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GLOBAL GREEN USA · NATIONAL WILDLIFE FEDERATION

November 8, 2012

District Department of the Environment
Attn: Brian Van Wye, Natural Resources Administration
1200 First Street, NE, 5th Floor
Washington, DC 20002
SWRule@dc.gov

Re: Stormwater Rule

Dear Mr. Van Wye:

The Natural Resources Defense Council (NRDC) appreciates this opportunity to provide comment to the District Department of the Environment (DDOE) on its proposed stormwater rulemaking. NRDC is a national non-profit environmental organization that has long advocated for improved stormwater management in the Washington, DC region and nationwide. These comments are additionally joined by American Rivers, Anacostia Watershed Citizens Advisory Council, Anacostia Watershed Society, Audubon Naturalist Society, Chesapeake Bay Foundation, DC Environmental Network, Global Green USA, and National Wildlife Federation.

This proposed rule represents a critical opportunity to improve the health of District water bodies, provide social and economic benefits to local residents, and green our nation's capital. Additionally, the rule must be consistent with the terms of the Washington, DC municipal separate storm sewer system (MS4) permit issued in October 2011.[1] That permit calls for the District to develop programs to reduce harmful stormwater runoff volumes from both new and existing impervious surfaces.

[1] EPA Region III, Permit for the District of Columbia Municipal Separate Storm Sewer System, NPDES Permit No. DC0000221 (effective Oct. 7, 2011), *available at* http://www.epa.gov/reg3wapd/pdf/pdf_npdes/Wastewater/DC/DCMS4permit2011.pdf (hereinafter "DC MS4 Permit").

While we generally support the District's efforts to develop a cost-effective method to implement citywide green stormwater controls, we are concerned that certain aspects of the proposed regulations could undercut the potential benefits of such a program. In sum:

- The stormwater retention practices required by these proposed regulations will have many benefits for District waterways, citizens, and businesses.

- However, we believe some aspects of the proposed program do not comply with MS4 permit requirements. These aspects include: the formula used to calculate stormwater retention volume (SWRv); indefinite credit banking; certification of credits for previously constructed retention practices; the lack of geographical restrictions on trading between watersheds; the lack of recordation requirements for retrofit practices; the lack of guarantees that fee-in-lieu funds will be used to achieve the required retention capacity; and the potential "double counting" of one retrofit project toward multiple permit obligations.

- Other aspects of the proposed program might lead to negative environmental consequences. These aspects include: certification of credits for retention capacity beyond the 1.2-inch storm; the exemption for District-owned transportation right-of-way projects; and the inconsistency with standards for the Anacostia Waterfront Development Zone.

- Certain aspects of the proposed program are confusing and should be clarified.

- Some aspects of the proposed regulations raise concerns regarding the transparency and administrability of the program.

Finally, we attach at the end of our comments a Technical Appendix prepared by NRDC consultant and stormwater expert Diane Cameron, which details concerns with several technical aspects of the proposed rule and associated guidebook.

I. The Benefits of Stormwater Retention Practices

The draft regulations' requirement for new development and redevelopment projects to retain the volume of rainfall associated with a 1.2-inch storm is both legally required by the District's MS4 permit and a smart approach to stormwater management that will yield many benefits.

Stormwater runs off of roofs, roads, parking lots, and other paved surfaces into nearby waterways, increasing health risks and degrading ecosystems by increasing pollutant loads and scouring stream banks. According to the National Research Council, "Stormwater runoff from the built environment remains one of the great challenges of modern water pollution control, as this source of contamination is a principal contributor to water quality impairment of water

bodies nationwide."[2] Locally, 17 miles of Washington, DC rivers and streams are currently listed as impaired due to wet weather discharges.[3] Accordingly, the District describes urban runoff as having a "major impact" on local waters.[4] Stormwater runoff must be reduced if the city is to reverse these impairments and improve local water quality.

Retention of stormwater volume on-site is widely considered to be the best way to avoid runoff-related pollution and the overburdening of water infrastructure.[5] The National Research Council has concluded that conventional stormwater management that focuses on flood control does not adequately address the water quality problems caused by rainfall.[6] As DDOE notes, conventional detention requirements fail to mimic natural pre-development conditions because they extend the peak discharge rate during large storms and fail to reduce the discharge rate during smaller storms.[7] Unlike such detention strategies, which ultimately release runoff to local waterways, volume retention practices keep runoff out of sewers and waterways entirely – eliminating associated pollutant loads, protecting against stream bank erosion, and reducing flood risks. As a result, retention practices more closely mimic natural conditions, allowing rainwater to infiltrate into the soil or evapotranspirate into the air.

Additionally, practices that achieve retention through the use of vegetation provide benefits to communities beyond improvements in water quality. These "green" practices – like porous pavement, green roofs, rain gardens, roadside plantings, and rain barrels – "provide[] ecosystem services and associated economic benefits that conventional stormwater controls do not."[8] Trees and plants reduce air pollution by literally filtering the air, capturing pollutants (including dust, ozone, and carbon monoxide) in their leaves and on their surfaces. Plants also reduce the urban heat island effect and cool surrounding air through evapotranspiration and creation of shade; buildings' energy use savings from this cooling effect can range from 7 percent to 47 percent. Practices that achieve retention through harvesting and reuse also reduce water consumption and promote conservation. Vegetation in the urban environment provides habitat for birds, mammals, amphibians, reptiles, and insects. More green space and parks encourage outdoor physical activity, reducing obesity and preventing associated chronic diseases. By utilizing green infrastructure in construction and increasing vegetation and tree

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[2] National Research Council, *Urban Stormwater Management in the United States* vii (2008), *available at* http://www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf.
[3] District Department of the Environment, *District of Columbia Water Quality Assessment: 2012 Integrated Report to the U.S. Environmental Protection Agency and Congress* 66 (2012), *available at* http://green.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/Draft%202012%20IR%20with%20Coverletter2-7-2012.pdf.
[4] *Id.* at 3.
[5] *See generally* Natural Resources Defense Council, *Rooftops to Rivers II* (2011), *available at* http://www.nrdc.org/water/pollution/rooftopsii/.
[6] National Research Council, *Urban Stormwater Management in the United States* at 3.
[7] District Department of the Environment, *Notice of Proposed Rulemaking: Stormwater management, and Soil Erosion and Sediment Control* at Preamble p.9 (Aug. 10, 2012) (hereinafter "Proposed Regulations").
[8] ECONorthwest, *The Economics of Low Impact Development: A Literature Review* iii (2007), *available at* http://www.econw.com/media/ap_files/ECONorthwest-Economics-of-LID-Literature-Review_2007.pdf.

cover, green infrastructure can increase property values, benefiting both developers and homeowners. Finally, green infrastructure can reduce a community's infrastructure costs, promote economic growth, and create construction and maintenance jobs.[9]

Because the proposed stormwater management regulations for the District would require developments to retain stormwater runoff on-site and incentivize the installation of retention practices on existing sites, these regulations have the potential to provide many of the above-mentioned benefits to Washington, DC waterways, residents, and businesses.

