



# The Urban Review

Sediment & Erosion Control Information Newsletter

## Applied Watershed Management

### A practical approach

Watershed-based management is an idea whose time has arrived. While local land use policies can have an effect on the built environment, political boundaries limit the extent of a policy's effect and have no influence on problems that can arise due to conflicting neighboring policy management. Environmental protections and incentive programs have to span political boundaries just like the natural world. The continuum that is our environment is dependant on local processes that contribute to a larger world view.

Pennsylvania has created some innovative policies to accomplish its environmental goals. The aim of these policies is to reduce the release of nutrients (nitrogen and phosphorus) to the Chesapeake Bay, encourage a greenhouse gas reduction initiative, and stimulate the renewable energy market. It has established a multi-pollution accounting framework which consists of calculation tools, monitoring, reporting, verification protocols, and reverse auctions, and a multi-pollutant registry.

Multi-credit markets consider the full range of ecological values by creating a value tent. A value tent directs people towards the highest credit by identifying the areas where one could receive the most benefits from a project. It is built by overlaying GIS layers of watershed values. Each layer is scored by how "creditable" the location is within the layer. The layers are added together to obtain the final value or tent score.

Examples of layers are phosphorous and nitrogen loading, carbon sequestration scores, wetland restoration potential, and

aquatic, terrestrial and vertebrate habitats. Bundling these values in a multi-credit market increases the incentives to act.

Next, assume that a landowner wants to improve his property by installing BMPs, but needs financial incentives. The landowner, as seller, applies his potential credits towards his nutrient management plan. A buyer helps the seller establish an easement on part of his land and retires them. Another buyer needs offset credits for wetland mitigation and purchases the wetland credits from the seller. The county, a third buyer, purchases the phosphorus credits and banks them toward a potential future TMDL, helping to implement the statewide program locally.

The Pennsylvania Department of Environmental Protection maintains the statewide registry, helps bring the players together, and focuses on policy development and trade enforcement.

Similar programs can be developed for any local watershed and applied to larger scope areas. Southern Ohio is included in a national priority area for Gulf Coast hypoxia issues, creating a national market for nutrient management. Locally, the cost of retrofitting drinking water systems to remove contaminants like phosphorus, nitrogen, and atrazine may drive water quality trading markets within local watersheds.

There is a value to the goods and services provided by natural systems. Recognizing the conservation commodities around us and preserving those important natural systems is the key to a sustainable natural environment.

## Pond Clinic for Landowners

Franklin and Madison Soil and Water Conservation Districts will be hosting a pond clinic in May. Join us to learn about fish stocking rates, pond management, aeration and algae control from pond expert Bill Lynch, the OSU Extension Program Specialist in Aquatic Ecosystem

Management. Find out how to attract wildlife to your pond from Marne Titchenell, Wildlife Program Specialist. Learn how to construct a pond on your land from Rob Skidmore, NRCS Civil Engineering Technician. The clinic will be held May 14th from 6:30 to 9:00 pm . To pre-register visit the Franklin SWCD web site at [www.franklinswcd.org](http://www.franklinswcd.org).

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# Long Term Operation & Maintenance Plans

The new generation of the MS4 Phase II NPDES permit requires the development of maintenance plans for all post-construction best management practices (BMPs) and identification of the responsible party for the long term upkeep of those facilities. While these responsibilities are placed directly on the owner by the requirements in the Construction General Permit and should be clearly identified in the municipality's plan review processes, final acceptance and submittal of the Notice of Termination places the BMP under the municipality's MS4 permit umbrella.

This permit shift requires municipalities to have a mechanism that:

1. records the location and pertinent information of the BMP.
2. gives the municipality the ability to enforce compliance with the operation and maintenance (O&M) plan.
3. allows recourse for compliance maintenance performed by the municipality.

