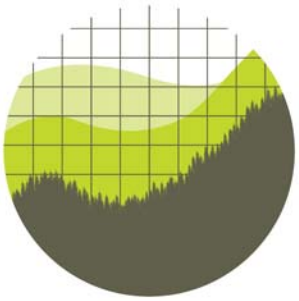

Institute *for*
Policy Integrity
new york university school of law

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Environmental Protection Agency
Attn: Lisa P. Jackson, Administrator
Nancy K. Stoner, Assistant Administrator for Water
James A. Hanlon, Office of Wastewater Management, Director
Deborah Nagle, Water Permits Division, Director

Office of Information and Regulatory Affairs
Attn: Cass Sunstein, Administrator
Dominic Mancini, Branch Chief

Subject: Comments on EPA's Forthcoming Revisions to the Stormwater Program

The Institute for Policy Integrity ("Policy Integrity") submits the following comments regarding the Environmental Protection Agency's forthcoming revisions to its stormwater regulations. These comments are aimed at ensuring that these regulations maximize net benefits and incorporate flexibility, ease, and efficiency.

The Institute for Policy Integrity at New York University School of Law is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy. Environmental quality is one area of particular focus for Policy Integrity.

EPA has announced plans to regulate stormwater discharges from newly-developed and redeveloped sites and to make other regulatory revisions to its stormwater program.[1] As it develops the proposed regulations, EPA should take a number of steps to ensure that the regulations maximize net benefits. Specifically, EPA should:

1. Refine its cost-benefit analysis by considering additional categories of benefits, incorporating non-use values, and accounting for industry adaptation;
2. Analyze whether market-based regulatory approaches can increase the cost-effectiveness of the proposed rule;
3. Minimize economically inefficient grandfathering by adopting a time-limited transition relief scheme;
4. Design the rule in a manner that facilitates watershed-based permitting; and
5. Structure the rule to maximize citizen involvement in the permitting, monitoring, and enforcement process.

[1] Stakeholder Input; Stormwater Management Including Discharges from New Development and Redevelopment, 74 Fed. Reg. 68,617, 68,617–22 (Dec. 28, 2009).

I. EPA Should Refine its Cost-Benefit Analysis by Considering Additional Categories of Benefits, Incorporating Non-Use Values, and Accounting for Industry Adaptation

Consistent with Executive Orders 12,866 and 13,563, EPA guidelines, and persuasive policy arguments, EPA will likely issue this rulemaking on the basis of cost-benefit analysis. There are several opportunities for EPA to improve upon the cost-benefit analysis it conducted for its previous stormwater rulemaking, the Phase II stormwater rule, which was issued in 1999.[2] In the current stormwater rulemaking, EPA should consider additional categories of benefits, including ancillary benefits; incorporate non-use values, such as existence value, into its calculation of benefits; account for industry adaptation when determining the proposed rule's costs; and analyze whether more stringent regulations are justified in other environmentally sensitive areas besides Chesapeake Bay.

EPA Should Consider Additional Categories of Benefits

To the extent feasible, EPA should quantify the benefits of the proposed rule. In its cost-benefit analysis for the Phase II stormwater rule—the last significant revision to EPA's stormwater regulations—EPA quantified several categories of benefits, including increased harvests from commercial fisheries, reduced beach closures, and reduced health risks from swimming in polluted waters.[3] EPA also considered a number of benefits qualitatively, including increased recreation, such as fishing, hunting, and boating; increased subsistence fishing; reduced health risks from consumption of contaminated seafood; reduced damage from flooding; reduced water treatment costs; and benefits due to reduced sedimentation, such as improved navigation and increased water storage in reservoirs.[4]

EPA should also attempt to quantify three categories of benefits it has not considered in previous stormwater rulemakings: reduced erosion, increased tourism, and reductions in discharge from combined sewer overflows.

First, more stringent controls on stormwater runoff will reduce property damage resulting from landslides and from the erosion and collapse of streambanks. Stormwater runoff from developed areas can significantly increase the flow of water in rivers and streams, leading to greater erosion and streambank collapse.[5] Insufficient stormwater control can increase the number and severity of landslides.[6] Controlling stormwater runoff will reduce the costs that streambank erosion and landslides impose.

Second, the water quality improvements that result from more stringent stormwater controls will also increase economic benefits from tourism. Research demonstrates that cleaner water will not

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[2] *See* EPA, *Economic Analysis of the Final Phase II Stormwater Rule* (1999) [hereinafter EPA, *Economic Analysis*].

[3] *Id.* at 6-21 to -27.

[4] *Id.* at 5-4 to -12.

[5] For a discussion of how stormwater runoff resulting from development increases the size of drainage channels and thus threatens both sidestream and downstream property, see Derek B. Booth, *Stream-Channel Incision Following Drainage-Basin Urbanization*, 26 WATER RESOURCES BULL. 407 (1990).

[6] DEREK B. BOOTH, BERNADETTE VISITACION & ANNE C. STEINEMANN, UNIV. OF WASH., DAMAGES AND COSTS OF STORMWATER RUNOFF IN THE PUGET SOUND REGION 6-7 (2006) ("Flooding and landslides are natural occurrences, but they are particularly common in areas of urban development and are exacerbated by insufficient or poorly maintained stormwater and drainage facilities."). *See also* CITY OF SEATTLE, DEP'T OF PLANNING & DEV., SEATTLE LANDSLIDE STUDY (2001), *available at* http://www.ci.seattle.wa.us/DPD/Landslide/Study/ (stating that 84 percent of landslides in the Seattle area were influenced by human activity, though not specifying which of the 84 percent might be mitigated by improved stormwater treatment).

only yield recreational benefits measurable by a user's willingness to pay, but economic benefits for surrounding communities in the form of increased tourism.[7]

Third, the proposed rule will reduce water pollution from combined sewer overflows.[8] Over seven hundred municipalities in the United States have a combined sewer system (one system for both stormwater and sewage).[9] When combined sewer systems exceed their treatment capacity—for example, after a rainstorm—the stormwater and the untreated sewage are diverted to combined sewer overflows, where they are discharged directly into waterways.[10] Combined sewer overflows are a major source of water pollution in the United States.[11] Reducing the amount of stormwater discharged from developed sites will reduce the amount of runoff flowing into combined sewers, thereby reducing water pollution from combined sewer overflows.

EPA Should Consider All Ancillary Benefits of the Proposed Rule

EPA's cost-benefit analysis should quantify the full range of ancillary benefits that will result from the proposed rule. To be balanced, cost-benefit analysis must consider the ancillary, or non-target, benefits of regulation.[12] EPA should attempt to quantify additional ancillary benefits that will result from the implementation of stormwater control technologies.

As a result of the proposed rule, several ancillary benefits will accrue to property owners. For example, green roofs reduce heating and air-conditioning expenses.[13] Structures specially designed to control stormwater also often have longer life cycles than many of the traditional structures they replace. Green roofs last longer than conventional roofs, for example, and porous pavement lasts longer than asphalt and concrete pavement.[14]

Other ancillary benefits will accrue to local governments and communities generally. Permeable pavement is less likely to develop potholes, and it requires less salting in winter, reducing costs for municipal highway departments.[15] Stormwater-control landscaping can mitigate urban heat islands, which can reduce the negative effects of heat waves.[16] Stormwater control measures can

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[7] H. Ken Cordell, John C. Bergstrom, Gregory A. Ashley & John Karish, *Economic Effects of River Recreation on Local Economies*, 26 WATER RESOURCES BULL. 53 (1990) (estimating the economic effects of expenditures by visitors to three recreational river sites on surrounding economies and concluding that visitor spending has a quantifiable, positive economic benefit on local activity and growth).

[8] EPA, Memorandum of Benjamin H. Grumbles, *Using Green Infrastructure to Protect Water Quality in Stormwater, CSO, Nonpoint Source and Other Water Programs* (2007); BASIL SEGGOS & MIKE PLUMB, RIVERKEEPER, SUSTAINABLE RAINDROPS 14–21 (2006); Christopher Kloss & Crystal Calarusse, Nat'l Res. Defense Council, *Rooftops to Rivers: Green Strategies for Controlling Stormwater and Combined Sewer Overflows* 6–7 (2006).

[9] EPA, COMBINED SEWER OVERFLOWS DEMOGRAPHICS, http://cfpub.epa.gov/npdes/cso/demo.cfm (last visited Apr. 23, 2012).

[10] EPA, *Combined Sewer Overflows*, http://cfpub.epa.gov/npdes/home.cfm?program_id=5 (last visited Apr. 21, 2012).

[11] EPA, *Report to Congress on the Impacts and Control of CSOs and SSOs*, at ES-7–ES-9 (2004); Nat'l Res. Defense Council, *supra* note 8, at 4.

[12] *See* RICHARD L. REVESZ & MICHAEL A. LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH 55–65 (2008) (discussing the ancillary benefit counterparts to three major countervailing-risk categories: direct risk tradeoffs, substitution effects, and lulling effects, and urging for parity between considerations of ancillary benefits and countervailing risks).

[13] Hao Niu et al., *Scaling of Economic Benefits from Green Roof Implementation in Washington, DC*, 44 ENVTL. SCI. & TECH. 4302, 4305 (2010).

[14] *See, e.g.*, *Cost Sheet*, GREEN VALUES NATIONAL STORMWATER MANAGEMENT CALCULATOR, http://greenvalues.cnt.org/national/cost_detail.php (last visited Apr. 23, 2012).

