides that DEP may deny or condition a permit based upon its impact on public resources such as parks, forests, scenic rivers, landmarks, historical sites and watercourses.

Status: *The House took it up on first consideration on May 25, 2010 and it is currently awaiting action in the House Appropriations Committee.*

HB 2214 - Introduced by Representative George, this bill amends the act of July 20, 1979 (P.L.183, No.60), entitled "An act regulating the terms and conditions of certain leases regarding natural gas and oil," further providing for guarantee of minimum royalties and for escalation of royalties. This bill proposes to restrict landowners and producers from negotiating the sharing of post-production expenses.

Status: *The House took it up on first consideration on May 25, 2010 and it is currently awaiting action in the House Appropriations Committee.*

HB 2234 - Introduced by Representative Houghton, this bill amends Title 68 (Real and Personal Property) of the Pennsylvania Consolidated Statutes, prohibiting deed restrictions pertaining to environmental improvements to property. The bill adds a new Section 7104 (relating

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to prohibition of deed restrictions pertaining to solar energy installations).

Under the bill, no deed restrictions, covenants or similar binding agreements running with the land shall prohibit or have the effect of prohibiting the installation of a solar energy system on a building erected on a lot or parcel covered by such restrictions.

However, the bill provides that condominium and planned community associations may establish reasonable regulations relating to solar and other renewable energy devices.

Status: *Passed the House on June 23, 2010 and is currently in the Senate Committee on Urban Affairs and Housing awaiting further action.*

HB 1155 - Introduced by Representative George, establishes a freestanding act, entitled the "Surface Owners' Protection Act". The bill impacts the following existing laws: *Solid Waste Management Act*, July 7, 1980 (P.L. 380, No. 97); *The Clean Streams Law*, June 22, 1937 (P.L.1987, No. 394); *Surface Mining Conservation and Reclamation Act*, of May 31, 1945 (P.L.1198, No. 418); *Oil and Gas Act*, of December 19, 1984 (P.L.1140, No. 223)

The bill provides for duties of oil and gas well operators, notice of operations and surface use and compensation agreements, entry without surface use compensation agreement, water protection and emergency situations.

Status: *First considered in the House on July 1, 2009 and is currently in the Appropriations Committee awaiting further action.*

HB 708 - Introduced by Representative Ross, establishes a statewide electronic waste recycling program to recover and recycle electronic waste; specifically, computer equipment and televisions. The bill imposes registration responsibilities for manufacturers and retailers of certain covered devices; provides for the powers and duties of the Department of Environmental Protection and for enforcement; establishes the Electronic Materials Recycling Account in the General Fund; and prescribing penalties.

Status: *This bill passed the House on June 15, 2010 and was amended and passed in the Senate on October 13, 2010. It is currently in House Rules awaiting concurrence.*

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serve as a Section Leader.

One Board member, who is not an officer, would be designated to serve as the liaison between each Section Leaders Committee and the Board. This Board member would oversee the Section Leader Committee and report back to the rest of the Board with updates, questions, issues to be discussed, etc. from the Section Leaders Committee. This Board member would also provide guidance and would be the direct voice of the Board to the Section Leaders Committee.