The new permit does require that all private and public storm water facilities be mapped within the MS4 municipal boundaries. Whether by sophisticated GPS survey or received as-builts, post-construction BMPs and

their operation and maintenance information needs to be accessible for future reference. The municipality will ultimately be responsible for area wide water quality. This does not mean that water quality monitoring of post-construction BMPs will be necessary.

However, the development of a municipal program to check for the periodic inspection and maintenance of post-construction BMPs is needed and might involve the notification of identified owners that proof of inspection or maintenance is needed in order

to comply with code. Also, a municipality's ability to enforce O&M plan compliance may involve revising municipal code requirements to ensure the enforcement and recoupment of maintenance costs incurred by public entities performing maintenance services on non-compliant sites is made possible.

By requiring proof of inspection frequency of private BMPs, peak performance of the post-construction BMP is maintained and a municipality's measurable performance goals for NPDES compliance will be met.



Vac truck cleaning out storm drain

# New Zoning for Darby Creek Watershed

Effective last summer, new zoning regulations have been implemented to protect the waters of Darby Creek through the establishment of a Big Darby Creek Watershed Riparian Setback Overlay District. The specific purpose and intent of this district is to govern uses and developments within riparian setbacks that would impair their function including flood impact reduction, watercourse protection, natural infiltration and ground water recharge, and bank stabilization. Riparian setbacks apply to all watercourses in the watershed with the exception of road side drainage ditches.

The size of the setback may be determined by using a developed formula or site specific delineation and will be adjusted to include wetlands, steep slopes, and floodplains. The minimum width is 100 feet on each side of the centerline.

Section 650 of the Franklin County Zoning Resolution explains the application procedures and site plan requirements as well as the permitted and prohibited uses within the riparian setbacks. Permitted uses may include passive recreation, trails, removal of damaged trees or invasive species, and approved stream improvement projects. Prohibited uses include construction, dumping, fences, parking, disturbance of existing vegetation, or sewage treatment areas.

Periodic inspections by the Zoning Administrative Office or Franklin Soil and Water will be conducted for compliance. As with all zoning regulations, variance procedures are provided through the Board of Zoning Appeals.

# Catch Basin Inserts For an Urban Setting

Catch basins are inlets to the storm drain system. They typically include a grate or curb inlet and a sump area to capture sediment, debris, and pollutants. Catch basin inserts (CBIs) are designed to remove sediment, oil and grease, trash, and debris. Inserts can improve the efficiency of catch basins. Some inserts are designed to drop directly into existing catch basins, while others may need retrofit construction. The devices are designed to be suspended from the storm drain inlet structure and work by gravitational filtering to remove debris and large sediment particles. Some models are designed with an inner component that has an oil absorbent material to facilitate the removal process. Hydraulically, they are designed with a high-flow bypass to prevent resuspension and washout during peak storm runoff.

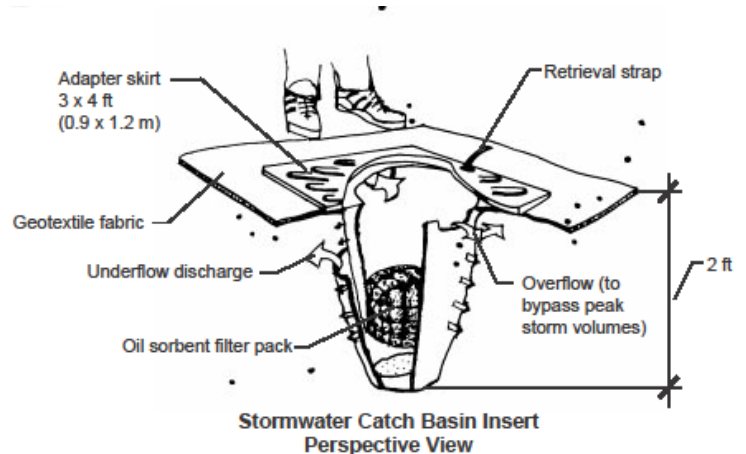
CBIs are not suitable for removal of fine particulate storm water pollutants such as metals, nutrients, silts, clays, or soluble pollutants; however, they are suited for sites where a substantial amount of debris is found in storm water runoff. Areas where CBIs would be useful include unpaved roads or parking areas, construction sites or unpaved industrial sites. CBIs could be used in lieu of oil/grit separators in unpaved areas.

