

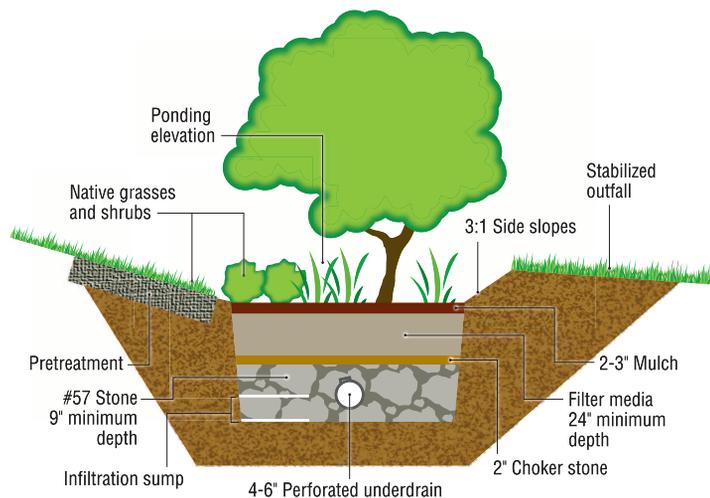
GREEN INFRASTRUCTURE INCENTIVES IN NATION'S CAPITAL

Innovative storm water regulation establishes private market that pays dividends to property owners for retrofits and improves Washington, DC's waterbodies in the process.

Marsha W. Johnston

ENVIRONMENTAL officials in the nation's capital have struggled with the polluting effects of storm water runoff caused by Washington, DC's high percentage of impervious land surface (43%) and a combined runoff/sewage system that regularly overflows. Satisfactory solutions have proven elusive or cost-prohibitive. As a result, years of inadequate storm water management have become a leading cause of the severe degradation of the District's water bodies, such as the Anacostia and Potomac Rivers and Rock Creek, all of which ultimately drain into the Chesapeake Bay, thus adding to the Bay's over-nutrication and sedimentation problems.

On July 19, 2013, the District's Department of Environment (DDOE) finalized new storm water regulations as part of compliance with its new Municipal Separate Storm Sewer System (MS4) permit (part of the federal Clean Water Act requirements). Realizing that most development projects sub-



Source: DDOE Storm Water Management Guide

Figure 1. Example of an enhanced bioretention design with an underdrain and infiltration sump/storage layer

ject to the new regulations would be located in the expensive, crowded downtown, DDOE saw a potential opportunity to drive storm water retention retrofits on the District's impervious land area that was less likely to attract development regulated under the MS4 permit. Historically, getting retrofits on impervious surfaces in outlying neighborhoods has been hugely difficult because of a lack of financing, even if a retrofit were required.

"If an apartment building in down-

town Washington can charge higher rent with a rooftop pool, there would be an opportunity cost of *not* being able to charge that rent if they have to put in a green roof, so they will want to look at off-site options, and their lowest cost opportunities would be found more on the periphery of the District

where there is a lot more open space and the land value is lower," explains Brian Van Wye, branch chief for program implementation in DDOE's Stormwater Management Division.

DEVELOPING RETENTION CREDIT TRADING

Taking inspiration from existing trading systems in the realms of renewable energy, air quality, water quality and greenhouse gas, DDOE included a first of its kind storm water retention credit trading system in its new regulations. DDOE's innovative Stormwater Retention Credit (SRC) trading system embraces two key ideas: 1) Allowing regulated projects to achieve a portion of their obligation off-site; and 2) Estab-

lishing a private market that pays dividends to property owners for retrofits and improves benefits for District waterbodies in the process.

Under the District's planned regulatory framework, a regulated project would have to retain on-site at least 50 percent of the volume of storm water associated with its applicable retention standard. The other 50 percent can be retained off-site. That portion is termed "Off-Site Retention Volume" (Offv). A project would be able to use off-site retention without having to first prove that it cannot achieve that retention on-site. A regulated site may achieve its Offv either via generating its own SRCs, buying SRCs, paying an in-lieu fee or a combination of generating/buying SRCs and paying the fee. Each SRC corresponds to one gallon of retention for one year, and the in-lieu fee (ILF) corresponds to one gallon of retention for one year.

In its Storm Water Management Guide, DDOE lists 11 Best Management Practices (BMPs) that may be used to meet required on- and off-site Stormwater Retention Volume (SWRv) or to generate SRCs on an unregulated site that a developer might want to purchase. The approved BMPs are: Green roofs, rainwater harvesting, impervious surface disconnection, permeable pavement systems, bioretention, infiltration, open channel systems, ponds, wetlands, proprietary practices, and tree planting and preservation. Compost — with its water retention capabilities — is an element of several of the BMP groups, including impervious surface disconnection to a soil amended filter path, green roof growing media, bioretention media, compost-amended grass channel (amended to a one foot depth), dry swale filter (compost-amended on top 4-inches), constructed wetlands (compost-amended planting holes) and compost-amended trees. In DDOE's filter media criteria for bioretention, organic matter is a required constituent in the soil media; "well-aged clean compost" is used to describe organic matter. Figure 1 illustrates an enhanced bioretention design.

