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FRANKLIN SOIL AND WATER CONSERVATION DISTRICT

The Urban Review

Sediment & Erosion Control Information Newsletter

7th Stormwater & Erosion Control Expo

The date has been set for the 7th annual Central Ohio Stormwater and Erosion Control Expo. Mark your calendars for **March 19th** at the Longaberger Alumni House. You won't want to miss this special event!

The focus this year will be on using green infrastructure to meet your stormwater management goals. Green infrastructure refers to the ecological processes, both natural and engineered, that act as natural infrastructure. Green Infrastructure elements are planned and managed primarily for stormwater control, but exhibit social, economic and environmental benefits as well. The United States Environmental Protection Agency (EPA) has extended the concept to apply to the management of stormwater runoff at the local level through the use of natural systems, or engineered systems that mimic natural systems, to treat polluted runoff. This is key to the sustainable and efficient use of land.

Abby Hall of the U.S. EPA will be the keynote speaker at this year's Expo. Ms. Hall is a Policy Analyst in EPA's Development, Community and Environment Division. She works on the intersections between land use and water quality. Her projects focus on municipal and state level policies that support smart growth and green infrastructure. Ms. Hall will discuss local incentives that communities use to encourage the use of green infrastructure approaches. She will also cover evaluating local ordinances and codes to eliminate barriers and include a demonstration on use of the audit tool.

Dan Christian, lead engineer of the green design group for Tetra Tech Inc., will make a presentation on green infrastructure design and construction. He will provide perspective on how standard stormwater engineering methods are applied differently with green infrastructure approaches.

Source: Abby Hall, US EPA

Mark Kline, of Kinzelman Kline Gossman, will provide an update on the Whittier Peninsula Redevelopment Project. This multi-jurisdictional project is transforming the Whittier Peninsula from a brownfields area into an urban nature park using several green infrastructure practices such as rain gardens, wetlands, pervious pavements, and bio-swales.

Other Expo topics will include design and installation of green roofs and real world examples of sustainable and context-sensitive applications for stormwater management projects.

To register to attend the Expo or for sponsorship and exhibitor opportunities visit **www.franklinswcd.org**.

A Certificate of Attendance will be offered to those who request one at registration. This will assist those needing to document Professional Development Hours for their technical profession.

Franklin SWCD Annual Tree and Fish Sale

The annual tree and fish sale is now under way at Franklin Soil and Water Conservation District. This year's assortment is available on-line at **www.franklinswcd.org** along with information and pictures on each tree and shrub offered to help make your selection easier.

Rain garden kits will be available again this year with 49 plants included in each kit.

Native grass and wildflower seeds will be offered, as well as 2" pots of several species of native plants. The 2" pots will be available on a first come first served basis on the day of pick-up.

Inside This Issue

What Is Green Infrastructure?

"Green infrastructure" is a term that is heard more and more frequently in land use, planning, and development discussions across the country. Green infrastructure means different things to different people depending on the context in which it is used. In the context of stormwater management it generally refers to "systems and practices that use or mimic natural processes to infiltrate, evapotranspirate, or reuse stormwater or runoff on the site where it is generated."

Bioswale

Many communities are looking for ways to protect the water quality of their rivers and streams from the negative impacts of development and urbanization. Traditional development practices cover large areas with impervious surfaces such as roads, driveways and buildings. Once the land is covered, rainwater cannot infiltrate into the soil. Instead it runs off at much higher levels than before. The force of so much rainwater runoff scours streams, erodes stream banks and causes sediment and other pollutants to enter the waterways.

A set of techniques, technologies, approaches, and practices, or "green infrastructure", can be used to eliminate or reduce the amount of rainwater and pollutants that run off a site and impact nearby waterways. These management approaches utilize, enhance and/or mimic the natural processes of evapotranspiration, infiltration, and groundwater recharge.

Some green infrastructure approaches currently being used in Ohio include rain gardens, bioswales, greenways, permeable pavements, revegetation/reforestation, green roofs, and protection and enhancement of riparian buffers, wetlands, and floodplains. Decentralized water collection practices, such as rain barrels and cisterns, that capture and re-use rainfall, keep rainwater out of municipal sewer systems so that it does not add to sewer overflows or to untreated sewage discharges into local streams.

Green infrastructure allows stormwater to be absorbed and cleaned by soil and vegetation and to gradually flow back into groundwater or waterways. Construction costs of development can be reduced by replacing the traditional infrastructure of pipes, curbs, gutters, and drains with alternative approaches to stormwater management.

Benefits of green infrastructure include:

- Decreased erosion
- Reduced and delayed peak runoff volumes
- Reduced potential flooding
- Enhanced groundwater recharge
- Cleaner water
- Increased carbon sequestration
- Reduced heat island effects and energy demand
- Increased land values
- Improved air quality
- Reduced water pollution
- Reduced hard infrastructure costs

For more information on these and other specific green infrastructure practices, visit: **http://www.epa.gov/npdes/greeninfrastructure**.

Vertical Axis Wind Turbines

Advancements in alternative wind turbine designs have resulted in the installation of wind energy systems in surprising places. The commercial development of vertical axis wind turbine (VAWT) technology makes the installation of urban wind turbines a viable choice. Because of the shape of the turbine, they can be mounted in series to buildings or rooftops and function at lower wind speeds over a wider range of wind conditions. A recent urban installation will generate enough energy for a large lighted billboard in Times Square. The turbine design lends itself to blending with building architecture and is unidirectional unlike propeller driven turbines. Many VAWT designs are also animal friendly. VAWT's are perceived as solid objects by animals and are avoided. Propeller driven turbines have been implicated in bird and bat strikes and siting for these must consider potential animal effects as well as other issues such as the strobe effect of the turning blades and the impact this may have on neighboring properties. If you're looking for a green infrastructure project for your piece of the planet, consider VAWTs for your renewable energy solution.

