

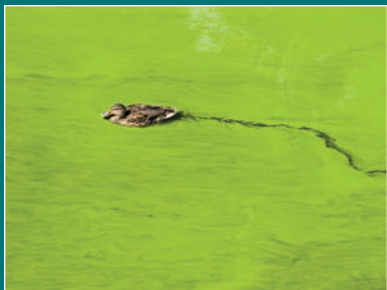
# Maintenance: The Dirty Secret of the Stormwater Treatment Industry

Why Aren't Stormwater BMPs Regularly Maintained?



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## Overview

The U.S. stormwater treatment industry was born out of the passage of the Clean Water Act of 1972. Enforcement of the regulations carried out by the U.S. Environmental Protection Agency (EPA) (or the cities/states who have been delegated the same authority) are what currently drive compliance and, in turn, the industry.

### Are Treatment BMPs Maintained?

While the EPA does stipulate that maintenance of stormwater best management practices (BMPs) such as bioswales, sand filters, stormwater ponds and manufactured treatment devices (MTDs) must occur, the wording is vague and there's no mention of frequency. The lack of specificity has resulted in vast differences in the way maintenance is enforced—if it is enforced—from state to state and city to city. As an example, enforcement of BMP maintenance is almost non-existent in some parts of the country, whereas the state of Maine, the city of St. Louis, and Clayton County, Ga., all require proof of a maintenance contract as part of initial permitting process.

Even in areas of the United States where MS4 (Municipal Separate Storm Sewer System) and IG (Industrial General) permit regulations are strictly enforced, regulators generally commit more time and energy into performance testing and verification of stormwater BMPs than into ensuring that ongoing

system maintenance occurs. If stormwater BMPs are not maintained, it's only a matter of months or years until the units cease to function as intended and begin to overflow with trash, sediment and other pollutants. This renders useless the effort expended to test, approve, specify and install systems.

### What Happens When Maintenance Isn't Done?

If the systems that were designed to keep harmful pollutants out of waterways eventually fail due to lack of maintenance, the birds, fish and small mammals that make their habitat in and around water bodies will be affected. Additionally, if pollutions become eyesores, this can affect tourism and harm local seafood industries. Plastic is arguably the most hazardous component of trash for wildlife. It can take up to 400 years to bio-degrade, and furthermore it's usually buoyant in water, making it easy for animals to become entangled in it or mistake it for food. Once consumed, birds, fish and other wildlife are either poisoned or unable to effectively digest the material and, in most cases, die.

While these pollutants may spell the end for that animal, the life of that plastic bottle cap, food wrapper or beverage straw has only just begun. After the animal decomposes, those same pollutants are once again free to reenter the ecosystem by way of a rain event or other means and threaten the life of another animal.



# The Story of a BMP's End User

In one hypothetical scenario, Arthur is a shop owner who rents commercial space within a shopping plaza. One day, Arthur receives a Notice of Violation from the city on behalf of the EPA, informing him that his business is discharging untreated stormwater into the drainage line and he has 30 days to maintain the system or face regulatory penalties.

Arthur knows nothing about stormwater treatment, has never seen a treatment system in his complex and feels certain the letter was sent in error. Arthur contacts his landlord, a real estate development company, and after much back-and-forth, is directed to the portion of the lease agreement indicating that he is indeed

responsible for the maintenance of the unseen stormwater treatment system onsite. Arthur is advised to pay the fine and schedule a cleanout to avoid further action.

Feeling cheated by the "fine print," Arthur thinks about how to handle this unexpected annual expense: What is a stormwater treatment BMP? Why does it matter if it's maintained? How should he know when cleanout is needed? Why wasn't he notified of his obligation when he became a tenant?

Arthur's predicament is one shared by many commercial property owners, managers and tenants. Most people outside of construction, commercial real estate and municipal water treatment

sector are largely unfamiliar with stormwater treatment systems, and even those with a working knowledge of the technology aren't always clear on the upkeep required and pertinent regulations.

### The Problem

Whether or not BMP maintenance occurs is ultimately in the hands of the group who is least likely to be aware of their responsibility—end users. Without appropriate education (and if post-construction compliance is not enforced by the regulating bodies), it is only a matter of time before stormwater quality units fail and overflow with trash, sediment and other harmful pollutants initially captured.





# How Does the Communication Break Down?



As illustrated by the figure below, the layered structure of contracting in property development today separates those with the knowledge of stormwater management and those with the responsibility for system upkeep. This can clog communication flows and create bureaucratic issues for everyone involved.