DDOE believes strongly that the off-site trading provision will be key to higher participation, lower cost and more effective storm water retention, which it illustrated in a comparison to strict on-site retention:

Scenario A: A 0.25-acre regulated site that is 100 percent impervious installs retention practices to retain on-site the volume from 1.2-inch storm — approximately 7,700 gallons (gal).

Scenario B: The same site installs on-site practices with half the capacity, and, through trading, purchases SRCs

from another site (same size and surface cover) that installs allowed BMPs to retain the remaining volume.

During a 1.2-inch storm, the two scenarios retain equal volumes. However, the 1.2-inch storm is in the 90th-percentile rainfall event in the District, meaning it happens relatively infrequently. So, during the many smaller storms that occur in a year, Scenario B, with green infrastructure practices serving a greater land area, results in greater retention. In fact, using 2009 rainfall data, DDOE calculated the annual retention for each scenario and found that Scenario B results in a 57 percent increase.

Furthermore, notes Van Wye, storm runoff from the core of the city typically drains to the combined sewer system or the Potomac or Anacostia rivers, which, because of their tidal mixing, can better handle the volume and offer less potential for concentrating pollutants in a single area. Meanwhile, the less developed land on the periphery drains to the tributaries. "Those tributaries are much less able to handle it, so we think the credit trading will provide more help to our most vulnerable water bodies," he explains. Additionally, the increased number of smaller practices in these areas will capture more of the dirtiest "first-flush" pollution, while also improving environmental health and aesthetics in communities that need it. "Moreover, even if regulated sites do the minimum retention on site, it will be a significant improvement over the status quo, adding retention capacity where there was none," he adds.

Overall, in a typical year, says Van Wye, DDOE has calculated that the land that would be subjected to the new storm water management regulations represents approximately one percent of the District's total land area. Although that seems minuscule, Van Wye explains it is nonetheless 10 times greater than the area DDOE is able to retrofit with *all* of its voluntary programs (subsidies, incentives) combined in a typical year: "Under these regulations, development becomes the biggest driver of retrofits in the District."

IMPACT ON DEVELOPMENT

Regarding compliance cost, an analysis by Industrial Economics, Inc. assessed the incremental cost to achieve a 1-inch retention requirement on three sites in the District and found that the cost was roughly one-tenth of one percent (0.1%) of the total cost of the development project. Though the

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- Economic Case For Green Infrastructure, Part I
- Compost In The Green Infrastructure Tool Box, Part II

impending 1.2-inch retention requirement would have a higher comparative cost, DDOE says it has "no basis" to believe that the cost increase would be sufficient to fundamentally change its conclusion that most sites can achieve the requirement at a reasonable cost.

During the rule-making, some stakeholders suggested that a 1.2-inch retention requirement would drive development away from the District into surrounding jurisdictions, thereby undermining smart growth initiatives that prioritize dense urban development over suburban or rural green field development. In defending its choice, DDOE cited recent research conducted by ECONorthwest on behalf of Smart Growth America that indicates such a result is unlikely. ECONorthwest researchers interviewed developers and government officials in three jurisdictions that had recently implemented new and significantly stronger storm water management requirements, including in Montgomery County, Maryland, adjacent to the Washington, DC. They found that storm water management requirements are not a major driver of decision-making, and no evidence that such requirements drive development out of urban areas into surrounding green field areas. In addition, the new regulations and their provisions for off-site retention offer more flexibility than is available in other urban jurisdictions with similar retention requirements, making it even less likely that these new requirements will drive development out of the District.

Van Wye expects compliance with the regulations to positively impact a range of industries, supporting jobs in nurseries, the building and maintenance trades, as well as design and engineering. DDOE plans to build on its existing process for storm water practices, to inspect storm water retention installations and certify them for credits. "We expect some increased demand on our resources, so we're hiring some additional people, and putting in place a grant with a nonprofit to do some plan reviews/inspections on our behalf," says VanWye.

As for trading the credits, he says DDOE doesn't plan to run an exchange per se, but rather a kind of a "hybrid over-the-counter (OTC) and exchange" model. "We will just facilitate informal exchange, like a periodic meeting, informal auction, maybe bimonthly or quarterly, and there is nothing to prevent private entities from setting up a

more formal exchange,” explains Van Wye. “We know some people out there are interested in doing that.”

As the first jurisdiction to put storm water retention trading in place, the District doesn’t have the benefit of looking to other jurisdictions where it worked for lessons. “There is a learning curve we are going to have to go

through,” he says. “We have tried to keep things as simple and straightforward as we thought reasonable to do so. It took a long time for us to get to this point, and it will take some time to retrofit the vast area of impervious surface and fully repair our water bodies.”

For more details about the District of

Columbia’s new storm water regulations and credit trading initiative, visit: <http://budget.dc.gov/node/610572> ■

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Reprinted From:
September, 2013

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