[15] EPA, *Listening Session on EPA's Proposed Stormwater Rulemaking for New and Redevelopment* (Feb. 3, 2010), www.epa.gov/npdes/outreach_files/webcast/mp4/sw-020310.mp4.

[16] *See* E. Gregory McPherson, *Cooling Urban Heat Islands with Sustainable Landscapes, in* THE ECOLOGICAL CITY, PRESERVING AND RESTORING URBAN BIODIVERSITY 151, 151 (R. H. Platt, R. A. Rowntree, and P. C. Muick, eds., 1994) ("[C]oncepts of sustainable landscapes and urban climatology can be applied to counteract urban warming in street canyons, parking lots,

reduce air pollution,[17] increase carbon dioxide sequestration,[18] increase groundwater recharge,[19] reduce water treatment costs,[20] increase sound absorption[21], and provide aesthetic value.[22]

Non-Use Values Should Be Included in EPA's Cost-Benefit Analysis

EPA should also incorporate non-use values into its cost-benefit analysis. A cost-benefit analysis that monetizes non-use values is more precise than a cost-benefit analysis that only monetizes direct use market values.[23] Non-use values in the environmental context include existence value (an individual's willingness to pay to maintain an ecological resource even if he or she never uses the resource) and bequest value (an individual's willingness to pay to leave assets to future generations).[24]

EPA incorporated non-use values into the cost-benefit analysis for the Phase II stormwater rule (a previous stormwater rulemaking). In that cost-benefit analysis, EPA relied on a stated-preference study of household willingness to pay for cleaner water—both cleaner water locally, and cleaner water, in general, on a national scale.[25] At the very least, EPA should perform a similar, updated analysis to determine the non-use benefits of the proposed rule. Additionally, EPA's Science Advisory Board is currently consulting with the EPA Office of Water regarding the economic benefits of clean water, including non-use benefits.[26] EPA should attempt to estimate the non-use value of the clean water benefits resulting from the proposed rule, either by applying existing studies, as it did in the Phase II stormwater rule, or through additional research.

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urban parks, and residential streets. . . . Mitigation of urban heat-islands by landscapes can contribute to the sustainability of our cities.").

[17] *See* David Nowak, Daniel Crane & Jack Stevens, *Air Pollution Removal by Urban Trees & Shrubs in the United States*, 4 URB. FORESTRY & URB. GREENING 115, 115 (2006) (presenting the results of a study demonstrating that urban trees and shrubs "remove large amounts of air pollution that consequently improve urban air quality").

[18] *See* David Nowak, *Institutionalizing Urban Forestry as a "Biotechnology" to Improve Environmental Quality*, 5 URB. FORESTRY & URB. GREENING 93, 96 (2006) (discussing the mechanism and extent to which urban trees reduce the amount of atmospheric carbon dioxide in the United States).

[19] "Groundwater recharge" refers to the process by which surface water moves downward to groundwater. Activities associated with urban development, such as increasing the amount of impervious land cover, can reduce groundwater recharge, lowering the elevation of the groundwater (the "water table"). Lower groundwater elevations can reduce the yield of water supply wells, N.J. DEP'T OF ENVTL. PROT., NEW JERSEY STORMWATER BEST MANAGEMENT PRACTICES MANUAL at 6-3 (2004), and increase land subsidence, building damage, and habitat deterioration. *See* BRIAN THOMAS & RICHARD VOGEL, BOSTON GROUNDWATER TRUST, THE IMPACT OF STORMWATER RECHARGE PRACTICES ON BOSTON GROUNDWATER ELEVATION 3 (2011).

[20] EPA, *After the Storm*, http://water.epa.gov/action/weatherchannel/stormwater.cfm (last visited Apr. 23, 2012) ("Polluted stormwater runoff . . . can affect human health and increase drinking water treatment costs"). *See also* CHESAPEAKE BAY FOUND., THE ECONOMIC ARGUMENT FOR CLEANING UP THE BAY AND ITS RIVERS 5 (2010) (noting an EPA study concluding that "every $1 spent on source-water protection saved an average of $27 in water treatment costs").

[21] *See, e.g.*, Ulrich Porsche & Manfred Köhler. *Life Cycle Costs of Green Roofs: A Comparison of Germany, USA, and Brazil*, RIO 3–World Climate & Energy Event, Rio de Janeiro, Braz. 461, 465 (Dec. 1–5, 2003) *available at* http://scholar.googleusercontent.com/scholar?q=cache:QgmNd2AUmwkJ:scholar.google.com/&hl=en&as_sdt=0,33 (noting that green roofs absorb sound and reduce noise levels).

[22] *See* SIM VAN DER RYN & STUART COWAN, ECOLOGICAL DESIGN, at preface, page x (1996) ("[Ecological design] foster[s] community, health, and beauty.").

[23] *See* REVESZ & LIVERMORE, *supra* note 12, at 119–29.

[24] *See* EPA, GUIDELINES FOR PREPARING ECONOMIC ANALYSES at xiv (2010); *see also* EPA, INTERIM ECONOMIC GUIDANCE FOR WATER QUALITY STANDARDS app. C (1995).

[25] EPA, *Economic Analysis, supra* note 2, at 6-10 to -16.

[26] EPA, Memorandum from Dr. Stephen Polasky, *Consultation on the Development of EPA's Report on the* Value of Water to the U.S. Economy (2012), *available at* http://yosemite.epa.gov/sab/sabproduct.nsf/c91996cd39a82f648525742400690127/5A974D37B2A710B785257996005D8520/$File/EPA-SAB-12-004-unsigned.pdf (last visited Apr. 22, 2012). *See also* EPA, *Estimating the Value of Water to the U.S. Economy*, http://yosemite.epa.gov/sab/sabproduct.nsf/c91996cd39a82f648525742400690127/26ed6423f450cda2852578f7004ba0e6!OpenDocument&TableRow=2.0#2 (last visited Apr. 21, 2012) [hereinafter EPA, *Estimating the Value of Water*].

EPA Should Consider Benefits Qualitatively Where Quantification is Not Feasible, and Should Conduct Break-Even Analysis Where Monetized Costs Exceed Monetized Benefits

To the extent feasible, EPA should quantify the benefits described above in its cost-benefit analysis. Where it is infeasible to attach reliable quantified estimates to these benefits, EPA should consider them qualitatively. Such qualitative consideration will ensure that important categories of benefits are taken into account, even where monetization is difficult or data is limited.[27]

If monetized costs exceed monetized benefits for any policy alternative under consideration, EPA should conduct an explicit break-even analysis to assess the proposed rule. The purpose of break-even analysis is to ensure that federal regulations maximize social welfare even where data is limited.[28] The Office of Management and Budget ("OMB") directs agencies to "exercise professional judgment in determining how important the non-quantified benefits or costs may be in the context of the overall analysis."[29] Where benefit or cost categories are likely to be important, but cannot be quantified reliably, agencies should seek to determine "[h]ow small . . . the value of the non-quantified benefits [could] be (or how large would the value of the non-quantified costs need to be) before the rule [or policy alternative] would yield zero net benefits."[30] EPA guidelines also identify break-even analysis as an appropriate tool when "either risk data or valuation data are lacking."[31] Break-even analysis will assist EPA in promulgating a rule that maximizes the aggregate of monetized and non-monetized net benefits.

Industry Adaptation Reduces Compliance Costs

When calculating the rule's compliance costs, EPA should take industry adaptation into account. Scholars have noted that cost-benefit analyses for proposed regulations often overestimate compliance costs.[32] A leading factor contributing to the overestimation of compliance costs is the failure to account for technological innovation and adaptation among regulated firms.[33] As a result of the forthcoming rulemaking, which will significantly expand the number of regulated sources, the leading stormwater control measures, such as permeable pavements and green roofs, will see more widespread use. As with most technologies, their costs are likely to decrease over time due to factors such as technological innovation, economies of scale, and growing competition.[34] Further, as regulated entities become more familiar with the adoption and implementation of stormwater control measures, operations costs and learning costs will likely abate. EPA's cost-benefit analysis should account for these decreasing costs over time.

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[27] EPA, GUIDELINES FOR PREPARING ECONOMIC ANALYSES at 7-49 (2010).

[28] OFFICE OF MGMT.. & BUDGET, EXECUTIVE OFFICE OF THE PRESIDENT, CIRCULAR A-4 at 2 (2003), *available at* http://www.whitehouse.gov/sites/default/files/omb/assets/ regulatory_matters_pdf/a-4.pdf; EPA, GUIDELINES FOR PREPARING ECONOMIC ANALYSES, *supra* note 27, at 7-50.

[29] OFFICE OF MGMT.. & BUDGET, *supra* note 28, at 2.

[30] *Id.*

[31] EPA, GUIDELINES FOR PREPARING ECONOMIC ANALYSES, *supra* note 27, at 7-50 (2010).

[32] *See* REVESZ & LIVERMORE, *supra* note 12, at 131–43.

[33] "Technological change can be thought of as having at least two components: true technological innovation, such as a new pollution control method; and learning effects, in which experience leads to cost savings through improvements in operations, experience, or similar factors." EPA, GUIDELINES FOR PREPARING ECONOMIC ANALYSES, *supra* note 27, at 5-7. *See also* Winston Harrington et al., *On the Accuracy of Regulatory Cost Estimates*, 19 J. POL'Y ANAL. & MGMT. 297, 309 ("Most regulatory cost estimates ignore the possibility of technological innovation.").

