



The Urban Review

Storm Water and Erosion Control Newsletter

Post-Construction BMP Inspection

In our work with local governments, Franklin Soil and Water has assisted with inspections of post-construction best management practices (BMPs). This was done in one municipality to better understand the level and frequency of maintenance and documentation needed. National Pollutant Discharge Elimination System (NPDES) regulations require that operation and maintenance procedures for post-construction BMPs be established in perpetuity. Inspection of these BMPs is necessary to ensure peak performance and storm water quality control. Also, all public and private structural and non-structural post-construction storm water controls that discharge to a municipal separate storm sewer system (MS4) are to be mapped for tracking purposes.

An initial check of the municipal GIS data indicated that of the known structural BMPs installed within the past three years, half were mapped and a third were identified by manufacturer and type.

The BMPs were also checked for general condition, sediment accumulation, and maintenance at the access point. Most of the BMPs were positioned under or adjacent to pavement with access through manhole covers or grates that allow easy access by a vacuum truck. One external access route had been landscaped and would require tree removal to reach the BMP. Other access points were incorporated into landscape beds and covered with mulch. Some internal access points, while located in the paved parking were inaccessible due to a storage trailer

parked on top and asphalt seal coating of the manhole. A few BMPs featured proprietary locking tops.

Catch basin inserts are located in individual drain inlets. They trap sediment using filter fabrics and absorb oils and grease with materials like activated carbon. The absorbent materials used for capturing oil and grease are effective when new but will decrease in efficiency with each storm event. Generally, the amount of storm water reaching individual catch basin inserts is divided across the site. However, the small surface area and porosity of the filter fabric in each insert is reduced with each storm and more frequent inspection is warranted for these BMPs. Some of the inserts inspected were filled near capacity with sediment. These were located in areas where higher loads and concentrations of pollutants could be expected.

Several of the inspected sites used infiltration for storm water control. These consisted of bio-infiltration swales with controlled drainage, rock lined infiltration trenches for low volume storm events, and refitted dry detention basins with parking lot curb cuts. As part of the usual site maintenance, mowing and general clean up was presumed to occur periodically. All the BMPs appeared to be functioning and had few apparent issues or maintenance needs and their intrinsic function remained intact.

The appearance of BMP maintenance was assessed for each site in a purely subjective method. Indicators like the presence of undisturbed compacted mulch, applied seal coat, or in-line lane striping on several manholes would suggest that these had been undisturbed for some time. BMPs with locking lids showed bolt head locations filled with sediment. This sediment indicated a lack of recent access or maintenance. Several of the units reviewed were either inaccessible or had no field data

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Certification for Municipal Storm Water Program Specialists

A new professional certification program is now available for all qualified Municipal Separate Storm Sewer System (MS4) program staff, operators, coordinators, and others who wish to demonstrate their proficiencies. This certification program was created by EnviroCert International, Inc. in conjunction with an international oversight committee of MS4 operators and storm water professionals. Successful completion of this program will qualify an individual as a Certified Municipal Separate Storm Sewer System Specialist (CMS4S).

The mission of the new CMS4S program is to serve the public trust through the certification of individuals who are technically and ethically qualified to coordinate or manage nationally consistent National Pollutant Discharge Elimination System (NPDES) MS4 programs which are in compliance with applicable laws and regulations.

In this unique program, the CMS4S registrants must understand the minimum requirements for the US EPA NPDES storm water permit requirements, as they relate to overall coordination and implementation of MS4 operations.

Registrants must document proficiencies in each of the NPDES minimum control measures: public education and outreach, public participation and involvement, illicit discharge detection and elimination, construction site runoff control, post-construction runoff control, pollution prevention and good housekeeping practices. They must also demonstrate knowledge of overall program management and documentation, program funding, and program audits and evaluation.