II. Certain Aspects of the Proposed Program Do Not Comply with MS4 Permit Requirements

While the proposed regulations have the potential to provide benefits to the District and represent an improvement over current stormwater management methods, certain aspects of the proposed program may not comply with the terms of the Washington, DC MS4 permit.

The permit requires that the District "shall, through its Updated DC Stormwater Regulations or other permitting or regulatory mechanisms … [r]equire the design, construction and maintenance of stormwater controls to achieve on-site retention of 1.2" of stormwater from a 24-hour storm with a 72-hour antecedent dry period through evapotranspiration, infiltration and/or stormwater harvesting and use for all development greater than or equal to 5,000 square feet."[10] The permit provides that the District may allow a portion of the 1.2-inch volume to be compensated for in an off-site mitigation or fee-in-lieu program.[11] However, if the District chooses to use such a program, "On-site volume plus off-site volume (or fee-in-lieu equivalent or other relevant credits) must equal no less than the relevant volume in Section 4.1.1 [the 1.2-inch volume]."[12] Certain aspects of DDOE's proposed regulations do not comply with these terms.

The Formula Used to Calculate Stormwater Retention Volume (SWRv)

The proposed regulations refer to the net volume that a regulated project will be responsible for retaining as the Stormwater Retention Volume (SWRv), which is to be calculated as the volume of runoff that would be generated by a 1.2-inch storm.[13] Consequently, DDOE proposes to calculate SWRv using a formula that takes into account the type of land cover present on the regulated project site.[14] This formula uses runoff coefficients to determine the amount of runoff generated by impervious cover, compacted cover, and natural cover, respectively, to arrive at a regulated site's SWRv obligation.

[9] For more information on these benefits, *see* NRDC, *Rooftops to Rivers II*, at Chapter 2, and EPA, "Why Green Infrastructure?", http://water.epa.gov/infrastructure/greeninfrastructure/gi_why.cfm.
[10] DC MS4 Permit at § 4.1.1.
[11] *Id.*
[12] *Id.* at § 4.1.3(1).
[13] Proposed Regulations at Preamble p.8.
[14] *Id.* at § 520.3.

However, DDOE's chosen runoff coefficient for natural cover (0.00) is likely too low, given that other state agencies estimate the typical runoff coefficient for forests, meadows, and pastures to be within the range of 0.05 to 0.35, depending on soil type and hilliness.[15] These estimates are consistent with the traditional understanding of natural conditions as having about a 10% runoff rate.[16] Assuming that natural cover generates no runoff whatsoever will lead DDOE to underestimate a site's SWRv, and as a result the site will not be obligated to retain the actual 1.2-inch storm volume. DDOE should revise this formula to ensure that *all* of the 1.2-inch storm volume is captured by regulated sites.

Indefinite Credit Banking

DDOE proposes to allow stormwater retention credits (SRCs) used to satisfy a site's Off-Site Retention Volume (OSRv) to be banked indefinitely.[17] In other words, a regulated site may purchase multiple years' worth of SRCs (or pay multiple years' worth of in-lieu fee) at one time and use those SRCs in satisfaction of its compliance obligation at any point in the future. The one-year lifespan of an SRC does not begin to run until that SRC is used to satisfy the site's OSRv.[18]

Allowing SRCs to be banked indefinitely creates a problem of "non-contemporaneousness." That is, indefinite credit banking divorces the timing of real-world retention from the time when the credit corresponding to that retention is used in satisfaction of regulatory compliance. When the timing is divorced in this way, by the time an SRC is used, the corresponding retention practice may no longer exist. For example, a regulated site with an annual OSRv obligation of 1,000 gallons could purchase 10,000 SRCs at once and then use 1,000 SRCs each year for ten years to comply with the regulations. In this situation, 10,000 gallons of real-world retention have been achieved at the beginning of the ten-year period, but 0 gallons of retention have been achieved in the remaining years. Such an arrangement is problematic because the environmental benefit of retaining a large amount of stormwater over a short period of time is not the same as that of retaining a smaller amount of stormwater over a longer period of time; during the years when retention is not occurring, pollution continues to enter waterways, stream banks continue to be eroded, and sewage overflows continue to occur.

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[15] *See, e.g.*, Oregon Department of Transportation, *ODOT Hydraulics Manual* at Appendix 7-F ("Rational Method") (2011), *available at* ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Hydraulics/Hydro/Manuals_and_Guidance/HDM%202011/Chapter_07_2011/Chapter_07_appendix_F/CHAPTER_07_appendix_F.pdf; California State Water Resources Control Board, *Runoff Coefficient Fact Sheet* (2011), *available at* http://www.swrcb.ca.gov/water_issues/programs/swamp/docs/cwt/guidance/513.pdf.

[16] *See, e.g.*, EPA, "Urban Nonpoint Source Fact Sheet" (first infographic), http://water.epa.gov/polwaste/nps/urban_facts.cfm; Prince George's County, Maryland, Department of Environmental Resources, *Low Impact Development Hydrologic Analysis* at 4 (1999), *available at* http://www.epa.gov/owow/NPS/lid_hydr.pdf ("Under natural and undeveloped conditions, surface runoff can range from 10 to 30 percent of the total annual precipitation").

[17] Proposed Regulations at Preamble p.15.

[18] *Id.* at § 527.11.

Moreover, indefinite banking violates the MS4 permit's requirement "to achieve on-site retention of 1.2" of stormwater from a 24-hour storm." This permit language contemplates that the 1.2-inch volume will be retained – whether on one site or multiple sites – during each individual storm event. Even if one takes a longer-term view of the requirement over yearlong time periods, as DDOE seems to do, allowing indefinite credit banking eliminates any certainty that this permit requirement will be met.

It may be theoretically possible that, over time, the timing problem created by indefinite credit banking will be offset by the installation of new retention practices, but DDOE has not produced any evidence or analysis showing that this will be the case. As a result, DDOE should not allow credit banking beyond the time period for which an SRC offsets on-site actions – in other words, one year. (If retrofit sites are to be granted three years of SRCs at a time, credits should only be usable during one of those three years. For example, if a retrofit BMP has a 1,000 gallon capacity, instead of being granted 3,000 SRCs that are all immediately useable, the retrofit site owner should be granted 1,000 SRCs useable in the first year, 1,000 SRCs useable in the second year, and 1,000 SRCs useable in the third year.)

Certification of Credits for Previously Constructed Retention Practices

The proposed regulations would allow previously installed retention practices to apply for and begin earning SRCs as of the date that the regulations are finalized. These practices may have been installed as early as May 1, 2009 – over three years ago.[19] Allowing a regulated site to purchase SRCs generated by a pre-existing practice means that the full 1.2-inch volume is not being achieved beyond baseline conditions, as such SRC-generating practices already have been retaining stormwater for months or years. This arrangement goes against the spirit and intent of the MS4 permit requirement to actually *increase* the amount of retention occurring in the District.