[34] *See* Frans Oosterhuis, *Planning for the Environment; Netherlands Environmental Assessment Agency, Cost Decreases in Environmental Technology* 27 (Inst. for Envtl. Studies Report No. R-07/05, 2007) (arguing in the context of pollution control that "[j]ust like other innovations, newly developed technologies for emission reduction tend to be expensive in their initial stages and to become cheaper once they are widely used. If this is not accounted for, the *ex ante* pollution control costs may be overestimated.").

EPA Should Analyze Whether More Stringent Regulations Are Justified in Environmentally Sensitive Areas Beyond Chesapeake Bay

EPA should also determine whether more stringent regulations are justified in other severely impaired water bodies besides Chesapeake Bay. EPA has suggested that the proposed rule will impose additional, more stringent regulations on dischargers within the Chesapeake Bay watershed, including requirements related to turf management, as well as buffers and limits on pesticide and fertilizer usage.[35] However, there are other water bodies where stormwater runoff from developed areas contributes to severe water quality impairment, including the Hudson River,[36] Puget Sound,[37] and Casco Bay.[38] If more stringent rules for the Cheaspeake Bay are cost-benefit justified because of site-specific factors, more stringent regulations may also be justified in other area where stormwater runoff contributes to severe pollution in a waterbody. EPA should explore whether more stringent regulation would be cost-benefit-justified in those regions.

II. EPA Should Analyze Whether Market-Based Approaches Can Increase the Cost-Effectiveness of the Proposed Rule

Regulatory approaches based on market principles can provide significant advantages over other forms of regulation by offering flexibility to regulated firms and by achieving emissions reductions in the most cost-effective manner. EPA should determine whether market-based approaches such as stormwater utilities, cap-and-trade programs, emissions fees, offsets, and in-lieu fee programs could provide environmental benefits more cost-effectively than the command-and-control approaches that may be contemplated by the forthcoming rule. EPA has the legal authority to implement market-based approaches in the new stormwater program.[39]

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[35] EPA, CHESAPEAKE BAY STORMWATER LISTENING SESSION, WASHINGTON, DC, slide 25 (Nov. 4, 2010), *available at* http://cfpub.epa.gov/npdes/stormwater/rulemaking/chesbaystakeholder.cfm. Turf management can refer to various lawn, landscaping, and artificial turf care practices.

[36] NEW YORK STATE DEP'T OF ENVTL. CONSERVATION, CLEAN WATER FOR THE HUDSON RIVER ESTUARY (2012), http://www.dec.ny.gov/lands/5098.html ("According to DEC, stormwater runoff is the leading source of impairment to Hudson River estuaries.").

[37] *See* BOOTH, VISITACION & STEINEMANN, *supra* note 6 at 1 ("The biological health of Puget Sound is declining, and much of that decline is a direct or indirect consequence of stormwater runoff.").

[38] CASCO BAY ESTUARY PARTNERSHIP, STATE OF THE BAY 2010, at 8 (2010), *available at* http://www.cascobay.usm.maine.edu/sotb10.html ("The *Casco Bay Plan* points to stormwater as being the single greatest contributor of contaminants to Casco Bay.").

[39] Municipalities may establish stormwater utilities pursuant to state law. *See* NAT'L ASS'N OF FLOOD AND STORMWATER MGMT. AGENCIES, GUIDANCE FOR MUNICIPAL STORMWATER FUNDING 3-1 to -13 (2006) [hereinafter NAFSMA GUIDANCE]. With respect to trading mechanisms such as marketable permits, offsets, and in-lieu fees, EPA has stated that stormwater dischargers cannot use such trading mechanisms to meet technology-based effluent limitations. OFFICE OF WASTEWATER MGMT., EPA, WATER QUALITY TRADING TOOLKIT FOR PERMIT WRITERS 24 (2009). Instead, dischargers already achieving the most stringent technology-based limitations may generate tradable credits by reducing their pollution further—or may purchase those credits to meet water-quality-based effluent standards, such as those established by TMDLs. *Id.* at 29; OFFICE OF WATER, EPA, WATER QUALITY TRADING POLICY STATEMENT 5 (2003). While it is not currently supported by EPA's trading policy, trading to meet technology-based effluent limitations may be permissible. *Cf.* Inst. for Policy Integrity, *Comments on EPA's Forthcoming Greenhouse Gas New Source Performance Standards for Electric Utility Steam Generating Units* at 15–18 (2011) (arguing that market-mechanisms are consistent with flexible statutory phrases like "performance standards"). EPA has also stated that it may consider revising its policy against trading to meet technology-based effluent limitations "by including provisions for trading in the development of new and revised guidelines for technology-based effluent guidelines and other regulations." OFFICE OF WATER, EPA, WATER QUALITY TRADING POLICY STATEMENT 6 (2003). The arguments for allowing trading to meet technology-based effluent limitations may be particularly forceful in the stormwater context. Because there are a large number of different stormwater control technologies, there is a relatively weak nexus between TBELs and a specific technology. Additionally, there is a wide variety of site-specific conditions among stormwater dischargers, which provides room for larger gains from trades.

A market-based regulatory system for stormwater would function best within a watershed-based permitting framework.[40] For instance, allowing trading within an entire watershed would expand the number of potential traders, leading to a more efficient market. Trading over an entire watershed would also allow the trading program to be calibrated to achieve the water quality goals of the receiving waterbody.[41] In the case of a stormwater utility, organizing a single stormwater utility on the watershed level—as opposed to several smaller stormwater utilities, each operating on the municipal level—facilitates the implementation of the most cost-effective stormwater control measures.[42]

Even in the absence of a watershed-based framework, however, market-based approaches offer the potential for significant efficiency gains. Stormwater runoff is a classic example of an externality: because dischargers do not bear the costs of their stormwater runoff, dischargers lack the incentive to reduce their runoff.[43] Assessing a fee in proportion to a discharger's runoff, or requiring dischargers to purchase credits on the market in proportion to their runoff, creates a marginal cost to the discharger for stormwater disposal—thereby internalizing the externality and providing the discharger with an incentive to reduce its runoff. If stormwater dischargers are required to fully internalize the costs of their discharge, they will reduce their runoff to the efficient amount of use—that is, to the point at which the marginal abatement cost (the cost of additional stormwater control measures) equals the marginal benefit of additional abatement.[44]

There are additional reasons why market-based approaches may foster efficiency gains. Among dischargers, the costs of abating stormwater runoff differ. By letting high-cost abaters trade with low-cost abaters, market exchanges would equalize the marginal control cost, ensuring that the overall discharge target is attained at the lowest cost.[45] Additionally, market-based regulation can provide individual dischargers with the incentive to reduce stormwater runoff below the regulatory standard—unlike command-and-control regulation, under which there is no incentive to reduce discharge below the standard.[46] Market-based approaches can also reduce administrative costs by reducing the information-gathering burdens on administrators.[47] As EPA has stated, "market-based approaches, such as water quality trading, provide greater flexibility and have the potential to

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[40] *See infra* Part IV.

[41] NAT'L RESEARCH COUNCIL, URBAN STORMWATER MANAGEMENT IN THE UNITED STATES 419 (2008) [hereinafter NRC REPORT].

[42] As the National Association of Flood and Stormwater Management Agencies notes, "for example, to relieve flooding, a stormwater detention facility built in an upstream portion of a watershed in a rural area may be less expensive and provide better protection than extensive flood protection works installed downstream within a major urban area." NAFSMA GUIDANCE, *supra* note 39 at 2-6.

[43] *See* RICHARD L. REVESZ, ENVIRONMENTAL LAW AND POLICY 5–6 (2008).

[44] *See* Michael A. Livermore, *Reviving Environmental Protection: Preference-Directed Regulation and Regulatory Ossification*, 25 VA. ENVTL. L.J. 311, 325–26 (2007).

[45] Punam Parikh et al., *Application of Market Mechanisms and Incentives to Reduce Stormwater Runoff*, 8 ENVTL. SCI. & POL'Y 133, 134 (2005) ("When the cost of controlling emissions or runoff differs across individuals, equalizing marginal control costs ensures that the overall target is attained at the lowest aggregate cost.").

[46] Bruce Ackerman & Richard Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1341 (1985) (arguing that implementation of the traditional command-and-control system—the best available technology standard—"gives the polluter no incentive to reduce his wastes below the permitted amount.").

[47] "[Command-and-control via the best available technology standard] involves the centralized determination of complex scientific, engineering, and economic issues regarding the feasibility of controls on hundreds of thousands of pollution sources. Such determinations impose massive information-gathering burdens on administrators, and provide a fertile ground for complex litigation in the form of massive adversary rulemaking proceedings and protracted judicial review." *Id.* at 1336–37.

achieve water quality and environmental benefits greater than would otherwise be achieved under more traditional regulatory approaches."[48]

EPA Should Promote the Adoption of Stormwater Utilities and Issue Guidance to Assist Municipalities in Designing Optimal Rate Structures

A stormwater utility is an entity, created by a municipality, that assesses fees on stormwater dischargers.[49] Over five hundred cities and counties in the United States have adopted stormwater utilities.[50] EPA should promote the adoption of stormwater utilities by issuing technical guidance that advises municipalities on how to design rate structures that maximize net benefits.