Pac Wind Aeolian wind turbine

Vernal Pools As Green Infrastructure

Two overused, but seldom understood, words these days are green and infrastructure. The word green is intended to evoke environmental awareness, and infrastructure refers to the underlying base system that allows processes to function. Combining these two words confuses everyone not in the business of promoting these practices, but an awareness of environmentally conscientious practices is becoming a larger presence in all facets of our lives.

Vernal pools are an aspect of our green infrastructure. Their base system is the storage of rainwater. This basic function allows a myriad of dependent processes to occur. Like typical wetlands, vernal pools are collection points of rainwater runoff from the surrounding uplands either through surface flow or groundwater interactions. Most vernal pools and isolated wetlands have no direct hydrologic connections or outfalls like riparian wetlands, so the rain water that is stored in a vernal pool or an isolated wetland does not contribute to flood waters generated with seasonal storm events.

The water stored in vernal pools recharges groundwater levels. Complexes of small isolated pools are vital links in forest hydrologic cycles, woodland ecology, and stream base flows. The storage and concentration of rainfall in vernal pools results in a rise in the groundwater level around a vernal pool. Mounded groundwater helps to manage the available water capacity for plant growth over a wide area and maintains the drought tolerance and long term health of forest trees.

...their ephemeral quality often means that no one sees them or even understands the biodiversity they support.

As the name implies, vernal pools are associated with spring rainfall. Early spring rains (and snows) combined with low temperatures and little plant growth results in pool formation. Unlike typical wetlands, as the season progresses and plant metabolism increases, vernal pools dry to the extent that typical wetland plants can't survive. This relative lack of hydrophytic vegetation and resident organism populations results in a habitat type for specialized species and seasonal habitation. This does not mean that vernal pools are less important than more permanent features. On the contrary, species like fairy shrimp, salamanders, and some frogs require predator free, water dominated habitats to breed and raise young.

Our vernal pools are rapidly disappearing. The conversion of these areas continues due to the lack of specific regulations and size thresholds. Vernal pools come in all shapes, sizes, and functional habitat qualities but their ephemeral quality often means that no one sees them or even understands the biodiversity they support.

Vernal pools should be recognized and protected for all the existing benefits we derive from them as part of our green infrastructure. Part of that protection is being involved with groups dedicated to teaching about vernal pools. Vernal pool season is almost upon us, the spring peepers will be calling you. Become aware of the sights and sounds associated with vernal pool activity and strap your boots on. Bring a flashlight if you want to see the march of the salamanders to their ancestral waters and investigate the wonders that are vernal pools.

Upcoming Vernal Pool Monitoring Workshops

The Ohio Environment Council (OEC) is sponsoring a workshop on Saturday, February 21, 2009 at the Stratford Ecological Center in Delaware County. This workshop will be of interest to watershed groups, non-profits, naturalists, consultants, and government representatives who want to learn more about protecting vernal pools and the benefits of collecting data. Other goals include developing vernal pool monitoring teams. Participants in the workshop can look forward to a field trip to a vernal pool, accompanied by several experts including: David Reutter, Franklin SWCD; Mick Micacchion, Ohio EPA; David Celebrezze, OEC; and Mark Dilly, M.A.D. Scientist and Assoc. The group will also learn how to spot salamanders and identify different frog calls. To find out more about this vernal pool monitoring workshop and to register online visit **www.theOEC.org**.

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District programs and services are offered on a non-discriminatory basis.

BMP Review: Compost for Erosion Control

Compost filter berms are a sediment and erosion control BMP that are increasingly used instead of silt fence to slow down and filter stormwater runoff. Berms are especially effective on steep slopes with high erosive potential.

Compared to silt fence the berms easily fill gaps in grading or rough terrain making them ideal for use in wooded areas where trenching in a silt fence would be difficult. Studies show that sediment reaching surface waters can be reduced by 99% compared to silt fence. In many areas a compost berm is 30% cheaper to install than sediment fence.

Compost filter berms allow runoff water to penetrate and continue to flow downhill while filtering pollutants and sediment from the water. They also slow down the flow allowing soil particles to settle out. Besides sediment removal, compost excels at removing oil and grease, metals, and buffering pH.

The compost used in a berm should be fairly coarse to filter water quickly; usually a mix of fine (¼ to ½ inch) and coarse grades with no particle sizes over 3 inches. It can be placed in a berm contoured to the slope using a backhoe, bulldozer or blown in place. The berm width should be twice its height; the larger the berm the steeper the slope it can handle. The compost can be augmented with seed and a bonding matrix before placement to improve longevity and provide permanent vegetation.

Seeded compost berm

When the construction project is complete the compost filter berms can be spread out and planted or incorporated into compacted soil to improve infiltration. Since the compost berm is left on the site there is no waste product or cleaning up. Either way, a compost filter berm is an effective and inexpensive way to clean and control stormwater runoff.

To summarize benefits of compost filter berms:

- Reduces sediment by acting as a filter
- Reduces fertilizers, chemicals, metals and other pollutants in stormwater runoff
- Keeps used silt fencing out of the landfill and uses recycled organic materials
- Saves money and time