In addition, certifying SRCs for existing practices will also have the effect of artificially inflating the supply of SRCs, as well as depressing the price of credits. As a result, demand for new retrofits will be lower than it would be otherwise, slowing down the installation of new retrofit projects in the District.

We understand that DDOE wants to ensure the smooth functioning of the SRC market by making credits available immediately during the early stages of this program. Even still, DDOE may not prioritize these market concerns over its duty to fulfill the permit's mandate that the full 1.2-inch storm volume actually be retained.

[19] *Id.* at Preamble p.21, § 534.

Lack of Geographical Restrictions on Trading Between Watersheds

The proposed regulations place no geographical restrictions on the location of SRC-generating retrofit sites in relation to SRC-purchasing regulated sites so long as both are located within the District; in other words, there is no requirement that a regulated site purchase SRCs that came from the same watershed. From a citywide perspective, this arrangement will not affect the total amount of retention achieved. However, if SRCs are freely tradable between the separate and combined sewer areas of the District, it is possible that net retention may be shifted outside of the MS4 area such that the MS4 permit's retention requirement is not met. (The permit's requirements apply to areas served by or contributing to the separate sewer system.[20]) While it may be the case that net retention might alternatively shift from the combined sewer area to the MS4 sewershed, it is DDOE's responsibility to show that the retention requirement within the MS4 area will be met. DDOE has not yet done so.

In addition to this permit compliance issue, SRC trading among the District's three main watersheds – Anacostia, Potomac, and Rock Creek – could potentially lead to pollution hotspots or uneven environmental benefits. For example, the Anacostia River and Rock Creek are likely more sensitive to stormwater impacts: the Anacostia is a sluggish tidal river with a long pollutant residence time, and Rock Creek is a shallow free-flowing creek that is greatly influenced by runoff volumes.[21] Lost opportunities for retention in these watersheds could hinder efforts to improve water quality, which is the fundamental goal of the District's stormwater management program.

Moreover, allowing SRC trading to occur between watersheds may make it more difficult for the District to plan for meeting its total maximum daily load (TMDL) wasteload allocations (WLAs) for each of the three major water bodies, as required by the MS4 permit. This is particularly true given that regulated sites may purchase credits from different retrofit sites in different watersheds from year to year, making the environmental impact of inter-watershed trading unpredictable and subject to variation. This potential difficulty is one reason why the EPA's water quality trading policy recommends that all water quality trading should occur within a watershed for which a TMDL has been approved. According to the EPA, "Establishing defined trading areas that coincide with a watershed or TMDL boundary results in trades that affect the same water body or stream segment and helps ensure that water quality standards are maintained or achieved throughout the trading area and contiguous waters."[22] DDOE should thus consider restricting trading geographically so that it can more predictably account for how it will attain its TMDL WLAs.

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[20] DC MS4 Permit at § 1.1.
[21] District of Columbia Water and Sewer Authority, *Combined Sewer System Long Term Control Plan* at 2-2 (July 2002), *available at* http://www.dcwater.com/workzones/projects/pdfs/ltcp/Complete%20LTCP%20For%20CD.pdf.
[22] EPA, *Final Water Quality Trading Policy* (Jan. 13, 2003), *available at* http://water.epa.gov/type/watersheds/trading/finalpolicy2003.cfm.

To the extent that DDOE believes the lack of geographical restrictions would lead to a net environmental benefit compared to watershed-restricted trading, as the Department indicates in the preamble to the proposed regulations,[23] DDOE must publicly share any analysis or evidence upon which it bases this belief.

Lack of Recordation Requirements for Retrofit Practices

While the proposed regulations would require regulated sites to record a declaration of covenants stating its BMP maintenance responsibilities, no such requirement would apply to SRC-generating retrofit sites.[24] Exempting retrofit sites from the recordation requirement creates the possibility of situations where a retrofit property changes ownership during the three-year BMP certification period, the new owner is unaware of its BMP maintenance obligation and destroys or neglects to maintain the BMP, and retention does not occur. In such situations, the 1.2-inch volume retention requirement is not met.

DDOE should consequently require *all* BMP maintenance obligations to be recorded in the chain of title, including for retrofit properties. Such a requirement is needed to put the purchasers of these properties on notice regarding their duty to properly maintain BMPs located on the site. In the case of retrofit properties, the declaration could be limited to the three-year BMP certification period and then re-recorded subsequently as necessary.

Lack of Guarantees That Fee-in-Lieu Funds Will Be Used to Achieve the Required Retention Capacity

The proposed regulations would allow regulated sites to pay an in-lieu fee instead of performing on-site retention or purchasing SRCs.[25] This fee is to be based on the full cost to DDOE of installing, operating, and maintaining retrofit practices.[26] The proposed rule states that the fee-in-lieu funds shall be used solely to "achieve increased retention."[27] However, the rule does not state that the funds will be used to achieve the specific amount of retention corresponding to the number of OSRv gallons for which the regulated site has paid the fee. DDOE must guarantee that the in-lieu fee will result in that specific amount of retention, or the District runs the risk of violating the MS4 permit's 1.2-inch volume retention requirement.

It may be the case that DDOE needs to raise the price of the in-lieu fee in order to guarantee that the Department will actually achieve the requisite amount of retention. The District's MS4 permit requires, "For a fee-in-lieu program, establishment of a system or process to assign monetary values at least equivalent to the cost of implementation of controls to account

[23] Proposed Regulations at Preamble p.17-18.
[24] *Id.* at Preamble p.22.
[25] *Id.* at § 527.3(b).
[26] *Id.* at Preamble p.18, § 530.1.
[27] *Id.* at § 530.5(a).

for the difference in the performance standard…"[28] The current proposed price of the in-lieu fee, $3.50 per gallon, is on the low end of what a gallon of retrofit retention capacity has the potential to cost. As part of an analysis of stormwater retrofit opportunities in Philadelphia by NRDC, the Nature Conservancy, and EKO Asset Management Partners, the consulting firm AKRF attempted to estimate retrofit installation costs from available data. Although the estimates are subject to considerable uncertainty, and costs may vary widely depending on site-specific conditions, these estimates should give DDOE pause in adopting the current proposed in-lieu fee amount. AKRF estimated that typical costs to install one gallon of retrofit retention capacity will range widely, from $0.53 for downspout disconnection and $1.92 for swales, to $3.85 for porous pavement, $5.26 for rainwater harvesting, and $5.77 for rain gardens.[29] These estimates are based only on the costs of design, materials, and construction, *not* future maintenance. Because DDOE must be able to guarantee that it will install *and* maintain the appropriate amount of retention capacity, it should carefully consider the cost of the in-lieu fee, explain the basis for its derivation of the $3.50 charge, and subject that explanation to public review.