Certification is accomplished through successful completion of a written exam. Those wishing to sit for the exam must have prior approval from the CMS4S administrative office. Approval is gained through the application process. Detailed information about program requirements, application forms, fees, procedures and standards can be found at the CMS4S program web site: www.cms4s.org. Check out upcoming events for exams in Ohio.

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Upcoming Workshops and Events

Join us September 1 for the Center for Watershed Protection webcast. This two hour webcast will focus on **Permeable Pavement Design, Installation, and Maintenance**. It will provide practical design, installation, and maintenance tips to improve runoff reduction and pollutant removal performance of pervious concrete, porous asphalt, permeable pavers, and other types of permeable pavement. Start time is noon at the Franklin Soil and Water office at 1328 Dublin Road. Space is limited so call Sherry or Martha at 486-9613 x114 to reserve your seat.

A **CMS4S exam** is to be held on September 14 in Twinsburg, Ohio at the Ohio EPA's Northeast District Office. Contact Adrienne LaFavre at Adrienne.LaFavre@epa.state.oh.us for registration information. Please note, you must have prior approval from the CMS4S administrative office to sit for this exam. Visit www.cms4s.org for information and application forms. **CPESC** and **CESSWI** exams will also be held at the same time.

The Ohio EPA is providing a free training opportunity September 16 on **long term post-construction maintenance** practices and will have a BMP tour visiting six sites in Lorain and western Cuyahoga Counties. This event will be held at Lorain County Community College in Elyria, Ohio. For more information about this tour and to register go to http://epa.ohio.gov/ocapp/storm_water.aspx. The Ohio EPA is also planning a tour of conservation developments in the fall.

North Carolina State University will hold a workshop on **How to Control Turbidity on Construction Sites** on August 25, in Charlotte, NC. Learn methods for meeting the turbidity limits in the new US EPA rule through the use of chemical treatment systems and inexpensive, passive treatment approaches. The workshop will provide 6.5 hours of credit for soil scientists, landscape architects, engineers and CPESCs. Visit www.soil.ncsu.edu/training/ to register.

Plan to attend the Central Ohio Roundtable on August 26 hosted by the City of Gahanna. This roundtable discussion will discuss a variety of programmatic post-construction BMPs for municipalities. Meet at the Hanna Park Shelter House on Clark State Road 10:00 a.m. until noon.

Save the Date! The Franklin Soil and Water Annual Banquet will be held on October 21 at Confluence Park.

indicating depth to cleanout requirements. One BMP opening had failed. Site managers were asked about the sites' routine maintenance needs. They were unaware of the structures' purposes, operation, or maintenance schedule.

Maintenance of Proprietary Devices

Maintenance schedules for proprietary devices are recommended by the manufacturer but local conditions such as continued development or adjacent slopes, should be considered.

Many swirl type separation chambers are deep cylinders (8 to 10 feet) that maintain a full level of water capturing floatable material on top and collecting the sediment that sinks to the bottom. The bottom loads are not visible from the access port and require a known depth of the BMP and a stadia rod to measure sediment loading or complete evacuation for visual inspection. The large capacity of these BMPs generally means maintenance is needed less often, however, without specific dimensions, visual inspection would require complete evacuation regardless.

Other in-ground BMPs rely on detention volume for sedimentation and baffle chambers for separation of floatables. These multi-chamber BMPs are often designed with large diameter pipes or concrete boxes with access ports to the chambers. The length of the access riser can affect the ease of measuring sediment and the length of the vacuum nozzle needed for clean-out. A tall riser reduces the angle the nozzle can reach

into the chamber, cleaning only a small area directly under the access port. This is more pronounced on linear designs with few access ports.