Stormwater utilities offer the potential to make stormwater regulation more cost-effective. Assessing a fee in proportion to a discharger's runoff creates a marginal cost to the discharger for stormwater disposal, thereby providing the discharger with an incentive to reduce its runoff. If stormwater dischargers are required to fully internalize the costs of their discharge, they will reduce their runoff to the efficient amount of use.[51] However, municipalities currently lack guidance on optimal rate design. EPA has not published guidance to municipalities on adopting stormwater utilities. The National Association of Flood and Stormwater Management Agencies ("NAFSMA") has published guidance under contract with EPA, but NAFSMA's guidance frames stormwater utilities solely as a means of funding stormwater programs. The guidance document provides advice to municipalities about avoiding litigation when establishing stormwater utilities, but does not discuss how to design a stormwater program's rate structure in a manner that maximizes social benefits.[52] As a result of this lack of information, many localities have adopted rate structures that fail to provide salutary incentives. For instance, many stormwater utilities impose some or all of the user fee based on the gross area of the property.[53] Such user fees provide dischargers with a negligible incentive to reduce their stormwater runoff, because implementing control measures that actually reduce stormwater runoff will not reduce the fee they pay (i.e., most stormwater controls will not reduce the property's gross area).

In its technical guidance, EPA should make clear to municipalities that the optimal rate structure will be the one that most closely relates to flow. Because they more directly allocate the costs of stormwater runoff to the actors most responsible for the harm, rate structures based on flow—or relatively close proxies for flow—are preferable to rate structures based on gross property area from an efficiency perspective. In areas where the technology is advanced enough to measure, or to accurately model, the flow of stormwater runoff, the rate structure should directly correlate to the data: the greater quantity of flow from a site, the greater the fee should be. However, in areas where measuring or modeling flow is difficult or impossible, rate structures should be based on the closest feasible proxies for flow.[54] This will hinge on the technical capabilities of the regulators and

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[48] EPA, WATERSHED-BASED NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITTING TECHNICAL GUIDANCE 46 (2007) [hereinafter EPA, NPDES TECHNICAL GUIDANCE].

[49] *See* Janice Kaspersen, *The Stormwater Utility: Will it Work in Your Community?*, 1 STORMWATER (2000), *available at* http://www.stormh2o.com/SW/Articles/The_Stormwater_Utility_Will_It_Work_in_Your_Commun_212.aspx (discussing the increasing prominence of stormwater utilities as well as some of the difficulties of implementing them).

[50] NAFSMA GUIDANCE, *supra* note 39, at 2-12.

[51] *See* Livermore, *supra* note 44, at 325–26.

[52] NAFSMA GUIDANCE , *supra* note 39, at ES-1 ("The focus of this guidance is to provide a resource to local governments as they address contemporary stormwater program financing challenges. The guidance includes procedural, legal, and financial considerations in developing viable funding approaches.").

[53] For a discussion of potential storm rate methodologies (including impervious area, gross area, percentage of impervious coverage, and intensity of development), see *Id.* at 2-36 to -47.

[54] NRC REPORT, *supra* note 41, at 101 (concluding that "[f]uture land-use development would be controlled to prevent increases in stormwater discharges from predevelopment conditions, and impervious cover and volumetric restrictions would serve as a reliable proxy for stormwater loading from many of these developments.").

will therefore vary among jurisdictions.

EPA's stormwater utility guidance should also include legal advice for municipalities on how to adopt a legally sound stormwater utility. Several stormwater utility programs have been successfully challenged in courts on the grounds that the utility imposes is an impermissible tax rather than a valid user fee.[55] Such lawsuits may have a chilling effect on the adoption of efficiency-maximizing stormwater utilities.[56] Official guidance from EPA will help correct for this bias and foster the adoption of stormwater utilities.

EPA Should Explore Additional Market-Based Approaches for Regulating Stormwater

In addition to stormwater utilities, other market-based approaches for stormwater control could theoretically be more cost-effective than command-and-control regulation, including cap-and-trade programs, offsets, and in-lieu fees. These programs could complement any command-and-control approaches contemplated in the forthcoming rule, or could replace them. EPA should perform a cost-benefit analysis to determine which of these market-based approaches could yield efficiency gains, and should incorporate market-based approaches into the final regulations where cost-benefit justified.

EPA should consider implementing a cap-and-trade program for dischargers within a given boundary (such as a watershed or a political jurisdiction, like an MS4). Cap-and-trade programs allow the market to identify the least costly way to achieve a given level of pollution reduction. The cost-effectiveness of tradable allowance programs in the Clean Air Act context is well-established. Watersheds are different than air sheds in many respects, however; water is confined to a channel, does not mix uniformly, and accumulates downstream. These differences, among others, present challenges for tradable allowance programs in the stormwater context.[57]

However, tradable allowance programs for stormwater runoff can be feasible. One of the major barriers to tradable allowance programs is the difficulty in accurately modeling the amount of stormwater runoff from a given site.[58] New improvements in technology, however—such as Geographic Information System (GIS) mapping—have significantly lowered the costs of collecting and managing large amounts of geological and hydrological data.[59] These sophisticated models provide a relatively low-cost way to model stormwater runoff from individual properties based on their geological attributes, thereby facilitating tradable allowance programs for stormwater.

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[55] *See, e.g.*, Howard Jarvis Taxpayers Ass'n v. City of Salinas, 121 Cal. Rptr. 2d 228 (Cal. Dist. Ct. App. 2002); Bolt v. City of Lansing, 587 N.W.2d 264 (Mich. 1998).

[56] *See* Avi Brisman, *Considerations in Establishing a Stormwater Utility*, 26 S. ILL. U. L.J. 505, 528 (2002) (arguing that being aware of the potential legal challenges to the creation of a stormwater utility would aid in the creation of a program that would "both gain the support of community members and withstand judicial challenge").

[57] *See* Hale Thurston et al., *Controlling Stormwater Runoff with Tradable Allowances for Impervious Surfaces*, 129 J. WATER RESOURCES PLAN. & MGMT. 410, 411 (2003) (noting that a stormwater trading regime requires "detailed mapping information on individual properties, including size, percent impervious surface, and soil type").

[58] *Id.* (noting that, in the past, the high costs of gathering the information needed to accurately model stormwater runoff "made the type of program suggested in this study extremely difficult, if not impossible, to implement.").

[59] *Id.* ("Recent improvements in geographic information system (GIS) technology, however, allow us to collect and manage large amounts of geographic data fairly inexpensively."). EPA has funded the study of advanced computational models that simulate real storm events for the purposes of determining the most efficient methods of mitigating urban stormwater runoff and combined sewer overflow phenomena. WAYNE C. HUBER & ROBERT E. DICKINSON, OFFICE OF RES. & DEV., EPA, STORM WATER MANAGEMENT MODEL, VERSION 4: USER'S MANUAL 1–4 (1992). *See also* Christina Tague & Molly Pohl-Costello, *The Potential Utility of Physically Based Hydrologic Modeling in Ungauged Urban Streams*, 98 ANNALS ASS'N AM. GEOGRAPHERS 818 (2008) (discussing the ease of use of hydrologic modeling tools based on geographic information systems to aid in urban planning, design, and environmental assessment).

In a cap-and-trade program for stormwater, the cap would be set at the efficient level of runoff. Therefore, parcel owners would have to either install stormwater control technologies or purchase allowances from others who can install such technologies at a lower cost.[60] Sources for which control measures are expensive—perhaps because of the design of a building or the topography or geology of the land—will trade credits with sources for which control measures are cheaper, until the cost for a single unit of reduction is equal among all sources.[61] The decision about where to set the cap should take into account the most accurate baseline information—data on existing levels of stormwater runoff as well as stormwater runoff under pre-development conditions—that is available.[62] When a cap is set based on inaccurate data, caps may over- or under-allocate runoff allowances, which will lead to inefficient levels of pollution.

A market-based approach could also take the form of an offset program. An offset is a reduction that takes place at another source, whether the other source is regulated or unregulated.[63] In the stormwater context, dischargers could implement offsets by contracting with parties unregulated by the stormwater program to implement stormwater management controls.[64] Offsets are possible in the stormwater context because, even after the new rule is implemented, many dischargers of stormwater—such as agriculture and existing residential development—will not be covered by the stormwater program, but may still be able to implement stormwater control measures. Offsets present significant verification and monitoring challenges, but existing efforts to use offsets in trading programs are helping to develop solutions to these implementation challenges.

Another option for a market-based approach for stormwater would be an in-lieu fee program. Under an in-lieu fee program, regulated parties would be allowed to make a payment to a local government entity instead of implementing on-site controls. The government entity would use the revenue from the fee to implement stormwater controls elsewhere in the watershed.[65] Alternatively, a private company, certified by the regulator, could sell credits to regulated parties and use the revenue to purchase land and implement stormwater controls elsewhere in the watershed.[66]

While models of a cap-and-trade program for stormwater runoff have been proposed, no such programs have been established.[67] Several offset programs and in-lieu fee programs, however, have been implemented. In Maryland, for example, owners of developed sites in Critical Areas—

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[60] *See* Thurston et al., *supra* note 57, at 412 (arguing that if runoff volume were used as a criterion for initial distribution of stormwater allowances, "most parcel owners would either have to install [best management practices] or purchase allowances from others better positioned to install them."); Parikh et al., *supra* note 45, at 139 ("[The allowance] system allows parcel owners to trade allowances, which creates incentives for individuals who can reduce runoff at lower costs to take on a larger share of the burden.").

[61] *See* Thurston et al., *supra* note 57, at 411–12 (arguing that a demand and supply of allowances will evolve based on varying marginal costs such that an equilibrium allocation will be achieved).