DDOE should also consider raising the price of the in-lieu fee in order to encourage regulated sites to perform the full 1.2 inches of retention on-site or to purchase SRCs from other private parties. DDOE staff will already be facing a significant increase in workload and resource demands from tasks such as inspecting regulated sites, certifying SRCs, approving SRC transfers, and the like. Administering a large in-lieu fee program is certain to put an additional strain on the Department – a relevant consideration in setting the level of the fee. These increased administrative costs must be factored into the price of the in-lieu fee pursuant to the terms of the MS4 permit, which requires the fee to cover the "cost of *implementation* of controls."[30] It would be very reasonable for the Department to set the in-lieu fee at a price that incentivizes regulated parties to use other methods of regulatory compliance first, and in-lieu fee purchase as a last resort. (This approach would also be reasonable in light of the fact that the MS4 permit makes the use of an in-lieu fee program discretionary, not mandatory.[31]) The price of the in-lieu fee should also escalate over time so that it becomes more and more of a last-choice option.

Additionally, in order to guarantee compliance with the MS4 permit's requirements, DDOE must also provide a guarantee that fee-in-lieu funds will be spent on the installation of retrofit projects prior to, or contemporaneous with, the increased imperviousness from the development project, so that there is not a period of time during which full retention is not being achieved.

[28] DC MS4 Permit at § 4.1.3(3).
[29] NRDC, Nature Conservancy, & EKO Asset Management Partners, *Natural Infrastructure Innovative Financing Lab Philadelphia Pilot: Preliminary Findings* (Oct. 2012) (on file with NRDC).
[30] DC MS4 Permit at § 4.1.3(3).
[31] *Id.* at § 4.1.3.

Finally, the proposed regulations state that in-lieu funds will be deposited in the Stormwater Permit Compliance Enterprise Fund, a general fund that is used for a number of different stormwater-related activities.[32] Using this fund for the deposit of in-lieu fees will make it difficult to ensure that those fees are not advertently or inadvertently used for another purpose. Too often, funds for one program are diverted to use in other programs due to budget shortfalls.[33] The District cannot risk being put into non-compliance with the MS4 permit's volume retention requirement because its fee-in-lieu funds were diverted to another use. These funds should therefore be placed into a separate, special-purpose fund that is legally required to be used *only* for the construction of retention BMPs, and which could be established via legislation.

"Double Counting" of Retrofit Projects Toward Multiple Permit Obligations

While the proposed regulations do not specifically state that DDOE plans to allow retention practices installed to comply with the city's MS4 permit retrofit obligations to generate SRCs (or, conversely, that it plans to allow SRC-generating retrofit sites to count toward the city's retrofit quota), DDOE staff have suggested that this is the Department's intention. This "double counting" must not be allowed.

The District's MS4 permit requires the District to implement retrofits for stormwater discharges from 18,000,000 square feet of impervious surfaces during the permit term, and to install at least 350,000 square feet of green roofs on District properties.[34] Under the clear terms of the permit, this requirement is one that applies to existing discharges, in contrast to the obligation to implement a retention standard for new discharges (new development and redevelopment). As a result, the 1.2-inch retention requirement and the retrofit requirement are two distinct and independent obligations, as evidenced by the fact that they are housed in two separate sections of the MS4 permit, as well as by the permit's statement that all provisions contained therein are severable from one another.[35] It would be inappropriate and violative of permit conditions if the District were to allow the same project to *both* generate SRCs and count toward the city's retrofit quota. "Double counting" one project for both obligations would undercut the EPA's determination that the two separate requirements *together* meet the "maximum extent practicable" standard for MS4s. DDOE should clearly state within the regulations that a retrofit project may be counted toward only one of these obligations.

III. Other Program Aspects Might Lead to Negative Environmental Consequences

Certain aspects of the proposed program might lead to negative environmental consequences. DDOE should revise the proposed regulations to ensure that these consequences are avoided.

[32] Proposed Regulations at § 530.5(b).
[33] *See, e.g.*, Tim Craig, *Fenty Proposes to Use Bag Tax Money for Street Sweeping*, Washington Post, Apr. 1, 2010, *available at* http://voices.washingtonpost.com/dc/2010/04/fenty_proposes_to_use_bag_tax.html.
[34] DC MS4 Permit at §§ 4.1.5.4, 4.1.7.2.
[35] *Id.* at § 8.11.

Certification of Credits for Retention Capacity Beyond the 1.2-Inch Storm

The proposed regulations would allow sites to generate SRCs in excess of regulatory requirements or existing retention up to the SRC ceiling, which is equivalent to the 1.7-inch storm volume.[36] However, gallons of retention capacity that accommodate large storms (storms between 1.2 and 1.7 inches) will be used relatively infrequently. In fact, such capacity will be used during only 5 percent of storms (the difference between the 90th percentile, 1.2-inch storm and the 95th percentile, 1.7-inch storm). The rainfall distribution chart contained within the proposed regulations' preamble shows that during 2009, retention capacity between 1.2 and 1.7 inches would have been used during only nine storms, compared to the more than seventy storms that produced less than 1.2 inches of rainfall.[37]

As a result, adding a gallon of capacity to a practice that can already accommodate large storms is not as useful or beneficial as creating a gallon of capacity of a second site to accommodate the much larger number of smaller storms. For example, imagine that one site sells SRCs for retention capacity that it has created for storms generating between 1.2 and 1.7 inches of rainfall, and that a second site purchases that first site's SRCs in order to fulfill its OSRv obligations. A 1.2-inch storm occurs. During this storm, the first site's SRC-generating capacity is not actually being used, even though in theory it is supposed to be capturing those gallons of rainfall in order to compensate for the second site's OSRv. In such situations, the regulated site's full 1.2-inch storm volume is not being retained.

Consequently, DDOE should either set the SRC ceiling at the 1.2-inch storm volume or discount the value of SRCs that are generated by capacity that would only be used during storms generating between 1.2 and 1.7 inches of rainfall. The discounted value would need to be set at a level that would compensate for the fact that such capacity would actually retain stormwater during relatively few storm events.

Exemption for District-Owned Transportation Right-of-Way Projects

The proposed regulations would exempt construction projects in the public right-of-way from the requirement to use SRCs or pay the in-lieu fee to satisfy any shortfall in attaining the site's SWRv.[38] While this exemption is authorized by the District's MS4 permit,[39] it nonetheless represents a huge missed opportunity. As DDOE admits, the public right-of-way represents approximately 25 percent of the District of Columbia, and retrofitting this space with retention BMPs is essential for the protection of District water bodies.[40] Allowing projects within this significant portion of the District to retain less stormwater is therefore sure to slow the restoration of local waterways.

[36] Proposed Regulations at § 531.3(a).
[37] *Id.* at Preamble p.17 Figure 1.
[38] *Id.* at Preamble p.23, § 521.4.
[39] DC MS4 Permit at § 4.1.3.
[40] Proposed Regulations at Preamble p.23.