Studies have shown that catch basin inserts are capable of trapping and removing coarse materials and debris that is typically found in unpaved areas. New inserts designed to remove petroleum hydrocarbons were found to reduce oil and grease concentrations by 30 to 90 percent; after some use, the sustained removal rates were reduced to 30% or less. While inserts vary in their ability to remove oil and grease, most units showed some level of treatment if maintained on a regular basis.

Because of their limitations, catch basin inserts should not be used as a stand-alone BMP but rather as part of a treatment train. They should be designed to perform acceptably for a reasonable design storm such as a 2-yr rainfall event. They should not interfere with the drainage for a larger event such as a 10-year rainfall. They are commercially available and design and installation information can be

easily obtained from their manufacturers or distributors.

A major concern with catch basin inserts is the need for regular maintenance of the filter system or medium. Depending on their size and location, units will usually operate correctly if cleaned after every two or three major storms. Maintenance for inserts configured for oil and grease removal is more site specific but generally is more intensive. Most of the inserts are made of lightweight material and can be removed by one person; however, filter inserts that have filled with sediment may require two people to lift.



Depending on the size and complexity of the unit, the CBI grate-mounted inserts can range in cost from \$100 to as much as \$1,500. Another consideration is the clean-out and maintenance requirements of a sump with an insert versus a sump without the insert. Costs for maintaining CBIs range from \$10 to \$100 per unit per month, assuming monthly replacement of the filter media. Sumps that do not have inserts should be cleaned once or twice per year, at a minimum. In a study conducted by the Port of Seattle, it took one person 90 minutes to clean 18 inserts. In contrast, it took two vacuum truck operators about three hours to clean 18 sumps.

Excerpts from US DOT, Federal Highway Administration, **Fact Sheet—Catch Basin Inserts**

## Upcoming Events

Columbus Green Building Forum presents the **6th Annual Green Building Expo**, May 19th on the OSU campus. Visit [www.cgbf.org](http://www.cgbf.org) for more information.

**Certified Erosion, Sediment, and Storm Water Inspector (CESSWI)** review classes and exams will be held at the Ohio Contractors' Association during May, June, and July. Visit [www.ohiocontractors.org](http://www.ohiocontractors.org) to register.

**Ohio Stormwater Conference 2009** on May 14-15 at The Manor House in Mason, Ohio. For information on this event visit, [www.tinkerscreekwatershed.org](http://www.tinkerscreekwatershed.org) to download a schedule and registration packet.

**Stormwater Management MCM #4, Erosion Control Inspection** presented by Ohio LTAP May 27th in Columbus.



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## **BMP Review: Non-Structural BMPs**

When it comes to implementing erosion and sediment control best management practices we usually think of structural BMPs. Silt fences, basins, check dams, and erosion control blankets all do the job to prevent erosion and keep sediment out of waterways. But there are other, less expensive, more practical practices we can use.

The use of nonstructural BMPs on a development site should be the first consideration when developing a site plan. These BMPs are the existing inherent abilities of a site to control runoff and sedimentation. Contours are frequently overlooked when developing a site plan. Grades that fight the existing contours can cause areas of concentrated flows and promote sediment loss. Existing vegetation preserved during and after development can have a huge effect controlling runoff and promoting storm water quality. The set aside of buffer areas will preserve steep slopes, ravines, and channel areas, as well as sensitive habitats such as wetlands. As a post-construction control, think of using engineered soils, infiltration areas, and separating rooftop runoff to decrease the overall runoff curve number of the site and the amount of stormwater storage required. Contact Franklin Soil and Water for more information on the use of these practices.



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