[62] *See* Sam Napolitano, et al., *The NO_x Budget Trading Program: A Collaborative, Innovative Approach to Solving a Regional Air Pollution Problem* 20 ELECTRICITY J. 65, 73–74 (2007) (arguing that accurate baseline emissions inventory is "critical" for setting a cap in order to ensure effective program design).

[63] *See, e.g.*, Andrew Manale et al., *Offset Markets for Nutrient and Sediment Discharges in the Chesapeake Bay Watershed: Policy Tradeoffs and Potential Steps Forward* (Nat'l Ctr. for Envtl. Econ., Working Paper No. 11-05, 2011). *See also* SHARYN ROSS-RAKESH, MELBOURNE WATER, STORMWATER QUALITY OFFSETS: A GUIDE FOR DEVELOPERS (2006), *available at* http://library.melbournewater.com.au/content/wsud/Stormwater_Quality_Offset_Scheme.pdf.

[64] NRC REPORT, *supra* note 41, at 355.

[65] *Id.* at 422 ("In lieu fee programs are distinguished from other offset programs in that it is the responsibility of the local government (or more generally, any designated fee service provider such as a nongovernmental organization) to provide the off-site SCMs.").

[66] Leonard Shabman & Paul Scodari, *Past, Present, and Future of Wetlands Credit Sales* 8 (Res. for the Future, Discussion Paper No. 04-48, 2004) (discussing credit sales in the context of the federal wetlands permit program).

[67] NRC REPORT, *supra* note 41, at 421.

defined by the Critical Area Act as all land within 1,000 feet of tidal waters or tidal wetlands—are required to reduce stormwater pollutant loads to a level at least 10 percent below the load generated by the same site prior to development.[68] Where on-site controls are not feasible, the Critical Area Act regulations allow landowners to use offsets or pay an offset fee to meet the pollution reduction requirement.[69] Acceptable offsets include constructing stormwater controls elsewhere in the watershed, reducing the imperviousness of an existing property, reforestation, and wetland restoration, among others.[70] Landowners may also pay an in-lieu fee—termed an "offset fee"—which must be equivalent to the cost of constructing an offset capable of meeting the pollutant reduction requirement.[71] In-lieu fee programs have also been implemented in Santa Monica, California; Williamsburg, Virginia; and the Neuse River Basin in North Carolina.[72]

EPA should compare the various options for market-based approaches to determine which combination of approaches would be optimal in the stormwater context. Particularly, EPA should compare the costs and benefits of marketable-permit schemes, such as a credit-trading program, versus effluent fees, such as a runoff charge imposed by a stormwater utility. In a perfect market, marketable-permit schemes and effluent fees will yield the same level of efficiency gains.[73] In determining which approach is preferable, the key variable is uncertainty.[74] Where uncertainty as to the efficient price is greater than uncertainty as to the efficient level of flow, market-based schemes are likely preferable; when the opposite is true, effluent fees are likely preferable. Effluent fees, however, can achieve lower transaction costs in certain circumstances. Whereas trading programs entail search costs, the costs of establishing a market, and the costs of establishing certain strategic behavior, under a system of effluent fees dischargers respond directly to the incentive provided by the fee.[75] EPA should determine which program is more efficient based on the levels of uncertainty and transaction costs associated with each.

An additional advantage of marketable-permit schemes, relative to command-and-control regulations, is that they can achieve higher compliance rates and require fewer enforcement resources.[76] For this advantage to be realized, however, the probability of detection must be sufficiently high.[77] As the probability of detection decreases—due, for example, to difficulties in monitoring and enforcement—the "expected penalty" could fall below the price of purchasing additional credits, making compliance much less likely.

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[68] CRITICAL AREA COMM'N FOR THE CHESAPEAKE AND ATL. COASTAL BAYS, CRITICAL AREA 10% RULE GUIDANCE MANUAL at 1-1 (2003).

[69] *Id.* at 6-1.

[70] *Id.* at 6-1 to -9.

[71] *Id.* at 6-1.

[72] NRC REPORT, *supra* note 41, at 421.

[73] Martin Weitzman, *Prices vs. Quantities*, 41 REV. ECON. STUD. 477, 479 (1974) ("[T]he only fair way to begin must be with the tenet that there is no *basic* or *universal* rationale for having a general predisposition toward one control mode or the other.").

[74] *Id.* at 480 ("If there is any advantage to employing price or quantity control modes, therefore, it must be due to inadequate information or uncertainty.").

[75] REVESZ, supra note 43, at 174 (citing WILLIAM J. BAUMOL & WALLACE E. OATES, THE THEORY OF ENVIRONMENTAL POLICY 178–81 (1988)).

[76] *See* Lesley K. McAllister, *Putting Persuasion Back in the Equation: Compliance in Cap and Trade Programs*, 24 PACE ENVTL. L. REV. 299, 314 (2007) (noting that the cap-and-trade program for acid rain has achieved 99 to 100 percent compliance and that compliance rates under the Regional Clean Air Incentives Market have averaged 93 percent). *See also* ROBERT C. ANDERSON & ANDREW Q. LOHOF, ENVTL. LAW INST., THE UNITED STATES EXPERIENCE WITH ECONOMIC INCENTIVES IN ENVIRONMENTAL POLLUTION CONTROL POLICY 6-21 (1997) (noting that, under EPA's trading program for lead credits among gasoline refiners, "well over 99 percent of transactions were reported accurately").

[77] *See, e.g.*, Gary Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL .ECON. 169, 204–05 (1968).

Implementing market-based regulatory approaches within the stormwater program may raise concerns that such schemes will lead to the creation of "hot spots." Hot spots are relatively high concentrations of discharge that occur in small areas within the larger pollution control region.[78] EPA should address hot spot concerns through market design that takes into account the local characteristics and concentrations of pollutants. For example, a trading program could be designed that would approve all trades except those that would concentrate an excessive amount of stormwater discharge within a given area.[79]

III. EPA Should Minimize Economically Inefficient Grandfathering by Adopting a Time-Limited Transition Relief Scheme

Any grandfathering in EPA's final rule should be implemented only to the extent that it maximizes the net benefits of the regulation. This requires that EPA carefully weigh the efficiency losses due to the "old plant" effect against any efficiency benefits of grandfathering. To minimize economically inefficient grandfathering, EPA should consider adopting limits on the grandfathering of existing sites.

The forthcoming rule may contain a risk of economically inefficient grandfathering. Grandfathering is a form of transition relief under which existing sources of pollution are shielded from a new regulatory regime.[80] The central problem with grandfathering is that "stringent standards for new sources of pollution, coupled with grandfathering, create undesirable incentives for existing sources to remain in place."[81] If the proposed rule subjects only newly developed and redeveloped sites to regulation, it will be grandfathering existing sites. This differential system—under which stringent regulations apply to newly developed and redeveloped sites, while existing sites are unregulated—can lead to economic inefficiency by providing dischargers with an incentive to "patch up" existing sites, rather than redevelop them, in order to avoid triggering the new regulatory regime.[82] As a result of this phenomenon (known as the "old plant" effect), existing sites are maintained in operation longer than is economically efficient.[83] Environmental quality may in fact be worsened because the regulations discourage the redevelopment that would subject sites to more stringent environmental regulations.[84]

Maximizing Net Social Benefits May Require Time-Limited Grandfathering for Existing Sites

To determine the optimal level of transition relief, EPA must weigh the efficiency losses due to the "old plant" effect against the efficiency benefits, if any, of grandfathering. Grandfathering can be desirable in contexts where transition costs—the costs of implementing a new control measure apart from the direct cost of the control measure itself—are especially high.[85] More precisely,

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[78] *See* Ackerman & Stewart, *supra* note 46, at 1350.

[79] Jonathan Remy Nash & Richard L. Revesz, *Markets and Geography: Designing Marketable Permit Schemes to Control Local and Regional Pollutants*, 28 ECOLOGY L.Q. 569, 572–73 (2001).

[80] REVESZ, *supra* note 43, at 416.

[81] Richard L. Revesz & Allison L. Westfahl Kong, *Regulatory Change and Optimal Transition Relief*, 105 NW. U. L. REV. 1581, 1615 (2011).

[82] *Id.* at 1629 ("The existence of pollution regulations applying to new sources, however, may give the plant an incentive to bear these inefficiencies for longer than would otherwise be the case because they are less costly than complying with the standards applicable to new sources."). *See also* Jonathan Remy Nash & Richard L. Revesz, *Grandfathering and Environmental Regulation: The Law and Economics of New Source Review*, 101 NW. U. L. REV. 1677, 1707-10 (2007) (describing how "differential environmental regulations delay plant retirement" in the Clean Air Act New Source Review context).

[83] Nash & Revesz, *supra* note 82, at 1707–10.

[84] *Id.*

[85] Steven Shavell, *On Optimal Legal Change, Past Behavior, and Grandfathering*, 37 J. LEGAL STUD. 37, 51–52 (2008).

grandfathering can be preferable where the costs of new pollution control equipment, plus the transition costs, exceed the marginal benefits of the regulation.[86]

While indefinite grandfathering is often undesirable from an economic standpoint, time-limited grandfathering, in certain contexts, may yield efficiency gains. Time-limited grandfathering may be appropriate where new regulations would require the alteration or replacement of durable items, such as "the fixed physical aspects of property."[87] Eliminating grandfathering under the stormwater regulations altogether—that is, requiring every developed site in the United States to undertake major changes to its facilities to reduce stormwater runoff to levels under pre-development hydrology—may be prohibitively expensive relative to the regulation's environmental benefits.[88] In developing the final rule, EPA should estimate efficiency losses due to grandfathering, as well as any efficiency benefits, and develop a transition relief scheme that maximizes the overall social benefits of the regulation.