Additionally, the MS4 permit and associated fact sheet make clear that it was EPA's intention for this exemption to be allowable *only* during this permit term.[41] DDOE should consider eliminating the exemption entirely, both because of the missed opportunity that it represents and because it would save the District from having to revise its stormwater regulations again when the exemption is dropped from the next-iteration MS4 permit. At a minimum, the exemption must expire after five years.

Inconsistency with Standards for the Anacostia Waterfront Development Zone

DDOE recognizes that the Anacostia Waterfront Environmental Standards Act of 2008 requires projects along the Anacostia River waterfront (the "Anacostia Waterfront Development Zone" or AWDZ) to meet standards that provide an enhanced level of protection for the river.[42] However, the Department has unlawfully decided not to implement those standards in this rulemaking, instead inserting a placeholder section in the regulations even though the Council of the District of Columbia has already passed, and the Mayor has signed, legislation that amends and makes effective the AWDZ standards.[43]

DDOE may not ignore existing law in this way. To the extent that the standards for projects within the AWDZ differ from the proposed regulations' standards for other developments within the District, DDOE must incorporate the AWDZ standards into this rulemaking.

IV. Certain Aspects of the Program Are Confusing and Should Be Clarified

Numerous aspects of the proposed regulations are worded confusingly. The Department should clarify these aspects of the proposed program to ensure that regulated parties clearly understand their obligations.

- The regulations lack a definition of "technically infeasible," which is the standard for regulated sites that wish to be granted relief from the requirement to attain at least 50% of their SWRv on-site.[44] It is unclear exactly how "infeasible" achieving the minimum on-site requirement must be; i.e., must it be impossible, or is the standard less demanding than that? This term should be defined within the regulations and explained in further detail in the technical manual using objective, clearly defined criteria.

[41] DC MS4 Permit at 4.1.3 ("District-owned transportation right-of-way projects are subject to a similarly stringent process for determining an alternate performance volume, but *for the duration of this permit term* need not conduct off-site mitigation or pay into a fee-in-lieu program to compensate for the difference").
[42] D.C. Law 17-138 (2008) (codified at D.C. Code § 2-1225.01 et seq.).
[43] Anacostia Waterfront Environmental Standards Amendment Act of 2012, Act No. A19-0447, 59 D.C. Reg. 10174 (Aug. 24, 2012).
[44] Proposed Regulations at § 526.1.

- The language in the proposed regulations regarding over-control is not worded clearly.[45] The text states that sites may achieve on-site retention by retaining more than the 1.2-inch SWRv in a drainage area, but it does not clearly explain that the purpose of this over-control is to compensate for failing to achieve the minimum retention in another drainage area. The text also seems to imply that for sites draining into the combined sewer system, the minimum retention requirement of 50% of the SWRv does not apply. The Department should revise this provision to make clear that sites in the combined sewer area are only excepted from the requirement to treat volume that is not retained.

- The language in the proposed regulations regarding public right-of-way projects is also not worded clearly. The text states that a project in the right-of-way may apply for relief from the SWRv retention requirement due to "extraordinarily difficult site conditions."[46] It further states that right-of-way projects applying for relief "shall demonstrate that reducing the proposed roadway size in order to create an expanded area for retention of a volume of the SWRv between the curb line and the private property is technically infeasible or environmentally harmful."[47] What is not clear from the face of this text is whether this "expanded area" demonstration is all that is necessary in order to be granted relief, or whether it is additional to the § 526 process for granting relief from difficult site conditions more generally.

- The language in the proposed regulations regarding restriction on infiltration BMPs seems to contain a typographical error.[48] This provision states that the Department may restrict the use of infiltration BMPs if an applicant's proposed land use activity "has the potential to pollute stormwater runoff." Given that virtually all stormwater runoff is typically considered "polluted," we wonder if the Department intended to write something more relevant to infiltration practices in particular, such as "has the potential to pollute groundwater."

- The text of the proposed regulations is not clear with regard to the process for fee rebasing.[49] The regulations simply state that the Department may rebase the in-lieu fee as the Department determines necessary; no process for this rebasing is specified. The Department should revise this language to make clear that fee rebasing will be done by rule, providing for public input.

[45] *Id.* at § 520.5.
[46] *Id.* at § 521.3.
[47] *Id.* at § 521.5.
[48] *Id.* at § 523.1.
[49] *Id.* at § 530.3.

- The text of the proposed regulations is not clear regarding the public sharing of information about SRCs.[50] The provision states that the Department will share information that is "not personal, proprietary, a trade secret, or otherwise confidential." It is not clear what type of information the Department would consider to be "otherwise confidential" that would not fall into the first three categories of information. The Department should revise this provision to either delete "or otherwise confidential" or clearly specify what type of confidential information will be withheld.

- It is unclear from the text of the proposed regulations how the retention requirement and off-site mitigation program relate to the District's forthcoming stormwater fee rebate program. Department staff have verbally indicated that retention practices that generate SRCs will also be eligible for the fee discount. However, this intention is not stated anywhere in the regulations. While the technical guidebook explains how the fee discounts will be calculated, it does not address this question of eligibility directly. The Department should make this point explicit.

V. Some Aspects of the Proposed Program Raise Concerns Regarding Transparency and Administrability

In order for the proposed stormwater management program to produce the desired benefits for local waterways and communities, the program must be practicable, enforceable, and easy to administer. However, certain aspects of the proposed regulations may undermine these critical program characteristics. In addition to our discussion of these aspects below, we additionally incorporate by reference the comments of DC Appleseed, which examine issues of practicability and enforceability in greater detail.

Information on SRC Generation, Transfer, and Use Should Be Available to the Public

Public participation and transparency are key aspects of any trading program. If the District intends to allow the purchase and use of SRCs as part of a site's regulatory compliance, the public will want to know that this compliance obligation has in fact been satisfied. However, trading programs can often be quite obscure with no easy way for the public to determine which BMPs have been installed and where, and which sites are using credits generated by those BMPs to fulfill their obligations. This obscurity can decrease public faith in, and commitment to, a trading program.

Consequently, DDOE should commit to making the SRC trading database completely public. Providing information on all credits generated, bought, and sold within the trading system will give buyers, sellers, regulatory agencies, and the public real-time insight into the state of the marketplace. As EPA has noted, "transparency and the free flow of information create stable

[50] *Id.* at § 533.7.

expectations and outcomes for market participants. With fewer lurking 'unknowns,' participants will feel less vulnerable in the marketplace and their required risk discount may shrink."[51]

Currently the draft regulations state that DDOE shall "undertake efforts to publicly share information" about the generation and use of SRCs.[52] DDOE should revise this provision to delete the phrase "undertake efforts to" and state that DDOE *shall* publicly share this critical information. DDOE should then maintain an openly accessible online database, or credit registry, where information about SRC transactions can be viewed, along with key details for each.