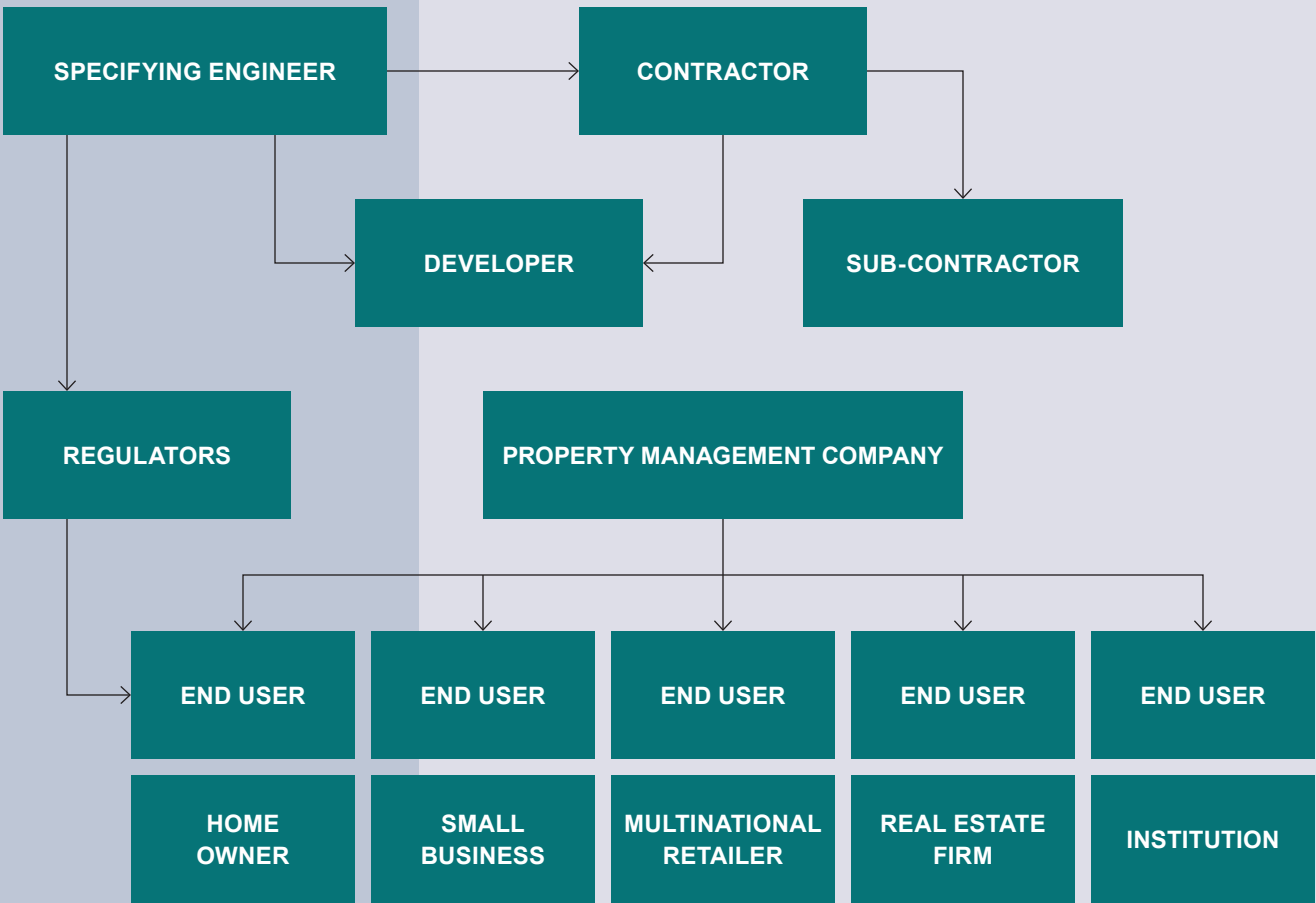
The Clean Water Act states that if a certain amount of earth is disturbed during the development or redevelopment of land contained within an MS4, a

stormwater treatment system must be installed to remove the sediment, oil, trash and other debris from the site's runoff before it discharges into any Waters of the United States (WOTUS).

Civil engineering firms hired by property developers are tasked with selecting BMPs for a project, in accordance with all federal, state and local stormwater treatment regulations. While engineers know the importance of service and maintenance, it is rare for



## Communication Flows Between Stormwater Professionals and End Users



the engineers to ever interact with the property's end users (think Arthur on page 3). In fact, engineers often work directly for a general contractor hired by a property developer, and sometimes are separated even further by a property manager.

The great news is that this is a problem easily remedied. Outlined here are simple strategies that building owners, managers and tenants can use to guard against the unexpected cost and regulatory scrutiny of a non-compliant stormwater treatment system:

**1) Communicate Proactively.** When new construction projects are underway, the civil engineer working on the project should have all the necessary information regarding the treatment system, including maintenance instructions from the manufacturer. Property managers and owners should not rely on developers or engineers to provide

this information without a request, and thus should take the initiative to ask for this information and make it available to all current and future tenants.

**2) Get Educated.** Tenants and end users need to understand their legal obligation but it might help them to understand their responsibility from a perspective that already makes sense to them. Most business owner's commercial business employees would never throw trash on the ground in their parking lot or allow their dumpster to overflow for years. Failing to maintain treatment systems, however, has the same effect on the environment, getting trash into waterways and eventually harming aquatic ecosystems and possibly fishing and shellfish industries. Helping end users see their responsibility from this point of view may help take the sting out of an otherwise confusing "tax" that they don't understand.