Instead of covering only newly developed and redeveloped sites, EPA should consider imposing time limits on the transition relief extended to existing sites so as to minimize inefficiencies due to the "old plant" effect. For example, EPA could design a deadline by which all existing sites must replace particular facilities relevant to stormwater control (e.g., roofs, parking lots), or a deadline by which all existing sites must conform to the standards that the regulation establishes for newly developed and redeveloped sites. In setting such a deadline, EPA should not seek to compel all existing sites to immediately adopt best management practices; because of the variability between sites, this would result in overregulation in instances where the marginal costs of immediate replacement exceed the marginal benefits of the new practices.[89] Further, simultaneously applying the regulations to all existing sites could result in exorbitant transaction costs that would likely outweigh the environmental benefits of the regulation. Instead, the deadline should be sensitive to the need for gradual implementation of the regulations in order to avoid these costs.

If EPA decides to implement transition relief for existing sources of stormwater discharge, the regulatory standards for stormwater and the transition relief scheme should be determined simultaneously. Regulators frequently choose the optimal regulatory standard for new sources first, and only then choose the optimal scheme of transition relief, in light of that new source standard.[90] This approach can lead to suboptimal outcomes, as it fails to consider how the disparity in regulatory stringency—between new sources and existing sources—causes grandfathered sources to stay in operation. It does not consider whether, for example, a less stringent standard, coupled with a less generous grandfathering scheme, would be preferable from an efficiency standpoint.[91] EPA should seek to maximize social welfare by considering the regulatory standards and transition relief scheme together.

The Definition of "Redeveloped Site" Must Consider the Incentives to Existing Sites

EPA should define the term "redeveloped site" to minimize efficiency losses due to the old plant effect. "Redeveloped site" could be narrowly defined to apply only to sites where an existing facility relevant to stormwater control—such as a roof or parking lot—is torn down and a new one is

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[86] *Id.*

[87] *Id.* at 41–42.

[88] Indeed, without the grandfathering of existing sites, the new regulations may lead, for example, to the result that most nonporous roads and parking lots in the country need to be simultaneously replaced with new, porous asphalt. This could paralyze the United States' transportation network. Grandfathering in this context may be necessary to avoid such absurdities.

[89] Shavell, *supra* note 85, at 51–52.

[90] Revesz & Kong, *supra* note 81, at 1615–16.

[91] *Id.* at 1617.

constructed. This would apply to any development action that involved the alteration of infrastructure of a site such that stormwater runoff is directly affected (e.g., grading, removal of vegetation, soil compaction, and so forth.). A broad definition of "redeveloped site," on the other hand, would include site owners' decision to "patch up" the facility that is in place (e.g., patching or resurfacing parking lots).[92] Defining "redeveloped site" in such a broad fashion could result in the high transition costs highlighted in the previous section. Conversely, if the narrow definition is used, the site owners may decide to "patch up" their facilities so as to avoid being subject to the regulation as a "redeveloped" site. This would increase the danger of inefficiencies due to the old plant effect. EPA should develop a definition of "redeveloped site" that allows site owners to pursue reasonable maintenance work on existing structures while preventing site owners from extending the lives of existing structures beyond their economically optimal replacement dates.

IV. The Structure of the Final Rule Should Facilitate Watershed-Based Permitting

In revising the permitting programs for MS4s and expanding the stormwater program to cover newly developed and redeveloped sites, EPA should structure the regulations to facilitate the transition toward a watershed-based framework for stormwater regulation. Stormwater permitting on a watershed level has the potential to achieve significant efficiency benefits relative to a single national standard. Watershed-level permitting would allow the stormwater program's standards to be directly tied to the pollution reduction goals for the receiving water, thereby imposing limitations tailored to achieving water quality outcomes. Additionally, stormwater permitting on a watershed level facilitates market-based approaches more efficiently than the current regulatory structure.

EPA has identified a number of benefits of watershed-based permitting, including the ability to achieve water quality goals at a lower cost; greater opportunities for trading; the ability to measure the effectiveness of targeted actions on water quality improvements; more effective implementation of TMDLs; and efficiency gains due to integrating various water programs under one framework.[93] Transforming clean water regulation in the United States from site-specific technology-based standards into an integrated, watershed-based permitting program is beyond the scope of this rule. However, EPA should design the stormwater regulations to facilitate a move toward watershed-based permitting, and should issue revised guidance on watershed-based permitting that advises states and localities on how to integrate their stormwater programs with watershed-based permitting frameworks so as to achieve the benefits identified.[94]

EPA has legal authority to issue permits for MS4s on a watershed basis.[95] Management programs

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[92] For a discussion of the definition of "development and re-development" in the context of Section 438 of the Energy Independence and Security Act of 2007, see OFFICE OF WATER, EPA, TECHNICAL GUIDANCE ON IMPLEMENTING THE STORMWATER RUNOFF REQUIREMENTS FOR FEDERAL PROJECTS UNDER SECTION 438 OF THE ENERGY INDEPENDENCE AND SECURITY ACT 11 (2009).

[93] EPA, WATERSHED-BASED NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITTING POLICY STATEMENT 3 (2003).

[94] NRC REPORT, *supra* note 41, at 388 (noting that the EPA guidance document on watershed-based permitting contains no reference to stormwater, and that, "although the EPA guidance documents lay some groundwork for watershed-based permitting—especially the ideas of integrated municipal permits, water quality trading, and monitoring consortia—the sum total of EPA's analysis does not define a framework for moving towards true watershed-based permitting").

[95] 33 U.S.C. § 1342(p)(3)(B)(i) (2000) ("Permits for discharges from municipal storm sewers . . . (i) may be issued on a system- or jurisdiction-wide basis."); 40 C.F.R. § 122.26 (a)(3)(ii) ("The Director may either issue one system-wide permit covering all discharges from municipal separate storm sewers within a large or medium municipal storm sewer system or issue distinct permits for appropriate categories of discharges within a large or medium municipal separate storm sewer system including, but not limited to: all discharges owned or operated by the same municipality; located within the same jurisdiction; *all discharges within a system that discharge to the same watershed*; discharges within a system that are similar in nature; or for individual discharges from municipal separate storm sewers within the system.") (emphasis added); 40 C.F.R. § 122.26 (a)(3)(v) ("Permits for all or a portion of all discharges from large or medium municipal

may be watershed-based and, upon petition, MS4s located within a watershed boundary may be designated a large or medium MS4 for permitting purposes.[96]

EPA Should Provide States with Guidance on Incorporating Stormwater Runoff into TMDLs

At minimum, EPA should issue guidance to states making clear that TMDLs must assign load allocations for stormwater runoff and advising states on how to incorporate stormwater discharges into TMDLs. TMDLs are pollution limits that enable water bodies to meet water quality standards. States must develop a TMDL for all water bodies that do not meet water quality standards.[97] The TMDL "defines the specified maximum of [each] pollutant which can be discharged or 'loaded' into the waters at issue from all combined sources."[98] The effluent limitations specified in NPDES permits for point sources must be set at a level that complies with limitations imposed by TMDLs.[99] Most stormwater runoff in developed areas, including all stormwater runoff that flows into municipal separate storm sewers and combined sewers, is categorized as point source pollution;[100] therefore, load allocations in TMDLs must be incorporated into stormwater permits.

Few states, however, have incorporated stormwater discharges into TMDLs,[101] even though stormwater runoff from urbanized areas is a significant source of water pollution in the United States.[102] EPA should clarify—through the issuance of guidance to the states—that stormwater discharge permits in areas where a TMDL has been implemented must contain effluent limitations sufficient to meet water quality standards established by the TMDL.

Additionally, EPA should consider encouraging states to assign TMDL pollutant loadings for stormwater based on flow, rather than based on the loadings of specific pollutants. One reason that states have been slow to incorporate stormwater into their TMDLs is that specific pollutant loadings in stormwater runoff are difficult to measure.[103] The technical capacity and prominence of sophisticated monitoring techniques for the determination of stormwater discharge and its impacts on impaired water bodies have increased over time. Yet, monitoring stormwater runoff for specific

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separate storm sewer systems that are issued on a system-wide, jurisdiction-wide, watershed or other basis may specify different conditions relating to different discharges covered by the permit, including different management programs for different drainage areas which contribute storm water to the system."); 40 C.F.R. § 122.26 (a)(5) ("The Director may issue permits for municipal separate storm sewers that are designated under paragraph (a)(1)(v) of this section on a system-wide basis, jurisdiction-wide basis, watershed basis or other appropriate basis, or may issue permits for individual discharges.").

96 40 C.F.R. § 122.26(b)(4)(iv), (b)(7)(iv).

97 33 U.S.C. § 1313(d)(1)(A), § 1313(d)(1)(C).

98 Dioxin/Organochlorine Ctr. v. Clarke, 57 F.3d 1517, 1520 (9th Cir. 1995).

99 40 C.F.R. § 122.44(d)(1)(vii)(B).

100 Nw. Envtl. Def. Ctr. v. Brown, 640 F.3d 1063, 1070–71 (9th Cir. 2011) ("[W]hen stormwater runoff is collected in a system of ditches, culverts, and channels and is then discharged into a stream or river, there is a 'discernable, confined and discrete conveyance' of pollutants, and there is therefore a discharge from a point source.").