Enforcement for Regulatory Violations Should Be Automatic, With Greater Penalties

Throughout the proposed regulations, DDOE states that the Department "may" take enforcement action when parties violate the regulations' mandates. Additionally, the regulations provide that parties failing to timely comply with a Department enforcement order (e.g., to replace failed SRCs or pay in-lieu fees) may be assessed a 10% administrative late fee.

These enforcement provisions are insufficient. Once a regulated site purchases SRCs, its regulatory obligations are complete. Therefore, if the SRC-generating practice fails, it falls to DDOE to redress the problem and ensure that full retention is achieved. For this reason it is critically important that the owners of SRC-generating practices have a strong incentive not to let those practices fail. DDOE's penalties should be automatically enforced, not discretionary. Moreover, penalties should be higher than a nominal 10% late fee.

* * *

As these comments indicate, NRDC believes that the proposed stormwater regulations as currently drafted are insufficient to comply with the mandates of the District's MS4 permit, may lead to negative environmental consequences, are confusing, and raise concerns about transparency and administration. As a result, we urge DDOE to revise the proposed rule in accordance with the recommendations contained herein before the rule is finalized. However, under no circumstances should the finalization of the rule be delayed beyond the MS4 permit's July 22, 2013, deadline.

[51] U.S. EPA, *Water Quality Trading Assessment Handbook* 45-46 (Nov. 2004), *available at* http://water.epa.gov/type/watersheds/trading/upload/2004_11_08_watershed_trading_handbook_national-wqt-handbook-2004.pdf.
[52] Proposed Regulations at § 533.7.

Thank you again for the opportunity to provide these comments. We would be glad to further discuss our recommendations with you at your convenience.

Sincerely,

Rebecca Hammer
Project Attorney, Water Program
Natural Resources Defense Council

together with:

Jeffrey Odefey
Director of Stormwater Programs
American Rivers

Cary Coppock
Chair
Anacostia Watershed Citizens Advisory Council

Brent Bolin
Director of Advocacy
Anacostia Watershed Society

Diane Cameron
Conservation Director
Audubon Naturalist Society

Lee Epstein
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Chesapeake Bay Foundation

Chris Weiss
Executive Director
DC Environmental Network

Paul F. Walker, Ph.D.
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Global Green USA

Anthony Caligiuri
Regional Executive Director, Chesapeake Mid-Atlantic Regional Center
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TECHNICAL APPENDIX

Below we offer additional comments on several technical aspects of the draft rule and guidebook, including:

- Allowable maximum contributing drainage areas to some of the practices.
- Bioretention: comment regarding DDOE's proposed cap on maximum retention volume credit for the media void space of 25%.
- Rainwater harvesting: the proposed criteria are too vague and lenient in some respects.
- Impervious surface disconnection: tighter standards are needed for sizing, soil, and vegetation conditions.
- Soil amendment with compost: DDOE should establish a 14th stormwater management practice.
- Erosion and sediment control: buffer minimum width of 25 feet is too lenient and not protective.
- Real-world example: a stormwater project costs and benefits spreadsheet for DC Fire Company Engine 12, from Glenn Williamson of Amber Real Estate, LLC.

Allowable Maximum Contributing Drainage Areas

The table below compares some of the green infrastructure runoff retention practices in the proposed DDOE stormwater rule and guidebook with those allowed in Maryland under MDE's stormwater design manual.[53] We acknowledge that the geographic scope of MDE's stormwater manual is much broader than that of the urban and ultra-urban sites on which the DDOE stormwater manual is mainly based. Though we do not necessarily advocate a direct replication of MDE's requirements in the District, on the other hand we do want to highlight a few areas where we think that a more conservative approach like that of the MDE manual makes sense for District projects.

The table below compares the allowable maximum contributing drainage area for the impervious surface that drains to some representative green stormwater practices. In some cases we found that DDOE's proposed criteria, including for green roofs and some types of bioretention and permeable pavement, as well as other practices, may be too lenient. We suggest that DDOE review the Maryland stormwater manual (and other states' manuals in this region), along with urban stormwater technical specifications like those for Philadelphia, to compare and double-check the accuracy and appropriateness of the proposed design criteria, including the contributing drainage area allowances.

[53] Maryland Department of the Environment, *Maryland Stormwater Design Manual* at Ch. 5 (2009), *available at* http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/MarylandStormwaterDesignManual/Pages/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.aspx.

Contributing Drainage Areas Allowed to Green Infrastructure Stormwater Practices		
Practice	***DDOE Draft SW Guidebook***	***MDE SW Design Manual ESD Chapter 5***
Green Roofs	Green Roof S.A.+.25% (25%)	Green roof is used only to reduce the Runoff Curve Number (according to media thickness) and to reduce the total site imperviousness.[54]
Bioretention – Traditional	<2.5 Acres	10 acres maximum.
Bioretention – Other Types	<1 Acre	20,000 sq. ft. (1/2 acre) or less.
Permeable Pavement	2- 5X practice S.A.	For PP exceeding 10,000 sq. ft., underlying soils must have an infiltration rate of > = 0.52 in./hr.; avoid D soils and compacted fill.
	(S.A. = Surface Area)	

As the MDE Manual states: "As the impervious area draining to each practice increases, practice effectiveness weakens. Therefore, runoff from adjacent areas (or 'run-on') should be limited."[55]

And: "Permeable pavements shall not be installed in HSG D or on areas of compacted fill. Underlying soil types and condition shall be field-verified prior to final design. For applications that exceed 10,000 ft^2, underlying soils shall have an infiltration rate (f) of 0.52 in/hr or greater."[56]

Bioretention: Maximum Retention Volume Credit for the Media Void Space of 25% May Not Be Accurate

In many urban sites, the opportunity to use bioretention will be space-limited. An important way for designers to achieve effective application of bioretention will in many cases be to use a deeper unit with a relatively smaller surface area. In a meeting with Dr. Allen Davis of the University of Maryland in 2008, Dr. Davis observed that a deep linear bioretention unit will still function effectively to capture runoff.[57]

However, if the maximum retention credit for the media pore space (void space) element that DDOE will allocate is 25%, in some instances that could both be significantly inaccurate (in

[54] *Id.* at 5.42.
[55] *Id.* at 5.47.
[56] *Id.* at 5.48.
[57] Interview with Dr. Allen Davis, University of Maryland, at University of Maryland College Park (Feb. 2008).

that it may grossly under-represent the actual runoff volume capture of the device) and could be a barrier to innovation in ultra-urban uses of bioretention. This limitation may be a barrier because many bioretention units that could potentially be three feet or deeper, with 2.5' or more of soil media and gravel media depth, will have more than 25% of the total practice retention volume provided by the media void space.