Recommendations

- Map all public and private storm water controls that discharge to an MS4 storm water system for NPDES tracking purposes, permit and municipal zoning compliance, and enforcement.
- Develop a system for tracking periodic maintenance of BMPs. Record BMP make and model for future reference and the education of current property managers.
- Follow manufacturer recommended installation procedures and inspect to verify correct installation.
- Clearly indicate clean-out levels for all installed BMPs for ease of visual inspection.
- Maximize the use of non-structural BMPs. Riparian setbacks, wetland protection buffers, and tree preservation play significant roles in long term, low-maintenance water quality management.
- At a minimum, routine inspections should begin immediately after BMP installation and annually thereafter with maintenance on an "as needed" basis. These inspections were carried out as support to the municipality in evaluating their own storm water program. Franklin Soil and Water is available to assist your municipality with an inspection and review of post-construction BMPs.

August Mack Environmental Sponsors Envirothon Team

Franklin Soil and Water would like to thank August Mack Environmental and Scott Mounts for sponsoring Envirothon teams this year. Franklin County was represented by the Bexley High School Envirothon Team at the state competition at Lake Erie College. They placed 2nd in the area contest, where they competed against 58 teams from central and southern Ohio. The Envirothon competition, sponsored by the Ohio Federation of Soil and Water Conservation Districts, is an outdoor contest challenging students in the areas of aquatic ecology, forestry, soils, wildlife, and current environmental issues.

The 2010 environmental issue was protection of ground water. The team presentation challenge state

contest was to propose a sub-division plan focusing on the protection of ground water resources.

Scott Mounts, Ohio Manager of August Mack Environmental, provided the Bexley students with information and resources for the preparation of this presentation. August Mack's sponsorship assisted with team registration fees and with information about this year's environmental topic.

We are always looking for team sponsors. If you are interested in learning how your organization can be a part of this valuable learning experience by mentoring students interested in environmental fields, contact Linda Pettit or Jennifer Fish at Franklin Soil and Water, at (614) 486-9613.



FRANKLIN SOIL AND WATER
CONSERVATION DISTRICT

1328 Dublin Road, Suite 101
Columbus, Ohio 43215
(614) 486-9613 Fax: (614) 486-9614
www.franklinswcd.org

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BMP Review: Using Compost for Increased Infiltration

The US EPA states that soil loss rates are at least 20 times greater from construction sites than other land uses. In fact, few land uses are more prone to damage from storm water runoff and erosion. Recently, the use of compost as a storm water Best Management Practice (BMP) is being recommended. Some states have required compost to be used as a storm water infiltration BMP on all construction sites.

Compost as a BMP has been generally in the form of berms, blankets, and filter socks. Compost blankets are ideal for stabilizing slopes of up to 50%. Compost 2-4 inches thick can be spread or blown on a slope and will hold in place on a 30% slope during rain events of up to 4 in/hr. It conforms to uneven terrain and fills rills and small gullies. Iowa State University studies show that runoff from compost-treated roadway embankments was significantly delayed and totaled only one-fifth as much as that from unprotected embankment areas. Erosion rates were less than 1% of those on unprotected roadway embankments. Compost blankets also have the benefit of improving revegetation rates and can even be used alone for slope stabilization when weather does not permit seeding.

Compost berms and compost-filled socks are easy to

install, conform to rough terrain, require less maintenance than silt fences, and can be seeded or spread in place on-site when construction is complete.

A recent study conducted by the US EPA has shown that incorporating compost into the top 6 to 12 inches of soil can improve infiltration rates considerably. Infiltration increased by 1.5 to 10.5 times after amending the soil with compost compared to unamended sites. An earlier study showed that compost amendment is an effective means of decreasing peak flows from all but the most severe storm events. Incorporation of compost doubled the water holding capacity of the soil.

One negative aspect was that concentrations of nutrients in the compost leached into the runoff. However, when decreased surface runoff quantities were taken into consideration, overall total runoff mass discharges of nutrients were reduced by 2 to 50% compared to unamended areas. Nutrients in runoff also decreased significantly over time, possibly due to increased plant growth.

Overall, it has been shown that incorporation of compost into the soil greatly enhances storm water infiltration rates, and reduces surface runoff and erosion.

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