101 NRC REPORT, *supra* note 41, at 51 ("Despite the potential for positive interaction between stormwater regulation and the TMDL program, there appears to be little activity occurring at the stormwater–TMDL interface.").

102 OFFICE OF WATER, EPA, NATIONAL WATER QUALITY INVENTORY 14 (2000) (identifying urban runoff and storm sewers as the fourth-leading source of river and stream impairment); *id.* at 22 (identifying urban runoff and storm sewers as the third-leading source of impairment in lakes, reservoirs, and ponds); *id.* at 30 (identifying urban runoff and storm sewers as the second-leading source of estuary impairment). The National Water Quality Inventory also identified urban runoff and storm sewers as a leading source of Great Lakes shoreline impairment, *id.* at 35, the leading source of ocean shoreline impairment, *id.* at 39, the leading reason for water quality impairment at beaches, *id.* at 59, and a leading source of toxic pollutants in water bodies, *id.* at 68.

103 NRC REPORT, *supra* note 41, at 51–52.

pollutants is imprecise and very expensive.[104]

Instead, it would be more efficient for EPA to use overall stormwater flow as a surrogate for various pollutants, as it is easier to monitor, model, and approximate.[105] Encouraging the use of flow as a surrogate for numeric effluent data in TMDL regulated areas will have the benefit of lowering the cost of assigning specific stormwater wasteload allocations to individual dischargers, thus facilitating more efficient regulation of stormwater dischargers on the watershed level. EPA should analyze the existing scholarly literature to determine the extent to which flow can serve as an effective surrogate for specific pollutant loadings, and advise the states on cost-effective means for incorporating stormwater runoff into TMDLs.[106]

Watershed-Based Permitting Offers the Potential to Maximize Net Benefits

In the final rule, EPA should create a framework under which municipalities—including municipalities across state lines—can form partnerships to pursue watershed-based permitting. Under watershed-based permitting for stormwater, NPDES permits for stormwater discharges would be issued based on pollution reduction goals for a given waterbody, and an institutional structure would be created to facilitate trading within the watershed. Coordinating permitting on a watershed level can facilitate market-based approaches more efficiently.[107] Watershed-based permitting also facilitates the ability of municipalities to coordinate in achieving pollution reduction goals for the receiving waterbody.[108]

Issuing individual permits to dischargers located in the same watershed region may be beneficial in cases where data on individual flow rate is ascertainable. However, when such data is not ascertainable, EPA should allow for permitting authorities in watershed regions to issue one permit to cover multiple sources or dischargers based on total flow volume into the relevant waterbody. When appropriate, this has the benefit of lowering the administrative costs of issuing permits and reducing the costs to applicants who jointly apply for permits.[109] In order to realize this potential benefit, EPA should consider structuring the proposed rule in a way that will facilitate the ultimate merging of the municipal, industrial, and construction permitting regimes, so as to coordinate permitting under a single, watershed-based approach.[110]

Additionally, a joint permitting approach would encourage the use of market-based regulatory tools. Such programs encourage collectively regulated dischargers to identify the least costly way

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[104] *Id.* at 84 ("By contrast, the uncertainties and variability surrounding both the nature of the stormwater discharges and the capabilities of various pollution controls for any given industrial site, construction site, or municipal storm sewer make it much more difficult to set precise numeric limits in advance for stormwater sources.").

[105] *Id.* at 83 ("A more straightforward way to regulate stormwater contributions to waterbody impairment would be to use flow or a surrogate, like impervious cover, as a measure of stormwater loading."). *See also* Thurston, supra note 57, at 411 ("Recent improvements in geographic information system (GIS) technology, however, allow us to collect and manage large amounts of geographic data fairly inexpensively. Using sophisticated geohydrologic models in the GIS platform, we can predict runoff from properties as a function of their physical attributes and effectively turn a nonpoint into a point source problem.").

[106] *Id.* at 391 ("The inclusion of hydrology is consistent with the CWA on several grounds. First, elevated runoff peak flow rates and volumes increase erosive shear stress on stream beds and banks and directly contribute particulate pollutants to the flow."); *id.* at 401–03 (describing the use of flow as a surrogate for stormwater pollution in the Potash Brook TMDL in Vermont, and summarizing relevant literature).

[107] *Id.* at 419–23.

[108] *See* NRC REPORT, *supra* note 41, at 397.

[109] EPA, NPDES TECHNICAL GUIDANCE, *supra* note 48, at 8–9.

[110] NRC REPORT, *supra* note 33, at 391 ("A true watershed-based approach would incorporate . . . (1) public streets and highways; (2) municipal stormwater drainage systems; (3) municipal separate and combined wastewater collection, conveyance, and treatment systems; (4) industrial stormwater and process wastewater discharges; (5) private residential and commercial property; and (6) construction sites.").

to achieve a given level of stormwater flow reduction (for example, cap-and-trade programs, stormwater utilities, and offset programs). The watershed permitting approach helps to facilitate trading by clearly defining the sources that may trade with one another.[111]

Watershed-based regulation of stormwater dischargers also increases the ability of authorities to measure the effectiveness of their regulatory actions on the water quality of the relevant waterbody.[112] Watershed-based regulation would consolidate the task of regulation to a single permitting authority as compared to the multiple authorities involved when regulation is based on political or census boundaries. By regulating on a watershed level, regulators are able to develop a more effective feedback mechanism for understanding the effects of regulation on the relevant waterbody. Watershed-based regulation of dischargers also lowers the cost of assessing compliance and progress towards achieving water quality goals, allowing for a more active and adaptive regulatory system.[113]

Successful watershed-based permitting regimes that include stormwater regulation have already been implemented on a limited basis. In 2004, twelve municipalities in the Tualatin River basin in Oregon that had formed a stormwater utility applied for and received a single NPDES permit that covered publicly owned treatment works, pretreatment facilities, sanitary sewer overflows, biosolid discharges, and stormwater runoff.[114] Their goal was to achieve administrative efficiencies by streamlining permits, create a framework for water quality credit trading, and encourage collaboration among key stakeholders.[115] The watershed-based partnership had several innovative, efficiency-maximizing components: for example, to manage the temperature of the river, the joint permittees implemented a successful trading program for stream-shading improvement credits.[116]

Watershed-based permitting remains limited, however, because of insufficient guidance from EPA—according to the National Research Council, "EPA's analysis does not define a framework for moving toward true watershed-based permitting"[117]—as well as separate regulatory frameworks within the NPDES program (and within the stormwater program itself).[118] EPA should issue revised guidance that contains such a framework, and the final rule should create a regulatory framework that easily facilitates watershed-based permitting.

V. EPA Should Maximize Opportunities for Citizen Involvement in the Permit Review and Enforcement Process

EPA's new regulations for MS4s and for newly developed and redeveloped sites should be designed in a way that better facilitates citizen participation in the permit review and enforcement process. By leveraging citizen participation, the regulations will more efficiently compel compliance among dischargers, thereby yielding environmental benefits more cost-effectively. To better facilitate

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111 EPA, NPDES TECHNICAL GUIDANCE, *supra* note 48, at 26–27. *See also* NRC REPORT, *supra* note 41, at 419–23.

112 EPA, WATERSHED-BASED NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITTING POLICY STATEMENT (2003) ("EPA believes that watershed-based permitting can . . . emphasize measuring the effectiveness of targeted actions on improvements in water quality.); NRC REPORT, *supra* note 33, at 404 ("[T]he endpoints upon which success and compliance would be judged are directly related to the attainment of beneficial uses.").

113 NRC REPORT, *supra* note 41, at 411–13 (discussing opportunities for institutional partnerships within the watershed-based permitting framework that can lower compliance costs).

114 *Id.* at 392–93.

115 *Id.*

116 *Id.*

117 *Id.* at 388.

118 *See id.* at 391.

citizen participation, EPA should increase dischargers' duty to self-monitor and self-report and should make those results available to the public. EPA should also require disclosure of dischargers' Stormwater Pollution Prevention Plans and should make those plans available to the public at the earliest feasible time.

Strengthening Stormwater Enforcement is Necessary to Achieve the Environmental Benefits of the Forthcoming Rule

Citizen enforcement plays an important role in Clean Water Act enforcement. Adequate enforcement is necessary if the environmental benefits of the proposed rule are to be realized. Without enforcement, dischargers of pollution lack the incentive to comply with regulations, because compliance imposes an economic cost on the discharger.[119] The purpose of enforcement is to use the threat of legal sanctions or penalties to correct for this incentive and compel dischargers to comply with the regulatory program.[120] The classical theory of deterrence states that individuals who gain an economic benefit from violating a law will instead comply with it when the expected benefit from violating the law is less than the expected penalty.[121] The expected penalty is determined by two factors: the severity of the penalty and the probability of detection.[122] More deterrence is not necessarily better; because most pollution is the result of socially beneficial activities, such as manufacturing and waste disposal, over-deterrence is possible.[123] The goal of enforcement efforts should be to provide an optimal level of deterrence. Empirical scholarship demonstrates that increased monitoring and enforcement activities can produce significant gains in specific deterrence (the reduction of violations at a specific firm), in general deterrence (the reduction of violations at other firms), and in emissions reductions.[124]

The current permitting, monitoring, and enforcement program within EPA's stormwater program provides insufficient levels of deterrence to compel compliance among stormwater dischargers.[125] Moreover, by expanding the boundaries for MS4s and subjecting all newly developed and redeveloped sites to the stormwater program, the forthcoming regulatory revisions will expand the number of regulated sources significantly. Thus, without greater enforcement, the probability of detection and punishment—already low—will decrease even further. To increase the level of deterrence to regulated firms, therefore, EPA should structure its regulations in a way that facilitates citizen participation in the permit review and enforcement process.