Another problem with limiting the pore space retention credit to 25% of the total practice retention credit is that it could lead to a proliferation of bioretention units that either take up unduly large surfaces areas, or that appear to be "deep trenches," since the designers will be driven to design maximum ponding volumes (and thus depth from the edge of the curb to the top of the soil media). Even if the maximum ponding depth allowed is one foot, that may be too deep to harmonize effectively with the multi-functionality, aesthetics, and practicality of ultra-urban bioretention. Picture a long, narrow, linear green street bioretention unit. If it consists of a "trench" that has a one-foot drop from the curb to the top of the soil or mulch layer, that may present a safety hazard to pedestrians and other users of the right-of-way, whereas a 6-inch or shorter drop – corresponding to a 6-inch ponding depth – would be considerably safer.

The draft Guidebook, Appendix E, regarding bioretention design, notes: "The ponding volume must be at least 75% of the design volume in order to receive full retention." We think this may not accurately reflect the typical balance of ponding volume and media pore space volume. We request that DDOE provide accurate crediting for the balance of pore space (media void space) retention volumes and ponding volumes, based on the particular dimensions and media characteristics of each practice and site.

Rainwater Harvesting: Landscaping Criteria Too Vague and Lenient

This section's proposed criteria for rainwater harvesting landscaping is too vague and lenient.

To quote from the draft proposed DDOE manual: "If the harvested water is to be used for irrigation, the design plan elements should include the proposed delineation of planting areas to be irrigated, the planting plan, and quantification of the expected water demand. The default water demand for irrigation is 1.0 inches per week over the area to be irrigated. Justification must be provided if larger volumes are to be used."

The rainwater harvesting requirements should provide more specificity for the overflow receiving area, in terms of the soil and vegetation conditions, and minimum size of runoff-generating and runoff-receiving areas. For an example of a somewhat more detailed set of

requirements for rainwater harvesting, see the MDE stormwater manual, practice M-1.[58] This MDE specification mandates overflow of rainwater harvesting devices into vegetated areas.

Impervious Surface Disconnection: Tighter Standards Are Needed for Sizing, Soil, and Vegetation Conditions

Impervious Surface Disconnection Practice – Section 3.3 establishes the criteria and requirements for landowners opting to use impervious surface disconnection. This practice is one of the least expensive and (if well designed) most effective and simple approaches to capturing and reducing runoff. However, if ill-designed, particularly if the soil of the pervious area receiving the runoff is compacted and/or not well-vegetated, then this practice in some instances could be ineffective in reducing runoff and could lead to gully formation and soil erosion.

Our research and direct experience in implementing and inspecting urban stormwater retention practices, including downspout disconnection, indicate that the proposed minimum thresholds for crediting stormwater retention for natural vegetation land cover are too permissive. We request that DDOE amend this section to include vegetation quality criteria and a reasonable size ratio (ratio of the size of the contributing impervious area to the size of the receiving area of the stormwater retention practice). For an example of the same practice with somewhat more stringent sizing requirements based on stormwater "flow path length," along with soil quality and vegetation requirements, see Chapter 5 of the Maryland Stormwater Design Manual.[59]

Further, DDOE's proposed manual states:

"3.3.1. Impervious Surface Disconnection Feasibility Criteria

"Impervious surface disconnections are ideal for use on commercial, institutional, municipal, multi-family residential and single-family residential buildings. Key constraints with impervious surface disconnections include available space, soil permeability, and soil compaction. For disconnection to alternative practices (D-4, D-5, and D-6) consult the applicable sections for the alternative practices which are listed above. For simple disconnection to compacted cover or natural cover (D-1, D-2, and D-3) the following feasibility criteria exist (see Table 3.3.1):

"Contributing Drainage Area. For rooftop impervious areas, the maximum impervious area treated cannot exceed 1,000 sq. ft. per disconnection. For non-rooftop impervious areas, the longest contributing impervious area flow path cannot exceed 75 feet.

[58] MDE, *Stormwater Design Manual* at 5.72.
[59] *Id.* at 5.57-5.65.

"Required Space. Minimum 150 [square] feet of disconnection area.
Sizing. The available disconnection area must be at least 10 feet wide and 15 feet long. The disconnection width is limited to 25 feet unless the contributing runoff is conveyed via sheetflow or a level spreader. The disconnection length can be extended up to 100 feet to increase the retention value."

The single minimum size factor now proposed in Section 3.3.1 is inadequate. Instead of a single minimum surface area, DDOE needs to require that a size ratio be applied - of the receiving area to the contributing impervious surface drainage area. This minimum size ratio of the receiving (pervious) area needs to apply to both rooftop and non-rooftop runoff. A reasonable ratio or set of ratios needs to be adopted that ensures effectiveness as well as widespread feasibility of this disconnection practice.

Impervious Surface Disconnection: Turf Decompaction and Compost Amendments/Soil Quality Standards Needed

For turf areas, the turf needs to be decompacted and its runoff reduction capacity increased through soil aeration and compost amending practices. Rather than simply encouraging this practice, the Guidebook should require turf decompaction and soil compost amendments, particularly for Hydrologic Soil Group Class C and D soils.

We note that the draft Guidebook includes Appendix K, Soil Compost Amendment Requirements. While we are not able to comment in depth at this time about the accuracy and appropriateness of this Appendix, we note that the thrust of the Appendix is to establish the protocol for those who choose to apply soil compost amendments. However, there is no requirement for such compost amendments to be used in certain practices – including for rainwater harvesting and impervious surface disconnection.

We urge DDOE to require soil compost amendments to be used as a mandatory step in certain practices and instances to be delineated by DDOE, where turf or other vegetated areas are compacted and would have low runoff reduction capacity without such amendments. For those selecting to install either impervious surface disconnection or rainwater harvesting in conjunction with landscape irrigation, soil compost amendments should be required for compacted soils. In addition, DDOE should establish soil compost amendment as a separate (14^{th}) stormwater practice for Chapter 3 of the Guidebook (as discussed below).

Soil quality standards similar to those recommended for Seattle should be adapted and required as part of this practice.[60] (Although the rainfall patterns of the District differ from those of the Pacific Northwest, the benefits of Soil Compost Amendments in increasing the water

[60] *See* Soils for Salmon, "How To: Soil Best Management Practices, Tools, & Specifications," http://www.soilsforsalmon.org/how.htm (a project of the Washington Organic Recycling Council).

retention capacity of compacted urban soils apply nationwide and in both climate regions.) These soil quality standards, to enable urban soils to absorb runoff, have been proposed for Maryland stormwater regulations by Brenda Platt of the Institute for Local Self-Reliance.[61]

Disconnection Practices: Vegetation Standards Needed

The proposed landscaping criteria for the impervious surface disconnection practice, including the table of recommended grass types in Table 3.3.5, page 69, is inadequate. Adequate landscaped area coverage with well-established vegetation, whether it is woody or herbaceous, is needed in order to assure that runoff reduction is achieved on all sites by those implementing this practice. Therefore, DDOE must establish minimum vegetation quality criteria and mandatory requirements (for size, area coverage, planting criteria for newly-planted areas, and maintenance).