**3) Plan Ahead.** The greatest blow to unsuspecting owners, managers and tenants is the sticker shock associated with repairing a stormwater treatment system that has gone years without maintenance. A common example is a stormwater pond, which, if left untended for too long, will become overgrown and require dredging. Also, underground trash screens will often collapse in on themselves beneath the weight of the collected debris.

The cost to return these systems to a functional status will be significantly greater than if the systems had been maintained on a regular basis, so budgeting for service and maintenance will make the most fiscal sense over the long-term. Increasingly, stormwater BMP maintenance contracts are being required prior to the issuance of any permits, which should help to mitigate instances of deferred maintenance.





# What's Involved in Maintenance?

Maintenance requirements depend on the type of BMP that is installed. Low impact development (LID) systems are maintained differently than MTD systems.

	System Type	What's Involved?	What Tools are Needed?	Price Range for Maintenance?	Notes
Low Impact Development (LID) Systems	Ponds	Mowing, Flailing Dredging, Reseeding	Commercial mower/ Excavator with flailing extensions	\$\$\$-\$\$\$\$\$ (10K+)	Typically multiple days of work
	Bioswales	Mowing Pruning Replanting	Commercial mower Weed wacker, etc.	\$-\$\$\$ (Typically not priced standalone. 750+)	More labor intensive
	Biofilters	Media and/or sand skimming and replacement	Commercial garden tools; hoes, rakes, etc.	\$\$-\$\$\$\$ (Typically not priced standalone. 750+)	More labor intensive. Typically multiple days of work
Manufactured Treatment Device (MTD) Systems	Hydrodynamic Separators	Power wash Pump out	Vactor truck	\$-\$\$\$ (750-2,500)	
	Media Filters	Power wash Pump out Media replacement	Vactor truck Confined entry setup	\$-\$\$\$ (1,500-3,500)	Depends on number of filters
	Screening Baffle Boxes	Power wash Pump out	Vacuum truck Confined entry setup	\$\$-\$\$\$\$ (2,500+)	

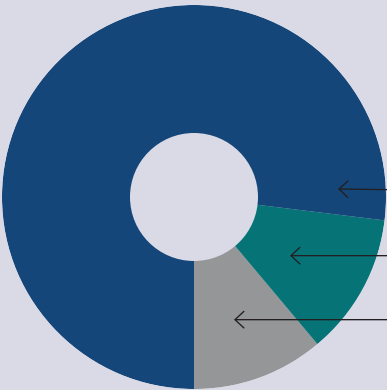
## Tips for Specifiers

- 1) Good Unit Placement.** Systems installed in the middle of busy roads are a safety concern and limit the ability to inspect and maintain.
- 2) Inaccessible Units Create Challenges to Maintenance.** This includes units well inside parking garages where vactor trucks can't enter as well as units placed out in athletic fields or other green spaces away from access roads.
- 3) More Detail Better than Less in the SWPPP.** For an example, there is often confusion over acceptable vegetation in a dry pond, with some mistakenly thinking they need to let the cattails grow.



## Recommend Maintenance Providers to End Users

- Be ready to make a recommendation for a third-party inspector or maintenance provider.
- Proactively reach out to those service providers in the area.
- Maintenance providers have their own challenges and concerns; work with them as early in the process as possible so they can be prepared to maintain systems.
- If using a proprietary BMP, ask the manufacturer about their service team.
- The manufacturer should also be able to directly help maintain other propriety and LID systems on the site as well.



## Will you recommend stormwater maintenance providers to end users?

77% YES  
12% NO  
11% IF I CAN FIND OUT WHO THEY ARE

SOURCE: 225 STORMWATER ENGINEERS/REGULATORS POLLED IN A HYDRO INTERNATIONAL WEBINAR

## What to Look for in a Stormwater Maintenance Service Provider

- **Look for a Full-Service Provider.** Many service providers are limited in the types of treatment systems they can effectively maintain. Make sure you select a company with the tools to clean everything from underground separators, catch basins and filters, to LID or green infrastructure systems such as stormwater ponds, bioswales and biofilters.
- **Look for Demonstrable Knowledge of Stormwater Regulations.** Just because a company has a vactor truck that cleans out grease traps and septic tanks or does landscaping does not mean they know how to ensure a treatment system is performing

in accordance with the original stormwater permit. Select a provider that can demonstrate an understanding of the intricacies of treatment regulations, or else face the risk of paying for maintenance that does nothing to bring you into compliance.

- **Place a Premium on Replacement Parts.** Both engineered and biological filter systems use media, a combination of sand and other materials designed to trap fine pollutants. Over time, media becomes spent and ceases to optimally function. Maintenance companies who do not have access to replacement media may charge full price for a half-done job.





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