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[119] David R. Hodas, *Enforcement of Environmental Law in a Triangular Federal System: Can Three Not Be A Crowd When Enforcement Authority Is Shared By the United States, the States, and Their Citizens?*, 54 MD. L. REV. 1552, 1553–54 (1995) ("Unfortunately, polluters have no economic incentive to comply with environmental laws because noncompliance results in economic benefits—the free use of water or air for waste disposal—while compliance exacts an economic cost—the internalization of waste disposal costs.").

[120] *Id.* at 1604 ("Effective enforcement is based on the theory of deterrence, which holds that a strong enforcement program deters the regulated community from violating in the first place, deters specific violators from further violations, and deters the public from violating other laws.").

[121] Becker, *supra* note 77, at 204–05.

[122] *Id.*

[123] Mark A. Cohen, *Empirical Research on the Deterrent Effect of Environmental Monitoring and Enforcement*, 30 ENVTL. L. REP. NEWS & ANALYSIS 10245, 10251 (2000) ("[T]here is a risk that too much deterrence will have the effect of stifling other socially desirable activities. . . . [M]ost environmental offenses are byproducts of socially desirable production or distribution processes.").

[124] Wayne B. Gray & Jay P. Shimshack, *The Effectiveness of Environmental Monitoring and Enforcement: A Review of the Empirical Evidence*, 5 REV. ENV. ECON. & POL'Y 3, 22 (2011).

[125] NRC REPORT, *supra* note 41, at 84–90.

Increased Self-Monitoring and Self-Reporting Requirements Will Lower the Burden for Citizen Participation

The Clean Water Act provides citizens with legal authority to enforce the Act.[126] The Act corrects a disincentive to filing suits by allowing individuals to recover attorney's fees.[127] However, courts have created many obstacles to citizen enforcement, such as limitations on which parties may recover attorney's fees; restrictions on standing; broad interpretations of sovereign immunity under the Eleventh Amendment; and ambiguity with regard to the meaning of key legal terms such as "diligent prosecution."[128] Despite these obstacles, citizen suits remain an important enforcement tool for increasing compliance with NPDES permits.[129] EPA's stormwater program, however, imposes additional obstacles that limit citizen enforcement in the stormwater context significantly.[130]

Though EPA is restricted in its ability to remove the obstacles to citizen suits created by courts, EPA's final stormwater rule should remove the additional regulatory obstacles to citizen participation in the review and enforcement process, thereby allowing citizens to assume a more robust enforcement role. Greater citizen involvement will enable permitting authorities to achieve greater deterrence and, thus, greater compliance and environmental benefits.

EPA's stormwater program imposes little to no monitoring and reporting requirements on dischargers. Most dischargers are not required to sample their stormwater discharges; they are merely required to conduct visual inspections of the discharge, report its visual appearance, and keep the document on file at the site.[131] Additionally, minimal reporting requirements are imposed on dischargers, and the reports that are required are often not reviewed.[132]

EPA should require increased disclosure of dischargers' site-specific plans. Scholars of environmental enforcement have identified a relationship between increased disclosure and increased rates of compliance.[133] In addition to increasing compliance, self-monitoring and self-

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126 33 U.S.C. § 1365.

127 *Id.*

128 *See* Will Reisinger, Trent A. Dougherty & Nolan Moser, *Environmental Enforcement and the Limits of Cooperative Federalism: Will Courts Allow Citizen Suits to Pick Up the Slack?*, 20 DUKE ENVTL. L. & POL'Y F. 1, 28–56 (2010) (discussing legal barriers to citizen enforcement of environmental law).

129 *See* James R. May, *Now More Than Ever: Trends in Environmental Citizen Suits at 30*, 10 WIDENER L. REV. 1, 47 (2003) ("Despite ever more cascading burdens respecting notice, jurisdiction, preclusion, actions against EPA and third parties, remedies, SEPs and attorney fees, there are now more reported environmental citizen suits than ever.").

130 NRC REPORT, *supra* note 41, at 90.

131 *Id.* at 88 ("A large subset of dischargers . . . are subject to much more limited monitoring requirements. They are not required to sample contaminant levels, but instead are required only to conduct a visual inspection of a grab sample of their stormwater runoff on a quarterly basis and describe the visual appearance of the sample in a document that is kept on file at the site. . . . A final set of regulated parties . . . are not required to provide any quantitative monitoring of runoff."). *See also* EPA, NPDES Multi-Sector General Permits for Stormwater Discharges Associated with Industrial Activity 29–30 (2008) (detailing the monitoring and inspection requirements for industrial dischargers) [hereinafter INDUSTRIAL MSGP].

132 NRC REPORT, *supra* note 41, at 3 (noting that self-reporting is "unaudited and largely ineffective."). *See also id.* at 68 ("Communities' inconsistent reporting of activities makes it difficult to evaluate program implementation nationwide."); *id.* at 88 (stating that, while a discharger's monitoring plan is subject to review and approval by the permitting authority, limited enforcement resources frequently are inadequate to support ongoing oversight).

133 MARK GREENWOOD, WHITE PAPER FROM INDUSTRY COALITION TO EPA ON CONCERNS OVER INFORMATION PROGRAM, reprinted in BUREAU OF NAT'L AFFAIRS, DAILY ENVT. REP., May 4, 1999, at E-1, E-3.

reporting make entities more aware of their compliance status.[134] Disclosure also enables members of the public to compel compliance by filing citizen suits.[135]

More Accurate, More Detailed, More Frequent, and More Accessible Self-Reporting is Required for Meaningful Citizen Participation

To increase the opportunity for public review and enforcement, EPA should require dischargers to disclose their permits to the general public at the permit review stage. For example, during the issuance of an NPDES permit for wastewater, the public has the opportunity to review and comment on the permits, which specifically list the allowable discharge.[136] In contrast, stormwater general permits only contain a description of the regulatory framework and menu of conditions—not the site-specific plan developed by the permittee.[137] As a result, meaningful citizen review of stormwater permits at the review stage is impossible.[138] EPA should specify in its regulations that the general permit for MS4s and for newly developed and redeveloped sites will enable members of the public to review permittees' site-specific plans and participate in the review and comment process.

EPA should also make these site-specific plans easily accessible to the public *after* the permit is approved so citizens can participate in overseeing facility compliance with permit requirements. Currently, citizens can only access a discharger's site-specific plan if they request the plan from the facility in writing.[139] The facility may decline to disclose a permit on the ground that it contains "confidential business information"—a decision that is not reviewable.[140] These rules present major barriers to citizen suits.[141] EPA should remove these barriers by making all site-specific plans publicly available on the Internet at the earliest feasible time. Permits for wastewater facilities, for example, are available through EPA's website, where any member of the public can search the effluent limitations and best management practices specific to the wastewater facility, as well as the facility's reporting and compliance history.[142]

Finally, to facilitate more accurate and comprehensive monitoring and reporting, and thus facilitate citizen participation, EPA should consider increasing the requirements for scientifically valid sampling so as to ensure more accurate reporting (or at least more rigorous sampling requirements than mere visual inspection); increasing the self-reporting requirements in terms of the level of detail of disclosure to ensure that both regulating authorities and the public have sufficient information about illegal discharges; requiring that dischargers report earlier and more frequently on the implementation of stormwater control technologies, thereby creating legally binding documents; and making the documents thus generated easily accessible by the general public.

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134 ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, ENSURING ENVIRONMENTAL COMPLIANCE: TRENDS AND GOOD PRACTICES 69–70 (2009).

135 Lori S. Brennar & Sheila M. Olmstead, *The Impacts of "Right to Know": Information Disclosure and the Violation of Drinking Water Standards*, 56 J. ENVTL. ECON. & MGMT. 117, 129 (2008).

136 NRC REPORT, *supra* note 41, at 90.

137 *Id.*

138 *Id.*

139 *See, e.g.*, INDUSTRIAL MSGP, *supra* note 131, at 31 (2008) ("EPA may provide access to portions of your SWPPP to a member of the public upon request. Confidential Business Information may be withheld from the public").

140 NRC REPORT, *supra* note 41, at 90.

141 *Id.*

142 *See* EPA ENVIROMAPPER, http://www.epa.gov/emefdata/em4ef.home (last visited Apr. 22, 2012); EPA, REGION 10, THE PACIFIC NORTHWEST, DRAFT NPDES PERMITS, http://yosemite.epa.gov/r10/WATER.NSF/NPDES+Permits/Draft+NP787 (last visited Apr. 22, 2012).

VI. Conclusion

EPA's forthcoming stormwater regulations have the potential to achieve significant economic benefits by improving water quality. To ensure that the rule maximizes net benefits, EPA should consider—and quantify where feasible—all relevant costs and benefits in its economic analysis. Further, EPA should analyze whether the net benefits of the regulation can be maximized by incorporating market-based approaches and implementing time limits on grandfathering. Finally, EPA should design the rule in a manner that facilitates watershed-based permitting and citizen involvement in the process of permitting, monitoring, and enforcement. These recommended improvements will help maximize the net social benefits of the regulatory revisions to EPA's stormwater program.

Sincerely,

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