DDOE Should Establish Soil Amendment with Compost as a New Stand-Alone Practice

In addition to making soil condition, including soil amendment with compost, a required/tandem component of other practices (including rainwater harvesting and imperviousness disconnection) as requested above, we also request that DDOE establish this as a stand-alone 14th Stormwater Management Practice in the Draft Stormwater Management Guidebook (Chapter 3), to be titled: Soil Amendment with Compost.

To summarize the proposed stormwater practice, it entails establishment of minimum soil quality and depth criteria in order to repair damaged urban soils using compost and mulch, combined with either turf areas or planting beds, so that stormwater can infiltrate the soil. Compost contains humus, which acts as a glue that keeps soil particles stuck together and resilient against eroding forces. Studies show that increasing soil organic content with compost amendments increases the water-holding capacity of the soil manifold.

This proposed stormwater practice can be used either as a stand-alone stormwater management practice, or in tandem with other green infrastructure stormwater practices including conservation landscaping, rainwater harvesting, and downspout disconnection. As a stand-alone practice, soil amendment with compost is aimed at reducing the curve number (e.g., reducing the conversion of rainfall into runoff) for turf and other areas down to that of Meadow (Pasture). When used in tandem with other stormwater retention practices, soil amendment with compost enables the soil of turf lawns and planting beds to better absorb and retain the runoff entering them from the outlets of rain barrels, cisterns, and downspouts.

Therefore, we request that DDOE not only add this practice as a 14th stand-alone Stormwater Management Practice, but also revise several other proposed practices, including

[61] Personal communication from Brenda Platt to Diane Cameron (Oct. 25, 2012) (on file with authors).

rainwater harvesting and imperviousness disconnection, to include compost soil amendment as a tandem practice (i.e., as a required step in the installation and effective working of other practices).

Minimum Buffer Width for Soil Erosion Control and Stream Protection During and After Construction Is Inadequate

The draft stormwater rule proposes to allow a minimum 25-foot stream buffer for construction projects. This proposed buffer width is not sufficient to protect the District's streams from construction and post-construction runoff. A buffer width of at least 50 feet is more effective and is supported by the technical literature on use of buffers to protect streams from urban and construction runoff. A fact sheet from the Center for Watershed Protection Stormwater Center recommends a buffer width of 100 feet.[62]

Real-World Example: A Stormwater Project Costs and Benefits Spreadsheet for DC Fire Company Engine 12, from Glenn Williamson of Amber Real Estate, LLC

As additional information for the record on how the SRC program is expected to work, and more generally on the feasibility, costs, and benefits of green roofs and bioretention in District projects, we include here a stormwater project costs and benefits spreadsheet from Glenn Williamson of Amber Real Estate, LLC, which was provided to the Demonstrating Approaches subcommittee of the Anacostia Watershed Restoration Partnership in October 2012. (Subcommittee Co-Chair Eric Siegel of the Cohen Companies worked with Mr. Williamson to provide this case study and enable it to be shared with DDOE and others.)

This case study (appended below) consists of an Excel Spreadsheet detailing the stormwater capture, costs, and benefits for the Engine 12 DC Fire Department green roof and bioretention project.[63]

[62] Center for Watershed Protection, "Aquatic Buffers Factsheet," http://www.stormwatercenter.net/Assorted%20Fact%20Sheets/Tool3_Buffers/BufferZones.htm.
[63] Source: Glenn Williamson of Amber Real Estate, LLC, glenn.williamson@amberreal.com.

Case Study: DC Fire Company Engine 12

AWRP - Demonstration of Approaches Ad-Hoc Subcommittee
Stormwater Costs and Benefits Tracking and Reporting Project

Part One: Basic Project Information

Organization
DC Fire and Emergency Medical Services
Project Name
Engine Company 12
Address
2225 5th Street NE
Point of Contact
Name Glenn Williamson
Title Managing Director, Amber Real Estate LLC
Phone 202.256.3922
email glenn.williamson@amberreal.com

Date Project Completed
July, 2012
Date of this Report
October, 2012
Project Type (School, Multi-Family Residential; Commercial-Retail, etc.)
Institutional - Fire Station
Project Category (New Development; Redevelopment; Remodel; Retrofit)
Retrofit
Total Project (or Site) Area (Acres/ Sq.Ft.)
7,000 s.f.
Total Project (or Site) Imperviousness at completion (Acres/St.Ft)*
4,500 s.f.
Total Project Costs (First Costs)
$33,724

Part Two: Stormwater Practice Costs (e.g., green roof, rain garden, conservation landscaping, etc.)

Stormwater Management Basic Information

Type of Stormwater Practice Used
Green Roof
Size and Capacity of Stormwater Facility
2,250 s.f. green roof plus bioswale unit treating 250 s.f.
Total impervious area draining to the LID practice
2,500 s.f.

Costs for stormwater practice

Construction costs for practice (capital or hard costs, including material, labor, etc., specific to the practice)
$30,895 Actual material, labor, plants
Soft costs (as much as possible, break out design, engineering, permitting, land costs, project management, insurance, etc. specific to the practice)
$2,829 Actual design, permitting
Avoided costs (piping, concrete, grading, etc (the idea is to capture net change in cost of project, if any, of using LID).
na
Operations and Maintenance (over 5 years--some practices will have initially higher maintenance costs)
$3,000 1st year actual plus estimated 4 years' future maintenance

Part Three: Stormwater Practice Benefits

Energy Savings

TBD. Initial reports indicate decreased A/C usage relative to other Engine Companies.

Water Savings

TBD. Recaptured water to be used for fire station requirements

Environmental Benefits (water quality; wildlife habitat; reduced toxics etc.)

Filtering of TSS, Volume reduction due to capture of 2.5" of stormwater.

Stormwater Fee Credits

Yes. Any volume reduction would be eligible for DC Water and DDOE stormwater credits.

Number of Jobs Created (one-year FTE or portion thereof)

NA

Growth in a local business or expanded market share as a result of this project

NA

Customer/ Client Benefits (e.g. positive customer/ tenant reviews of improved landscaping, etc.)

Contributes to DC Govt. Sustainable DC goals for stormwater management, energy conservation

Anticipated Increased Receipts/ Revenues Attributable to the stormwater facility

	S.F.	Gallons*	Base Fee / Month / 1000sf	Credit (TBD)	Monthly Amount	Annual Amount
1 DDOE Stormwater Fee Discount:	2,500		$2.67	55%	$3.67	$44.06
2 DC Water Clean Rivers Fee Discount (TBD)	2,500		$6.64	55%	$9.13	$109.56
3 DDOE Stormwater Retention Credit (SRC) to be sold in mkt.	2,500	2,517		$1.00		$2,516.71
Total						$2,670.32

* Gallons = 1.7" max credit for 2,500 s.f. of treated area

Social Benefits (e.g. reports of increased social interactions; improved morale of site users; improved health indicators)